Technical Information

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A General Information

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Introduction

The aim of this manual is to provide an overview of vehicle refinishing. Glasurit offers a comprehensive range of products for the repair trade which allows individual bodyshops to select the ideal refinishing system. Only by the selection of the correct materials, can high quality, economic paint jobs be achieved.

Most important for a good result is to stick to the recommended data in respect to film thickness, viscosity, drying time, etc.

For all the products listed in the individual systems in Sections C and D, we have enclosed a technical data sheet in Section G (sub-divided into Primer, Topcoats etc), in which the application data and other information is included. Pay close attention to the information about faster and slower thinners and hardeners, by which you can tailor the chosen product to the working conditions in your own paintshop.

The amount of labor involved in a paint job depends on the condition of the old paintwork and the customers' requirements.

A quality finish is a repair to a virtually new car. The paint must have a good finish, which involves comprehensive surfacer and filler work with careful fine sanding.

An economical finish carried out on an older vehicle does not warrant much as far as general appearance is concerned, as the old paintwork is already dented and scratched. Less surfacer and filler work is possible, a wet on wet system is sufficient.

A Sales or Secondhand Car Re-Spray is a cheap finish that makes an old ugly vehicle more attractive. For this kind of job, surfacing and filling can be reduced to a minimum. After cleaning and removal of rust, an adhesion promoter and a finish paint is applied wet on wet.

A "Blend-in" is necessary when the painting of a part would result in a visible color difference. Small spots can be economically repaired by using the "blend in" technique also.

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Use of matrices

Section B provides basic information and answers to crucial questions in matrix-shape.

- **B1 Surface preparation of substrates and old paintwork**

  How do you clean and sand the different substrates?

- **B1a Low VOC surface preparation of substrates**

  How do you clean and sand the different substrates in regulated areas?

- **B2 Metallic substrates – body fillers**

  Which body fillers can be used for which metallic substrates?

- **B3 Metallic substrates – undercoats**

  Which primers and/or primer fillers can be used for which metallic substrates?

- **B4 Coating of plastics – undercoats**

  Which undercoat materials can be applied to which plastics?

- **B5 Primer / primer surfacer / sealer combinations**

  Which primer surfacers or sealers can be used over which primers?

- **B6 Sanding of undercoats**

  Which sanding techniques and pads can be used for the different undercoat materials?

- **B7 Undercoat / topcoat combinations**

  Which topcoats can be applied to which undercoats?

- **B8 Hardeners / activators for undercoats**

  Which hardeners or activators are needed for which undercoat materials?

- **B9 Hardeners for topcoats / clears**

  Which hardeners can be used for which topcoats or clears?

- **B10 Basecoat / clearcoat combinations**

  Which clearcoats can be used over which basecoats?

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General information about the paint shop

Careful Planning

It should be noted that polishing materials containing silicone are often used. Silicone is the enemy of the vehicle painter (fisheye formation). A closed space away from the paint area must be available for the use of such polishing materials.

Air Management

There are 3 ways in which air should be managed in the spray booth:

1. Input of dust-free, warm fresh air.

2. The extraction of overspray and solvent fumes.

3. The screening of the spray booth against the entry of dust by slight pressurization.

Paint spray booths operate under the so called “open air circulation” principle. Fresh air is constantly sucked in from the atmosphere and the used air is exhausted at another point. The air speed in the unhindered cross-section of the cabin should be approximately 0.3 m/sec. (80-100 ft./min.). This corresponds to 180 to 220 air changes per hour. Vertical air movement and even distribution over the whole of the filter ceiling should be measured when a booth is first installed.

In the drying oven, the air serves as a heat transporting agent. This part of the shop can be operated as a closed air circuit. With a single rotation (airchange), about 10% drying air is exhausted into the atmosphere, and is replaced by the induction of fresh air. This means that for each ten air changes, the drying air is completely renewed.

Recommended booth temperatures

Working with an air temperature between 65°F-75°F/ 18°C-24°C during spraying has proved most satisfactory. At this temperature range the most favorable paint flow and processing is provided.

The drying temperatures depend on the respective paint type used. For obvious reasons temperature should be limited to a maximum of 175°F/80°C, otherwise plastic parts built into the vehicles, as well as highly susceptible electronic units and rubber tires, would become deformed or damaged.

Slight over-pressure in spray booth

To keep the spray booth “dustfree” it is necessary to provide a slight positive pressure. The output of the air entry unit must be higher than that of the air exhaust unit in order to achieve the desired overpressure. The fine adjustment of the overpressure is achieved by means of butterfly valves which are arranged in the air feed pipes (normally pre-set by the booth manufacturer).

Surrounding temperature – object temperature

Differentiation must be made between air outlet temperature and the temperature of the object being painted, as these vary. According to experience, the rule is that the air outlet temperature should be some 10°F-20°F/5°C-10°C higher than the required object temperature.

Example: If the desired object temperature is 140°F/60°C, the thermostat of the heating system should be set between 150°F-160°F/65°C-70°C. The maximum limit of 175°F/80°C placed on the curing or drying temperature of the object is due to the heat sensitive parts built into the car.

Providing compressed air

Damage to paintwork caused by impure compressed air during spraying can be easily avoided. Specialty firms today offer a large range of equipment which can meet the most varied requirements of the degree of cleanliness of compressed air. These machines remove dust, water and oil almost entirely from the compressed air. **Clean compressed air is absolutely essential for the production of high quality paintwork.** The financial costs for these machines bear no relationship to the costs that can result from defective paint finishes.

Cleaning the induced air

As well as the even distribution of the air over the entire surface of the booth, its cleaning is just as important as that of the air used for spraying. According to the composition of the atmosphere at the respective site, good pre-filtering of the air should be carried out in order to protect the expensive and high quality fine filter. This will lengthen considerably the life of the fine filter ceiling. Special attention should be paid to the creation of a good seal between the filter and the filter ceiling construction. For monitoring the degree of dirtiness of the filter, control of the pressure loss by means of a U-tube or a sloping tube manometer is essential. Care must be taken when changing the filter medium that a filter of the same degree of extraction and the same resistance is fitted. If this is ignored it can lead to a considerable reduction in air performance and thus to a disturbance of the air system of the booth, which is also an unavoidable result of too much dirt in the filter.

General information about the paint shop

Working, safety and operational regulations

Finally, it must be mentioned that such shops must be planned, constructed and operated in compliance with the many regulations controlling such situations. The regulations apply to the storage of paints, solvents and thinners. Maximum values of fumes and other substances which are detrimental to health must be observed in all working spaces.

Cleanliness in the Paint Shop

The appearance of a paint finish does not only depend on the paint material and the way in which it is processed, but also on the condition of the spraying and drying booths as well as of the working equipment. Paint processing should be carried out at an ambient temperature of between 65°F-75°F/18°C-24°C. The air feed to the spraying equipment must be free from oil and water. The spraying pressure must remain constant. The selection of the right nozzle is important, as well as keeping the nozzles and the air caps clean, otherwise it is impossible to achieve an even spray pattern.

The cleanliness of spraying and drying booths is mainly taken care of by an efficient air intake and exhaust system, which is also necessary for safety reasons so that concentrations of flammable solvent fumes and air mixtures can be avoided.

As well as the spray gun technology, an efficient air intake and exhaust system has a decisive bearing on the final appearance of the vehicle paint job. The air required in spray booths is enormous: taking it in from the workshop is not advised as this could overload the dust filter. The air that is sucked in from outside must be fed in via filter and warming equipment. This applies particularly during the colder parts of the year and especially for combined constructions where the spray booth serves at the same time as the drying booth. The induction quantity depends on the size of the booth, but also bears a relationship to the exhaust quantity. In any case, sufficient air must be fed in so that over-pressure is maintained in the spray booth. A ratio of exhaust to induced air of 1:1.05 is sufficient.

Under-pressure leads to the contamination of fresh paintwork, because the outside air coming in takes the path of least resistance through gaps around doors, cracks in the brickwork etc., and pulls dust deposits with it. Of its own accord, this air would not choose the more difficult way via the filter in the air circulation system. Filters must of course be suitable for their purpose and be kept clean constantly. The fine filter should have a dust removal capacity of not under 99.8%. It is particularly important that the induced air is fed in over a suitable distributor, the purpose of which is to avoid the formation of too strong air turbulence. The latter would not only disturb the painter, but would lead to air vortexes in which the spray mist becomes trapped. Bit by bit this would deposit itself on the fresh paintwork, causing it to become soiled. The air speed must not be too high as the paint would dry too quickly on its outer skin. The result would not only be disturbance to processing, but would also result in the formation of dust pimples as the overspray can no longer be absorbed and would simply lay itself on top. As a result of the outer surface of the paint drying too quickly, loss of shine and the formation of solvent pop blisters can appear. When local conditions allow, it is always recommended that the air feed or distribution takes place over the whole of the ceiling area. An air drop, i. e. an air speed of 0.3 m/sec. (1 ft./sec.) measured over the unobstructed cross-section of the booth is usually sufficient (circa 350 times by volume air change per hour). Air exhaust is most practical via outlet ducts in the floor of the spray booth.

The walls of the booth should be as smooth as possible so that no dust can become deposited. Water curtains on the walls are practical but expensive and are therefore mainly restricted to industrial spray booths with a high through-put. Tiled spray booth walls or metal or brickwork painted with PUR paint can be coated with a **strippable coating** for easier cleaning.

Safety and health precautions

Paint products are generally mixtures of a number of components that can be hazardous to health and safety. Paint products are typically composed of resins, pigments, solvents, additives and in some case isocyanates. In order to use these materials safely, a number of precautions should be followed.

- Flammable paint products should always be kept away from heat, sparks and other ignition sources due to the flammability of the solvents that are used as carriers.
- Labels should be on all containers during use and storage.
- Paint products should be used by trained professionals only.
- First aid equipment and fire extinguishers should be available and in proper working order.
- Proper ventilation is required when working with any solvent based products including paints, reducers, hardeners, body putties, etc.
- Proper respiratory and other PPE (Personal Protective Equipment) should be used when mixing, spraying, applying or sanding.
- Review all labels, technical sheets and MSDS's for recommendations on product use.
- Keep containers closed when not in use.
- Store properly.

Solvents, some pigments and other additives have health effects associated with them. OSHA has established PELs (Permissible Exposure Limits) for many of these and there may be TWAs (time weighted averages), STELs (short term exposure limits), TWA-C (TWA-Ceiling) or a skin designation. These levels are enforceable by OSHA inspectors. Some solvents or other components in a paint product can cause acute (immediate) or chronic (long term) effects. See the MSDS for specific information on these effects. Selected components may have been shown to cause such effects as damage to the liver or kidneys after overexposure. Acute effects may include dizziness, blurred vision, disorientation and in some severe cases unconsciousness. It is, therefore, very important to use the materials with the proper PPE including respiratory protection. Isocyanates have special hazards. See MSDS and labels for further information.

Protecting Yourself - PPE

Always wear gloves when skin exposure is possible. Organic solvents can be absorbed through the skin as well as inhaled. Never wash hands in solvent, use soap and water or a hand cleaner designed to remove paint. Solvents can also cause drying of the skin, dermatitis or other irritations to the skin.

Wear safety glasses or goggles to protect your eyes from splashes and vapors. Getting solvent in the eyes is very painful and may cause damage. If a solvent does get in the eyes, flush with large quantities of water and seek medical attention.

Protecting Yourself - Respiratory Protection

When using a material containing solvent, it is necessary to use the proper respiratory protection. The respirator must be properly fitted if it has a face to seal contact. A vapor particulate respirator will protect you from vapors, mist and dust. An organic vapor cartridge (TC-23C) should be used. All respirators should be NIOSH (National Institute for Occupational Safety and Health) and MSHA (Mine Safety and Health Administration) approved. If you have facial hair or other conditions that prevent a proper seal of the mask, you should use a fresh air system such as a hood that has a positive pressure (TC19C NIOSH/MSHA).

For cartridge respirators using negative pressure, the cartridges should be replaced frequently. Cartridges should be replaced immediately if you can smell solvent or it becomes difficult to breathe when wearing. When not in use, respirators should be cleaned and stored in sealed plastic bags away from sunlight, heat or moisture. See the manufacturer's recommendations for proper cleaning and storage.

Fresh air systems are the only ones approved by NIOSH/MSHA for use with products containing or mixed with products containing isocyanates.

A dust respirator should be used when sanding before or after applications of primers or body fillers. A vapor cartridge filter should also be used when applying body fillers which contain styrene or organic peroxides.

Note that while it is important to use the proper respiratory protection and other PPE when applying the products, it is also important to use it while mixing or otherwise handling the products.

See the MSDS and labels for more information.

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VOC information

VOC stands for Volatile Organic Compound. This is a class of materials that includes most solvents used in automotive paints. Solvents evaporate into the air during application and drying of paint coatings as well as during clean up operations. VOC's react chemically with sunlight to form a variety of pollutants generally referred to as "photochemical smog".

In an effort to improve air quality, many areas have enacted laws that regulate the use of products containing VOC's. Since the regulations vary from one area to another, it is important that the paint shop verify that the products they chose to use are compliant with local laws. The Glasurit line contains low VOC products which enable it to be used in all areas of the country. Consult your Glasurit jobber or BASF sales representative for details on regulations and compliant products.

Most of the processes described in this manual are for use in non-regulated areas. **Substitute the appropriate low VOC product whenever necessary to comply with local law.** Technical data sheets for low VOC products can be found in Section G.

VOC values are expressed in pounds per gallon (lbs/gal); or grams per liter (gms/l). These values can be found on the package label, or in various brochures and charts published by BASF. In the case of mixed colors, the VOC value is noted in SmartTrak or SmartColor. Regulations typically specify a maximum VOC value for paints as sprayed; that is with all hardeners and reducers needed to spray the product combined. A list of VOC values for ready to spray Glasurit products using different combinations of hardeners and reducers is available.

If the combination of products is not listed in the published tables, the following method can be used to calculate the as applied VOC for solvent based products that do not contain VOC exempt solvents.

Example for clear mixed 2:1 + 5% reduction:

	VOC as packaged		*Parts*		*VOC per product*
Clear	4.59 lbs/gal	x	20	=	91.80
Hardener	5.30 lbs/gal	x	10	=	53.00
Reducer	7.25 lbs/gal	x	1	=	7.25
Total			31		152.05

Total VOC (152.05) divided by the total number of parts (31) equals applied VOC.

152.05 ÷ 31 = 4.90

4.90 is the applied or ready to spray VOC value.

To convert lbs/gal to gms/l: multiply by 119.8

4.90 x 119.8 = 587 gms/l

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B Matrices

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Surface preparation of substrates and old paintwork

Metallic Substrates

Bare Metal	**360-4 Metal Cleaner**	1x	Wipe dry	80-150	**360-4 Metal Cleaner**	1x	Wipe dry
Galvanized Steel	**360-4 Metal Cleaner**	1x	Wipe dry	Sanding pad	**360-4 Metal Cleaner**	1x	Wipe dry
Aluminum	**360-4 Metal Cleaner**	1x	Wipe dry	80-150	**360-4 Metal Cleaner**	1x	Wipe dry

Plastics

Flexible Plastics	Plastic part must be washed with soap & water, rinsed then dried.	**541-30 Universal Cleaner for Plastics**	1x	Wipe dry	Gray Scuff pad	**541-30 Universal Cleaner for Plastics**	1x	Wipe dry
Rigid Plastics	Plastic part must be washed with soap & water, rinsed then dried.	**541-30 Universal Cleaner for Plastics**	1x	Wipe dry	Gray Scuff pad	**541-30 Universal Cleaner for Plastics**	1x	Wipe dry

Old paintwork / new panels

New panels factory-primed	**541-5 Silicone and Tar Remover**	1x	Wipe dry	Sanding pad or 150-240	**541-5 Silicone and Tar Remover**	1x	Wipe dry
Well-cured Old paintwork	**541-5 Silicone and Tar Remover**	1x	Wipe dry	150-240	**541-5 Silicone and Tar Remover**	1x	Wipe dry

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Low VOC surface preparation of substrates

Metallic Substrates

Bare Metal	**700-10 Waterborne Degreaser**	1x	Wipe dry	80-150	**700-1 Waterbased Cleaner**	1x	Wipe dry
Galvanized Steel	**700-10 Waterborne Degreaser**	1x	Wipe dry	Sanding pad	**700-1 Waterbased Cleaner**	1x	Wipe dry
Aluminum	**700-10 Waterborne Degreaser**	1x	Wipe dry	80-150	**700-1 Waterbased Cleaner**	1x	Wipe dry

Plastics

Flexible Plastics	Plastic part must be washed with soap & water, rinsed then dried.	**700-10 Waterborne Degreaser**	1x	Wipe dry	Gray Scuff pad	**700-10 Waterborne Degreaser**	1x	Wipe dry
Rigid Plastics	Plastic part must be washed with soap & water, rinsed then dried.	**700-10 Waterborne Degreaser**	1x	Wipe dry	Gray Scuff pad	**700-10 Waterborne Degreaser**	1x	Wipe dry

Check your local VOC wallcharts for VOC regulations in your area.

Old paintwork / new panels

New panels factory-primed	**700-10 Waterborne Degreaser**	1x	Wipe dry	Sanding pad or 150-240	**700-1 Waterbased Cleaner**	1x	Wipe dry
Well-cured Old paintwork	**700-10 Waterborne Degreaser**	1x	Wipe dry	150-240	**700-1 Waterbased Cleaner**	1x	Wipe dry

Note: Aerosol versions of the products on B 1 (360-4, 541-5, 541-30) may also be used in low VOC areas.

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Metallic substrates - body fillers

Product recommendations for applying body filler to metallic substrates

		Bare metal	Galvanized steel	Aluminum	OEM parts with e-coat	Well-cured old paintwork
Body Fillers	839-20 Double Plus Body Filler	●	●	●	●	●
	1006-26 Sprayable Body Filler	●	❶	❶	●	●

☐ Not applicable

● Direct application possible

❶ Pre-prime with 801- (1 spray coat 0.6 - 0.8 mil; flash off 30 mins.)

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Metallic substrates - undercoats

Product recommendations for applying undercoats to metallic substrates

		Bare metal	Galvanized steel	Aluminum	OEM parts with e-coat	Well-cured old paintwork
Pretreatments	283-155 Etching Primer	●	●	●	●	●
	801-72 Epoxy Primer Filler	●	●	●	●	●
	801-73 Low VOC Epoxy Primer	●	●	●	●	●
	801-703 Chromated Epoxy Primer	●	●	●	●	●

☐ Not applicable.

● Can be applied directly, even on bare metal substrates.

Metallic substrates - undercoats

Product recommendations for applying undercoats to metallic substrates

		Bare metal	Galvanized steel	Aluminum	OEM parts with e-coat	Well-cured old paintwork
Primer Surfacers	151-70 UV Light-Activated Primer Filler	●	●	●	●	●
	176-72 1K Waterborne Primer Surfacer	❶	❶	❶	●	●
	285-10 Low VOC DTM Primer, Black	●	●	●	●	●
	285-13 DTM Urethane Primer	●	●	●	●	●
	285-20 Low VOC DTM Primer, White	●	●	●	●	●
	285-21 2.1 VOC Primer	❷	❷	❷	❷	❷
	285-50 HS Primer Filler	❶	❶	❶	❹	❹
	285-60 Universal HS Primer	❶	❶	❶	❹	❹
	285-81 Dry Sand MS Primer Filler	❶	❶	❶	❹	❹
	801-72 Epoxy Primer Filler	●	●	●	●	●
	801-73 Low VOC Epoxy Primer	●	●	●	●	●
	801-703 Chromated Epoxy Primer	●	●	●	●	●

Metallic substrates - undercoats

Product recommendations for applying undercoats to metallic substrates

		Bare metal	Galvanized steel	Aluminum	OEM parts with e-coat	Well-cured old paintwork
Sealers	285-02 Low VOC Transparent Sealer	❸			❹	❹
	285-18 Low VOC Sealer, White	❺	❺	❺	❺	❺
	285-21 2.1 VOC Primer	❷	❷	❷	❷	❷
	285-29 Low VOC Sealer, Black	❺	❺	❺	❺	❺
	285-38 HS Non-Sanding Sealer, White	❶❸	❶❸	❶❸	●	●
	285-49 HS Non-Sanding Sealer, Black	❶❸	❶❸	❶❸	●	●
	285-60 Universal HS Primer	❶	❶	❶	❹	❹
	801-72 Epoxy Primer Filler	●	●	●	●	●
	801-73 Low VOC Epoxy Primer	●	●	●	●	●
	801-703 Chromated Epoxy Primer	●	●	●	●	●

	Not applicable.
●	Can be applied directly, even on bare metal substrates.
❶	Pre-prime all exposed metal areas with 283-155 or 801-72.
❷	Pre-prime large metal areas with 801-72 or 283-155 (as an adhesion promoter) depending on what is compliant in your area.
❸	Pre-prime with 283-155.
❹	Can be applied directly, however, exposed metal must be pre-primed.
❺	Pre-prime with 283-155.

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Coating of plastics - undercoats

Product recommendations for car refinishing only

		Flexible			Rigid Plastics					
		PU-RIM	TPO	PP-EPDM	ABS	GRP/SMC	PC-PBTP	PA	PPO	Rigid PVC
Body Fillers	**839-90** Plastic Body Filler	●	●	●	●	●	●	●	●	●
	1006-26 Sprayable Body Filler					●				
Adhesion Promoters	**934-30** 1K Clear Plastic Ad-Pro	❷	❷	❷	❷	❷	❷	❷	❷	❷
	934-40 Low VOC 1K Adhesion Promoter	❷	❷	❷	❷	❷	❷	❷	❷	❷
	934-70 2K One Step Plastics Adhesion Promoter	❷	❷	❷	❷	❷	❷	❷	❷	❷
	934-70 2K One Step Plastics Adhesion Promoter - Low VOC	❷	❷	❷	❷	❷	❷	❷	❷	❷
Primer Fillers	**285-10** Low VOC DTM Primer	❶	❶	❶	●	●	●	●	●	●
	285-13 DTM Urethane Primer	❶	❶	❶	●	●	●	●	●	●
	285-20 Low VOC DTM Primer	❶	❶	❶	●	●	●	●	●	●
	285-21 2.1 VOC Primer	❶	❶	❶	●	●	●	●	●	●
	285-50 HS Primer Filler	❶	❶	❶	●	●	●	●	●	●
	285-60 Universal HS Primer	❶	❶	❶	●	●	●	●	●	●

NOTES: • For more types of plastics that may be used go to www.basfrefinish.com/glasurit products, then click on "painting of plastics", and then click on "type identifier". • No tempering (or baking) necessary prior to painting plastic parts. • All bumpers to be considered flexible.

	not applicable, no elastifier additive required
●	Can be used directly over uncoated plastics, adhesion promoter coat not required.
❶	Requires use of an adhesion promoter. Also requires a 25% - 50% addition of elastifier additive (522-111 or 522-333) in the primer.
❷	Can be used directly over uncoated plastics, no elastifier additive required (in some air districts, can **ONLY** be applied over uncoated plastics).

Coatings of plastic - undercoats

Product recommendations for car refinishing only

		Flexible			Rigid Plastics					
		PU-RIM	TPO	PP-EPDM	ABS	GRP/SMC	PC-PBTP	PA	PPO	Rigid PVC
Sealers	285-02 Low VOC Transparent Sealer	❶	❶	❶	●	●	●	●	●	●
	285-18 Low VOC Sealer, White	❷	❷	❷	●	●	●	●	●	●
	285-29 Low VOC Sealer, Black	❷	❷	❷	●	●	●	●	●	●
	285-38 HS Non-Sanding Sealer, White	❶	❶	❶	●	●	●	●	●	●
	285-49 HS Non-Sanding Sealer, Black	❶	❶	❶	●	●	●	●	●	●

NOTE:
- For more types of plastics that may be used go to www.basfrefinish.com/glasurit products, then click on “painting of plastics”, and then click on “type identifier”.
- No tempering (or baking) necessary prior to painting plastic parts.
- All bumpers to be considered flexible.

	not applicable, no elastifier additive required
●	Can be used directly over raw plastics, adhesion promoter coat not required.
❶	Requires use of an adhesion promoter. Also requires a 25% - 50% addition of elastifier additive (522-111 or 522-333) in the primer.
❷	Requires use of an adhesion promoter. Also requires 25% addition of low VOC elastifier additive 522-333 in the primer.

Primer / primer surfacer / sealer combinations

		Primers / Pretreatments			
		283-155	283-155 Low VOC	801-72	801-703
Primer Surfacers	**176-72** 1K Waterborne Primer Surfacer			●	●
	285-21 2.1 VOC Primer	●	●	●	●
	285-50 HS Primer Filler	●	●	●	●
	285-60 Universal HS Primer	●	●	●	●
	285-81 Dry Sand MS Primer Filler	●	●	●	●
Sealers	**285-02** Low VOC Transparent Sealer	●	●	●	●
	285-18 Low VOC Sealer, White	●	●		
	285-21 2.1 VOC Primer			●	●
	285-29 Low VOC Sealer, Black	●	●		
	285-38 HS Non-Sanding Sealer, White	●	●	●	●
	285-49 HS Non-Sanding Sealer, Black	●	●	●	●
	285-60 Universal HS Primer			●	●

☐ Not applicable

● Possible primer / primer surfacer / sealer combinations

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Sanding of undercoats

		Wet sanding by hand	Dry sanding by hand	Dry sanding by machine
Body Fillers	**839-20** Double Plus Body Filler	N/A	N/A	80 - 150 finish sand with 240
	839-90 Plastic Body Filler	N/A	N/A	80 - 150 finish sand with 240 - 320
	1006-26 Sprayable Body Filler	N/A	N/A	150 finish sand with 240
Primer Surfacers	**151-70** UV Light-Activated Primer Filler	320 - 500	320 - 500	320 - 500
	176-72 1K Waterborne Primer Surfacer	800	N/A	400
	285-10 Low VOC DTM Primer, Black	320 - 500	320 - 500	400 - 500
	285-13 DTM Urethane Primer	320 - 500	320 - 500	400 - 500
	285-20 Low VOC DTM Primer, White	320 - 500	320 - 500	400 - 500
	285-21 2.1 VOC Primer	320 - 360	320 - 360	320 - 360
	285-50 HS Primer Filler	400 - 600	360 - 400	400 - 500
	285-60 Universal HS Primer	400 - 600	N/A	320 - 360*
	285-81 Dry Sand MS Primer Filler	N/A	320	320
	801-72 Epoxy Primer Filler	800	N/A	400
	801-73 Low VOC Epoxy Primer	320 - 400**	N/A	320 - 400**
	801-703 Chromated Epoxy Primer	320 - 400**	N/A	320 - 400**

* Only if force dried

** When used as a high-build filler, coarse sand first with 240

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Undercoat / topcoat combinations

		Topcoats				
		22-Line	22-Line 340 gms/liter	22-Line 420 gms/liter	55-Line	90-Line
Adhesion Promoter	**934-70** 2K One Step Plastics Adhesion Promoter	●	●	●	●	●
	934-70 2K One Step Plastics Adhesion Promoter (Low VOC)	●	●	●	●	●
Primer Surfacers	**151-70** UV Light-Activated Primer Filler	●	●	●	●	●
	176-72 1K Waterborne Primer Surfacer	●	●	●	●	●
	285-10 Low VOC DTM Primer, Black	●	●	●	●	●
	285-13 DTM Urethane Primer	●	●	●	●	●
	285-20 Low VOC DTM Primer, White	●	●	●	●	●
	285-21 2.1 VOC Primer	●	●	●	●	●
	285-50 HS Primer Filler	●	●	●	●	●
	285-60 Universal HS Primer	●	●	●	●	●
	285-81 Dry Sand MS Primer Filler	●	●	●	●	
	801-72 Epoxy Primer Filler	●	●	●	●	●
	801-73 Low VOC Epoxy Primer	●	●	●	●	●
	801-703 Chromated Epoxy Primer	●	●	●	●	●

55-Line w/ hardener

55-Line Extreme

55-Line Interior

90-Line w/ hardener

☐ Not applicable

● Possible primer surfacer / sealer / topcoat combinations

Undercoat / topcoat combinations

		Topcoats				
		22-Line	22-Line 340 gms/liter	22-Line 420 gms/liter	55-Line	90-Line
Sealers	285-02 Low VOC Transparent Sealer	●	●	●	●	●
	285-18 Low VOC Sealer, White	●	●	●	●	●
	285-21 2.1 VOC Primer	●	●	●	●	●
	285-29 Low VOC Sealer, Black	●	●	●	●	●
	285-38 HS Non-Sanding Sealer, White	●	●	●	●	●
	285-49 HS Non-Sanding Sealer, Black	●	●	●	●	●
	285-60 Universal HS Primer	●	●	●	●	●
	801-72 Epoxy Primer Filler	●	●	●	●	●
	801-73 Low VOC Epoxy Primer	●	●	●	●	●
	801-703 Chromated Epoxy Primer	●	●	●	●	●

55-Line w/ hardener

55-Line Extreme

55-Line Interior

90-Line w/ hardener

☐ Not applicable

● Possible primer surfacer / sealer / topcoat combinations

Hardeners / activators for undercoats

		RFU	583-660	929-100	929-110	929-120	929-130	929-51	929-53	929-210	948-22	948-36	965-60	965-61
Body Fillers	**839-20** Double Plus Body Filler											●		
	839-90 Plastic Body Filler											●		
	1006-26 Sprayable Body Filler										●			
Pretreatments & Adhesion Promoters	**283-155** Etching Primer		●											
	283-155 Etching Primer (Low VOC)		●											
	801-72 Epoxy Primer Filler												●	
	801-703 Chromated Epoxy Primer												●	
	934-30 1K Clear Plastic Ad-Pro	●												
	934-40 Low VOC 1K Adhesion Promoter	●												
	934-70 2K One Step Plastics Adhesion Promoter								●					
	934-70 2K One Step Plastics Adhesion Promoter - Low VOC			●	●	●	●							

☐ not applicable

● possible undercoat / hardener or activator combination

Hardeners / activators for undercoats

		RFU	583-660	929-100	929-110	929-120	929-130	929-51	929-53	929-210	948-22	948-36	965-60	965-61
Primer Surfacers	**151-70** UV Light-Activator Primer Filler	●												
	176-72 1K Waterborne Primer Surfacer	●												
	285-10 Low VOC DTM Primer, Black			●	●	●	●							
	285-13 DTM Urethane Primer							●	●					
	285-20 Low VOC DTM Primer, White			●	●	●	●							
	285-21 2.1 VOC Primer			●	●	●	●							
	285-50 HS Primer Filler							●	●					
	285-60 Universal HS Primer							●	●					
	285-81 Dry Sand MS Primer Filler							●	●					
	801-72 Epoxy Primer Filler												●	
	801-73 Low VOC Epoxy Primer													●
	801-703 Chromated Epoxy Primer												●	

☐ not applicable

● possible undercoat / hardener or activator combination

❶ activate aerosol per instructions on label

Hardeners / activators for undercoats

		RFU	583-660	929-100	929-110	929-120	929-130	929-51	929-53	929-210	948-22	948-36	965-60	965-61
Sealers	**285-02** Low VOC Transparent Sealer			●	●	●	●							
	285-18 Low VOC Sealer, White			●	●	●	●							
	285-21 2.1 VOC Primer					●	●							
	285-29 Low VOC Sealer, Black			●	●	●	●							
	285-38 HS Non-Sanding Sealer, White							●	●					
	285-49 HS Non-Sanding Sealer, Black							●	●					
	285-60 Universal HS Primer (tinted with 22-Line)							●	●					
	801-72 Epoxy Primer Filler												●	
	801-73 Low VOC Epoxy Primer													●
	801-703 Chromated Epoxy Primer												●	

☐ not applicable

● possible undercoat / hardener or activator combination

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Hardeners for topcoats / clears

		355-55	590-100	929-100	929-110	929-120	929-130	929-91	929-93	929-94	929-346
Topcoats	22-Line Urethane Acrylic							●	●	●	
	22-Line 340 gms/liter VOC Urethane Acrylic			●	●	●	●				
	22-Line 420 gms/liter VOC Urethane Acrylic			●	●	●	●				
	55-Line Basecoat Metallic/Solid	●									
	90-Line Basecoat Metallic/Solid		●								
Clearcoats	923-27 Rocker Guard			●	●	●	●				
	923-52 Low VOC Matte Clear			●	●	●	●				
	923-55 Urethane Acrylic Extra Matte Clear							●	●	●	
	923-57 Matte Elastified Clear							●	●	●	
	923-109 HS UV Klarlack							●	●	●	
	923-140 Rapid Repair Clear								●	●*	
	923-155 Acrylic Clear							●	●	●	
	923-200 Ultra Low VOC Clear			●	●	●	●				
	923-209 Low VOC HS Klarlack Clear			●	●	●	●				

☐ not applicable

● possible topcoat / clearcoat and hardener combination

●* 929-94 may be used in 923-140 under high temperature conditions

Hardeners for topcoats / clears

		355-55	590-100	929-100	929-110	929-120	929-130	929-91	929-93	929-94	929-346
Clearcoats	923-220 Low VOC Multi-Purpose Gloss Clear			●	●	●	●				
	923-222 Fast Repair Low VOC Clear			●	●	●	●				
	923-240 Low VOC Rapid Repair Clear			●	●	●					
	923-255 HS Multi-Clear							●	●	●	
	923-255 HS Multi-Clear - 90-Line only							●	●	●	
	923-345 Anti-Scratch 2.1 VOC HS Clear										●
	923-450 Multi-temp Baking Clear							●	●	●	
	923-460 Multi-Purpose Gloss Clear							●	●	●	
	923-550 High Performance Clear							●	●	●	

☐ not applicable

● possible topcoat / clearcoat and hardener combination

Basecoat / clearcoat combinations

		55-Line	90-Line
Clearcoats	923-27 Rocker Guard	●	●
	923-52 Low VOC Matte Clear		●
	923-55 Urethane Acrylic Extra Matte Clear	●	●
	923-57 Matte Elastified Clear	●	●
	923-109 HS UV Klarlack	●	●
	923-140 Rapid Repair Clear	●	●
	923-155 Acrylic Clear	❶	●
	923-200 Ultra Low VOC Clear	●	●
	923-209 Low VOC HS Klarlack Clear	●	●
	923-220 Low VOC Multi-Purpose Gloss Clear	●	●
	923-222 Fast Repair Low VOC Clear	●	●
	923-240 Low VOC Rapid Repair Clear	●	●
	923-255 HS Multi-Clear	●	●
	923-255 HS Multi-Clear - 90-Line only		●
	923-345 Anti-Scratch 2.1 VOC HS Clear	●	●
	923-450 Multi-temp Baking Clear	●	●
	923-460 Multi-Purpose Gloss Clear	●	●
	923-550 High Performance Clear	●	●

55-Line w/ hardener

55-Line Extreme

90-Line w/ hardener

● possible basecoat / clearcoat combination

❶ not U.S. National Rule compliant

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C Systems

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Glasurit® 90-Line - using body filler

90-Line
w/ hardener

Application: Repair process with water-thinnable products for a fast, economical quality finish in compliance with international VOC legislation.

Cleaning	**700-10 Waterborne Degreaser**	1x	Wipe dry	**mechanical de-rusting of damaged areas**	16-150	**700-10 Waterborne Degreaser**	1x	Wipe dry	
Body Filler (coarse + fine)	**839-20 Double Plus Body Filler**	**948-36 Hardener Paste**	+ 2-3%	20-30 mins. at 68°F/20°C	3-5 mins.	80-150 coarse sanding	240-320 fine sanding	700-1 1x	Wipe dry
Pretreatment*	**283-155 Etching Primer**	**583-660 Low VOC Etch Activator**	**352-91 Reducer**	1:1:30%	HVLP 1.3 mm	1 light coat 0.25-0.5 mil	10 mins. before next step		

*** or alternatively:** see matrix B 5 for additional pretreatments which may be used.

Primer ■ Filler	**285-60 Universal HS Primer**	**929-51, -53 HS Hardener**	**352-50, -91 or -216 Reducer**	4:1:1	HVLP 1.4-1.8 mm	2-4 coats	30 mins. at 140°F/60°C	2-6 mins.	320-360	700-1 1x	Wipe dry

■ or alternatively: see matrices B 5 and B 7 to determine appropriate undercoats which may be used with the selected pretreatment and basecoat.

Basecoat	**90-Line Basecoat**	**93-E3 Adjusting Base**	2:1	HVLP 1.2-1.3 mm	2 + 1/2 coats	flash off until matte between coats and before clear	
Clear ▲	**923-255 HS Multi-Clear**	**929-9X HS Hardener**	**352-25,-45 Reducer**	2:1+10%	HVLP 1.2-1.3 mm	2 coats	30 mins. at 140°F/60°C

▲ or alternatively: see matrix B 10 for additional clearcoats which may be used.

839-90
Plastic Body Filler

1006-26
Sprayable Body Filler

934-30
1K Clear Plastic
Ad-Pro

934-40
Low VOC 1K
Adhesion Promoter

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Glasurit® 90-Line - for use with 90-905 Velvet Silver III

Application: Repair process with water-thinnable products for a fast, economical quality finish in compliance with international VOC legislation.

1. Edge to edge repair

1-1. Substrates

Glasurit Filler / Surfacer or Primer Filler 285- or full cured, solvent resistant old paint work.

1-2. Pretreatment

1) Apply guide coat
2) Sand substrates with a dual action sander 500.
3) Reapply guide coat
4) Sand with dual action sander 1000 to cover the sanding mark of 500.
5) Degrease with 700-1.

Notes

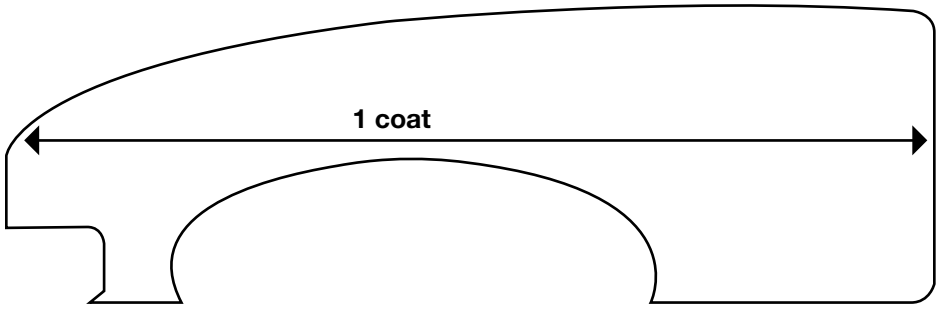
- If the rough surface of primer filler remains, it will result in a scaly appearance.
- If the sand-scratch marks of 500 remains, it will affect the surface quality by mottling or telegraphing the sand-scratches.
- Use guide coat to control the sanding process.
- Use soft interface pad for orbital sander.

1-3. Application of Blending Clear 90-M5

		Volume
Mixing ratio:	90-M5	2
	93-E3	1
Spray coats:	1 wet	
Flash off time:	15 minutes 68°F / 20°C	
Spray gun setting:	HVLP 1.3 - 1.4 mm	

Notes

- For ground coat, apply wet coat to avoid generating peel on the surface.
- Allow the total dry time to expire in order to avoid creating a scaly surface.



Glasurit® 90-Line - for use with 90-905 Velvet Silver III

Application: Repair process with water-thinnable products for a fast, economical quality finish in compliance with international VOC legislation.

1. Edge to edge repair (continued)

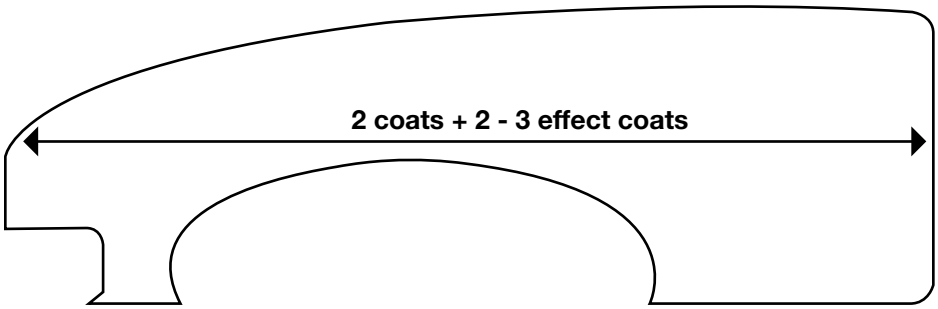
1-4. Application of 90-Line containing "Velvet Silver III" 90-905

90-Line "Velvet Silver III" 90-905 shade as supplied by distributor

		Volume
Mixing ratio:	90-color shade	100
	93-E3 Slow	50 - 80
	(Stir immediately after having added adjusting base)	
Spray coats:	2 medium wet plus 2 - 3 effect coats	
Flash off time:	Flash off until matte after each single coat	
Spray gun setting:	HVLP 1.3 - 1.4 mm	

Notes

- Use of tack rag is not recommended in between coats once effect coats have been applied.
- Inspect for unevenness and mottling using artificial light in booth with lights turned off.



1-5. Application of 923- clear

Apply 923- clear according to technical information.

Glasurit® 90-Line - for use with 90-905 Velvet Silver III

Application: Repair process with water-thinnable products for a fast, economical quality finish in compliance with international VOC legislation.

2. Blend-in technique

2-1. Substrates

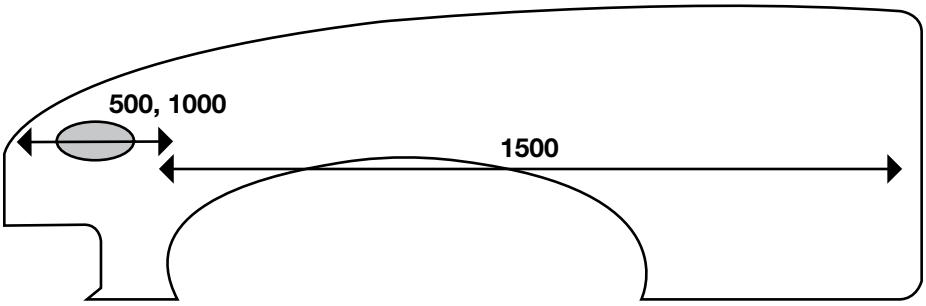
Glasurit Filler / Surfacer or Primer Filler 285- or full cured, solvent resistant old paint work.

2-2. Pretreatment

1) Sand filler surfacer area with a dual action sander 500.
2) Sand with dual action sander 1000 to cover the sanding mark of 500.
3) Sand with dual action sander 1500 on the fade out zone.
4) Degrease with 700-1.

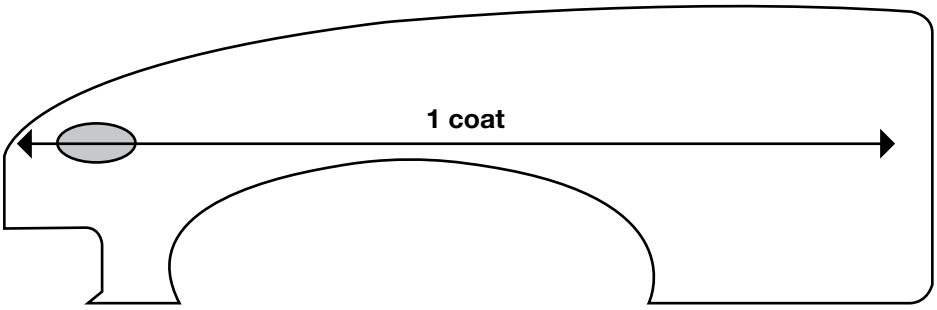
Note

- If the rough surface of primer filler remains, it will result in a scaly appearance.
- If the sand-scratch marks of 500 remains, it will affect the surface quality by mottling or telegraphing the sand-scratches.
- Use sanding guide to control the sanding process.
- Use soft interface pad for orbital sander.



2-3. Application of 90-M5 Blending Clear (1)

		Volume
Mixing ratio:	90-M5	2
	93-E3	1
Spray coats:	1	
Flash off time:	flash off until matte	
Spray gun setting:	HVLP 1.3 - 1.4 mm	



Glasurit® 90-Line - for use with 90-905 Velvet Silver III

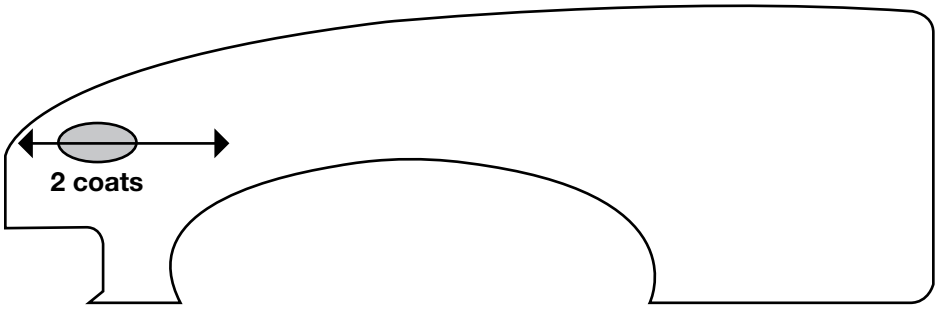
Application: Repair process with water-thinnable products for a fast, economical quality finish in compliance with international VOC legislation.

2. Blend-in technique (continued)

2-4. Application of 90-Line "Velvet Silver III" 90-905 shade

90-Line "Velvet Silver III" 90-905 shade as supplied by distributor

		Volume
Mixing ratio:	90-color shade	100
	93-E3 Slow	50 - 80
	(Stir immediately after having added adjusting base)	
Spray coats:	2 medium wet	
Flash off time:	Flash off until matte after each single coat	
Spray gun setting:	HVLP 1.3 - 1.4 mm	

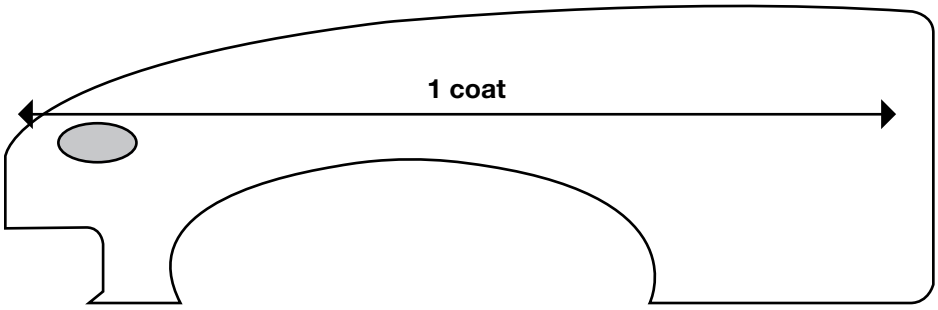


2-5. Application of 90-M5 Blending Clear (1)

		Volume
Mixing ratio:	90-M5	2
	93-E3	1
Spray coats:	1	
Flash off time:	flash off until matte	
Spray gun setting:	HVLP 1.3 - 1.4 mm	

Note

- Before the effect coats of 90-Line, apply a wet coat of 90-M5 on the blending area to avoid overspray mist.



Glasurit® 90-Line - for use with 90-905 Velvet Silver III

Application: Repair process with water-thinnable products for a fast, economical quality finish in compliance with international VOC legislation.

2. Blend-in technique (continued)

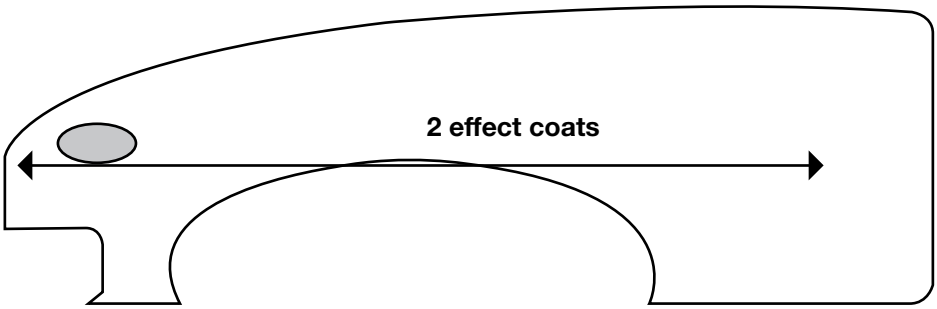
2-6. Application of 90-Line "Velvet Silver III" 90-905 shade

90-Line "Velvet Silver III" 90-905 shade as supplied by distributor

		Volume
Mixing ratio:	90-color shade	100
	93-E3 Slow	50 - 80
	(Stir immediately after having added adjusting base)	
Spray coats:	2 - 3 effect coats	
Flash off time:	Flash off until matte after each single coat	
Spray gun setting:	HVLP 1.3 - 1.4 mm	

Note

- Use of tack rag is not recommended in between coats once effect coats have been applied.
- Inspect for unevenness and mottling using artificial light in booth with lights turned off.



2-7. Application of 923- clear

Apply 923- clear according to technical information.

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Glasurit® 55-Line

55-Line w/ hardener

55-Line Extreme

355-55 Basecoat Activator

Application: Solventborne repair process for a fast, economical quality finish.

Cleaning	**541-5 Silicone and Tar Remover**	 1x	 Wipe dry	**mechanical de-rusting of damaged areas**	 16-150	**541-5 Silicone and Tar Remover**	 1x	 Wipe dry	
Body Filler (coarse + fine)	**839-20 Double Plus Body Filler**	**948-36 Hardener Paste**	 + 2-3%	 20-30 mins. at 68°F/20°C	 3-5 mins.	 80-150 coarse sanding	 240-320 fine sanding	 541-5 1x	 Wipe dry
Pretreatment*	**283-150 Etching Primer**	**352-228 Activator**	**352-50, -91 Reducer**	 1:1:30%	 HVLP 1.3 mm	 1 thin coat 0.2-0.4 mil	 10 mins at 68°F/20°C		

*** or alternatively:** see matrix B 5 for additional pretreatments which may be used.

Primer ■ Filler	**285-60 Universal HS Primer**	**929-51, -53 HS Hardener**	**352-50, -91 or -216 Reducer**	 4:1:1	 HVLP 1.4-1.8 mm	 2-4 coats	 30 mins. at 140°F/60°C	 2-6 mins.	 320-360	 541-5 1x	 Wipe dry

■ or alternatively: see matrices B 5 and B 7 to determine appropriate undercoats which may be used with the selected pretreatment and basecoat.

Basecoat	**55-Line Basecoat**	**352-50, -91 or -216 Reducer**	 2:1	 HVLP 1.2-1.4 mm	 2 + 1/2 coats	 approx. 10 mins.	
Clear ▲	**923-255 HS Multi-Clear**	**929-9X HS Hardener**	**352-25, -45 Reducer**	 2:1+10%	 HVLP 1.2-1.3 mm	 2 coats	 30 mins. at 140°F/60°C	 8 mins.

▲ or alternatively: see matrix B 10 for additional clearcoats which may be used.

839-90
Plastic Body Filler

1006-26
Sprayable Body Filler

934-30
1K Clear Plastic Ad-Pro

934-40
Low VOC 1K Adhesion Promoter

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Glasurit® 22-Line

22-Line
340 gms/liter
(2.8 lbs/gal)

22-Line
420 gms/liter
(3.5 lbs/gal)

Application: Solventborne repair process for a fast, economical quality finish with 22-Line.

Cleaning	**541-5 Silicone and Tar Remover**	 1x	 Wipe dry	**mechanical de-rusting of damaged areas**	 16-150	**541-5 Silicone and Tar Remover**	 1x	 Wipe dry	
Body Filler (coarse + fine)	**839-20 Double Plus Body Filler**	**948-36 Hardener Paste**	 + 2-3%	 20-30 mins. at 68°F/20°C	 3-5 mins.	 80-150 coarse sanding	 240-320 fine sanding	 541-5 1x	 Wipe dry
Pretreatment*	**283-155 Etching Primer**	**583-660 Low VOC Etch Activator**	**352-91 Reducer**	 1:1:30%	 HVLP 1.3 mm	 1 light coat 0.25-0.5 mil	 10 mins. before next step		

*** or alternatively:** see matrix B 5 for additional pretreatments which may be used.

Primer ■ Filler	**285-60 Universal HS Primer**	**929-51, -53 HS Hardener**	**352-50, -91 or -216 Reducer**	 4:1:1	 HVLP 1.4-1.8 mm	 2-4 coats	 30 mins. at 140°F/60°C	 2-6 mins.	 320-360	 541-5 1x	 Wipe dry

■ **or alternatively:** see matrices B 5 and B 7 to determine appropriate undercoats which may be used with the selected pretreatment and basecoat.

Topcoat	**22-Line Urethane Acrylic**	**929-9X HS Hardener**	**352-50, -91 or -216 Reducer**	 2:1+10%	 HVLP 1.2-1.4 mm	 2-3 coats	 30 mins. at 140°F/60°C	 7-10 mins.

522-10
Rapid
Additive

522-111
Elastifier
Additive

522-322
Flexible Gloss
Reducing Additive

522-333
Low VOC
Elastifier Additive

522-345
Texture
Additive Fine

522-422
Low VOC Gloss
Reducing Additive

580-100
Anti-Silicone
Additive

839-90
Plastic Body Filler

1006-26
Sprayable Body Filler

934-30
1K Clear Plastic
Ad-Pro

934-40
Low VOC 1K
Adhesion Promoter

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D Refinishing Systems

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Click on Glasurit Logo to return to Contents.

Sprayable Body Filler System

Glasurit® 1006-26 Sprayable Body Filler

Properties: This system should be applied when extensive body-filling is required (e.g. to repair damage caused by hail). Galvanised and aluminium substrates must be primed before applying the 1006-26 Sprayable Body Filler.

Cleaning	**541-5 Silicone and Tar Remover**	1x	Wipe dry	**mechanical de-rusting of damaged areas**	16-150	**541-5 Silicone and Tar Remover**	1x	Wipe dry	
Body Filler	**839-20 Double Plus Body Filler**	**948-36 Hardener Paste**	+ 2-3%	20-30 mins. at 68°F/20°C	3-5 mins.	80-150 coarse sanding	150-240 fine sanding	541-5 1x	Wipe dry
Pretreatment	**801-72 Epoxy Primer Filler**	**965-60 Epoxy Primer Activator**	**352-91, -216 Reducer**	4:1:1	HVLP 1.7-1.9 mm	1 thin coat 0.6-0.8 mil	30 mins. at 140°F/60°C	11 mins.	
Spray Body Filler	**1006-26 Sprayable Body Filler**	**948-22 Catalyzer**	1.5 Kg: 50 ml	HVLP 2.5-3.0 mm	4-8 coats minimum 8.0 mils	3 hrs. at 68°F/20°C or 30 mins. at 140°F/60°C	10 mins.	80 coarse sanding followed by 150-240 fine sanding	541-5 1x	Wipe dry	**Caution:** Prime sandthroughs with 801-72
Primer Filler	**285-60 Universal HS Primer**	**929-51, -53 HS Hardener**	**352-50, -91 or -216 Reducer**	4:1:1	HVLP 1.4-1.8 mm	2-4 coats	30 mins. at 140°F/60°C	2-6 mins.	320-360	541-5 1x	Wipe dry

or alternatively: see matrices B 5 and B 7 to determine appropriate undercoats which may be used with the selected pretreatment and basecoat.

Topcoat	**22-Line Urethane Acrylic**	or	**55-Line Basecoat**	**923-Clearcoat** ①	or	**90-Line Basecoat**	**923-Clearcoat** ①

① **see Matrix B 10 for a list of clearcoats which may be used with the selected basecoat.**

22-Line 340 gms/liter (2.8 lbs/gal) | 22-Line 420 gms/liter (3.5 lbs/gal) | 55-Line w/ hardener | 55-Line Extreme | 90-Line w/ hardener

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Painting of Plastics on Cars (1 step priming)

Properties: Multi-purpose system suitable for all paintable plastic materials on cars. Pure polypropylene (PP) and polyethylene (PE) cannot be painted. In order to guarantee paintability, modified plastic materials are used for vehicle parts that shall be painted. Although these plastic parts are often labelled PP, the material is nevertheless paintable.

Note: No tempering (or baking) necessary prior to painting plastic parts.

Cleaning	**541-30 Universal Cleaner for Plastics**	1x	Wipe dry	damaged area: 80-360 entire part	**541-30 Universal Cleaner for Plastics**	1x	Wipe dry	
Fine Body Filler	**839-90 Plastic Body Filler**	**948-36 Hardener Paste**	+ 2-3%	25-35 mins. at 68°F/20°C	8 mins.	80-150 coarse sanding	240-320 fine sanding	541-30 1x / Wipe dry
Adhesion Promoter	**934-70 2K One Step Plastics Adhesion Promoter**	**929-53 HS Hardener**	**352-50,-91 Reducer**	4:1:1	HVLP 1.2-1.3 mm	1 coat minimum 0.5 mil minimum	20 mins. at 68°F/20°C	
						or >1 coat	30 mins. at 140°F/60°C	

Topcoats	**22-Line Urethane Acrylic** ②	**or**	**55-Line Basecoat**	**923- Clearcoat** ①②	**or**	**90-Line Basecoat**	**923- Clearcoat** ①②

22-Line 340 gms/liter (2.8 lbs/gal)

22-Line 420 gms/liter (3.5 lbs/gal)

55-Line w/ hardener

55-Line Extreme

55-Line Interior

90-Line w/ hardener

① **see Matrix B 10 for a list of clearcoats which may be used with the selected basecoat.**

② **Topcoats or clears must be elastified by adding Glasurit® 522-111 Elastifier Additive or 522-333 Low VOC Elastifier Additive before being applied to plastic materials.**

22-Line Urethane Acrylic or 923- Clearcoat	**522-111 Elastifier Additive or 522-333 Low VOC Elastifier Additive**	4:1

Mixture: 22-Line / 522-111 or 522-333 or 923- / 522-111 or 522-333	**929- HS Hardener**	**352- Reducer**	2:1+10%	HVLP 1.3 mm	2 coats 22-line: 2.0-2.8 mils 923-: 2.0-2.5 mils	16 hrs. at 68°F/20°C or 40 mins. at 140°F/60°C

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Painting of Plastics on Cars (2 step priming)

Properties: Multi-purpose system suitable for all paintable plastic materials on cars. Pure polypropylene (PP) and polyethylene (PE) cannot be painted. In order to guarantee paintability, modified plastic materials are used for vehicle parts that shall be painted. Although these plastic parts are often labelled PP, the material is nevertheless paintable.

Note: No tempering (or baking) necessary prior to painting plastic parts.

Cleaning	**541-30 Universal Cleaner for Plastics**	1x	Wipe dry	damaged area: 80-360 entire part	**541-30 Universal Cleaner for Plastics**	1x	Wipe dry	
Fine Body Filler	**839-90 Plastic Body Filler**	**948-36 Hardener Paste**	+ 2-3%	25-35 mins. at 68°F/20°C	8 mins.	80-150 coarse sanding	240-320 fine sanding	541-30 1x / Wipe dry
Adhesion Promoter	**934-30 1K Clear Plastic Ad-Pro or 934-40 Low VOC 1K Adhesion Promoter**	HVLP 1.2-1.3 mm	1-2 coats 0.2-0.4 mil	10-15 mins. at 68°F/20°C				
Filler and Surfacer	**285-60 Universal HS Primer**	**55-Line Basecoat**	2:1	**Mixture: 285-60 / 55-Line**	**522-111 Elastifier Additive or 522-333 Low VOC Elastifier Additive**	4:1		
Mixture: 285-60 / 55-Line	**929-5X HS Hardener**	**352-25 or -45 Reducer**	4:1:1	HVLP 1.5 - 1.9 mm	2-4 coats Surfacer: 2.0-3.0 mils (6.0 mils max.) Sealer: 0.8-1.2 mils	2 hrs. at 68°F/20°C or 30 mins. at 140°F/60°C	400-600	541-30 1x / Wipe dry

or alternatively: see matrices B 5 and B 7 to determine appropriate undercoats which may be used with the selected pretreatment and basecoat.

Topcoats	**22-Line Urethane Acrylic** ②	**or**	**55-Line Basecoat**	**923- Clearcoat** ①②	**or**	**90-Line Basecoat**	**923- Clearcoat** ①②

① **see Matrix B 10 for a list of clearcoats which may be used with the selected basecoat.**

② **Topcoats or clears must be elastified by adding Glasurit® 522-111 Elastifier Additive or 522-333 Low VOC Elastifier Additive before being applied to plastic materials.**

22-Line 340 gms/liter (2.8 lbs/gal)
22-Line 420 gms/liter (3.5 lbs/gal)
55-Line w/ hardener
55-Line Extreme
55-Line Interior
90-Line w/ hardener

22-Line Urethane Acrylic or 923- Clearcoat	**522-111 Elastifier Additive or 522-333 Low VOC Elastifier Additive**	4:1	
Mixture: 22-Line / 522-111 or 522-333 or 923- / 522-111 or 522-333	**929- HS Hardener**	**352- Reducer**	2:1+10% / HVLP 1.3 mm / 2 coats 22-line: 2.0-2.8 mils 923-: 2.0-2.5 mils / 16 hrs. at 68°F/20°C or 40 mins. at 140°F/60°C

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Economical Repair System

Properties: Economical repair process for time-saving, low-cost refinishing of small defects and for coating new parts. Considerable time is saved by a wet-on-wet application of Glasurit® 285-38 and 285-49 Non-Sanding Filler.

Cleaning	**541-5 Silicone and Tar Remover**	1x	Wipe dry	**mechanical de-rusting of damaged areas**	16-150	**541-5 Silicone and Tar Remover**	1x	Wipe dry

Body Filler (coarse + fine)	**839-20 Double Plus Body Filler**	**948-36 Hardener Paste**	+ 2-3%	20-30 mins. at 68°F/20°C	3-5 mins.	80-150 coarse sanding	150-240 fine sanding	541-5 1x	Wipe dry

Pretreatment	**285-16 2K Primer Filler**	**929-51 HS Hardener**	**352-50, -91 Reducer**	4:1+30%	HVLP 1.7-1.9 mm	1 thin coat 0.6-0.8 mils	10 mins. at 68°F/20°C

Sealer	**285-38 HS Non-Sanding Sealer, White**	**929-5X HS Hardener**	**352-91, -216 Reducer**	2:1+30%	HVLP 1.2 -1.3 mm	2 coats	10 mins. at 68°F/20°C

or alternatively: see matrices B 5 and B 7 to determine appropriate undercoats which may be used with the selected pretreatment and basecoat.

Topcoat	**22-Line Urethane Acrylic**	**929-9X HS Hardener**	**352-50, -91 or -216 Reducer**	2:1+10%	HVLP 1.2-1.3 mm	2 coats	30 mins. at 140°F/60°C	7-10 mins.

22-Line 340 gms/liter (2.8 lbs/gal)

22-Line 420 gms/liter (3.5 lbs/gal)

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Repair System for New E-coated Parts

Properties: Economical repair process for time-saving, low-cost refinishing of e-coated parts without sanding. Considerable time is saved by a wet-on-wet application of Glasurit® 285-38 and 285-49 HS Non-Sanding Filler.

Remarks: New E-coated parts have to be protected from sun light; because there is a risk of poor adhesion and loss of corrosion protection.

Cleaning	**541-5 Silicone and Tar Remover**	 1x	 Wipe dry						
Sealer	**285-38, -49 HS Non-Sanding Sealers**	**929-51, -53 HS Hardener**	**352-91, -216 Reducer**	 2:1+30%	 HVLP 1.3 -1.4 mm	 2 coats	 10 mins. at 68°F/20°C		
Topcoats	**22-Line Urethane Acrylic**	**or**	**55-Line Basecoat**	**923-Clearcoat**	**or**	**90-Line Basecoat**	**923-Clearcoat**		
22-Line 340 gms/liter (2.8 lbs/gal)	22-Line 420 gms/liter (3.5 lbs/gal)		55-Line w/ hardener	55-Line Extreme		90-Line w/ hardener			

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Blend-in Refinishing System

Glasurit® 22-Line Urethane Acrylic

Properties: In principle, panel repairs with solid colors, including a complete refinish of the damaged body part, do not cause any problems. When color differences beyond allowable limits are to be expected and when the areas to be resprayed are not limited by trim strips or edges, the more appropriate method to overcome color differences may be to blend in the damaged area, if required. This procedure can be considerably more efficient and economical than time-consuming color matching.

541-5 Silicone and Tar Remover	1x	Wipe dry	**563-808 Sand Fix Paste**	563-808 + Sanding pad
541-5 Silicone and Tar Remover	1x	Wipe dry		

22-Line Urethane Acrylic	2:1+10% 929-91 352-50 / -91	HVLP 1.2-1.3 mm	1-2 coats

22-Line 340 gms/liter (2.8 lbs/gal)

22-Line 420 gms/liter (3.5 lbs/gal)

22-Line Urethane Acrylic	2:1+10% 929-91 352-50 / -91	HVLP 1.2-1.3 mm	1 coat fading out on adjacent surfaces	5 mins. at 68°F/20°C

Blend-in Refinishing System

Glasurit® 22-Line Urethane Acrylic

Optional

923-Clearcoat	2:1+10% 929-352-	HVLP 1.2-1.3 mm	1 coat	30 mins. at 140°F/60°C

When blending in on fade-out areas / clearcoat transition

352-1500 Blend-in Reducer	1-2 coats	30 mins. at 140°F/60°C

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Blend-in Refinishing System

Glasurit® 55-Line Basecoat

Properties: In principle, panel repairs with metallic basecoat/clearcoat systems are possible, and, as a rule, it is not necessary to respray adjacent body parts. When color differences beyond allowable limits are to be expected and when the areas to be resprayed are not limited by trim strips or edges, the more appropriate method to overcome color differences may be to blend in the damaged area and the adjacent part, if required. This procedure can be considerably more efficient and economical than time-consuming color matching.

541-5 Silicone and Tar Remover	1x	Wipe dry	**563-808 Sand Fix Paste**	563-808 + Sanding pad
541-5 Silicone and Tar Remover	1x	Wipe dry		

55-B500 Blending Clear	HVLP 1.3 mm	1 coat

Not required in case of 55-Line Solid Color Basecoat.

55-Line Basecoat	2:1 352-50 / -91	HVLP 1.2-1.3 mm	2 coats fading out on adjacent surfaces. May use 55-B500	flash off until matte

55-Line w/ hardener 55-Line Extreme

Blend-in Refinishing System

Glasurit® 55-Line Basecoat

55-Line Basecoat	2:1 352-50 / -91	HVLP 1.2-1.3 mm	1/2 coat	flash off until matte

55-Line w/ hardener

55-Line Extreme

923-Clearcoat	2:1+10% 929- 352-	HVLP 1.3 mm	2-3 coats	30 mins. at 140°F/60°C

When blending in on fade-out areas / clearcoat transition

352-1500 Blend-in Reducer	1-2 coats	30 mins. at 140°F/60°C

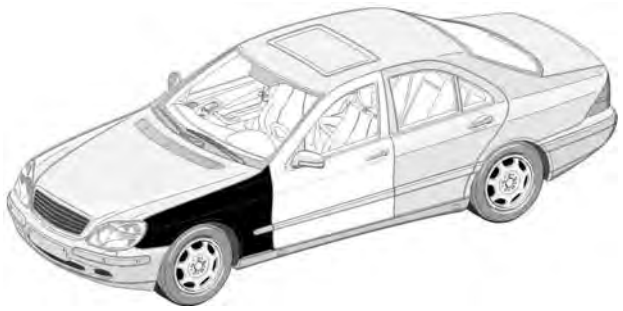
Blend-in Refinishing System

Glasurit® 55-Line Basecoat

Properties: In principle, panel repairs with metallic basecoat/clearcoat systems are possible, and, as a rule, it is not necessary to respray adjacent body parts. When color differences beyond allowable limits are to be expected and when the areas to be resprayed are not limited by trim strips or edges, the more appropriate method to overcome color differences may be to blend in the damaged area and the adjacent part, if required. This procedure can be considerably more efficient and economical than time-consuming color matching.

Blending-in on the adjacent panel

541-5 Silicone and Tar Remover	1x	Wipe dry	**563-808 Sand Fix Paste**	563-808 + Sanding pad
541-5 Silicone and Tar Remover	1x	Wipe dry		

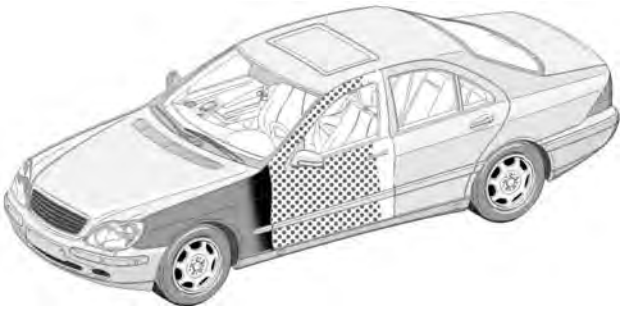


55-Line Basecoat	2:1 352-91	HVLP 1.2-1.3 mm	1 coat	flash off until matte

55-Line w/ hardener 55-Line Extreme

55 - B500 Blending Clear	HVLP 1.2-1.3 mm	1 coat

Not required in case of 55-Line Solid Color Basecoat.



Blend-in Refinishing System

Glasurit® 55-Line Basecoat

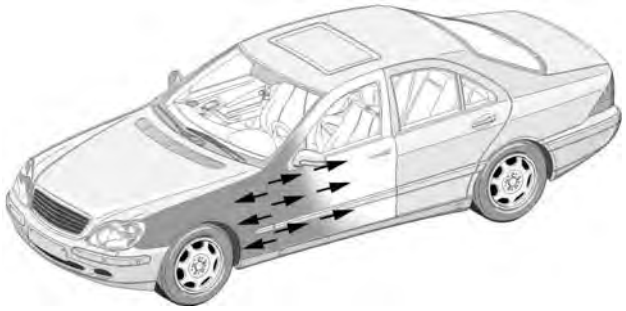
55-Line Basecoat	2:1 352-50 / -91	HVLP 1.2-1.3 mm	1 coat fading out on both panels

55-Line w/ hardener

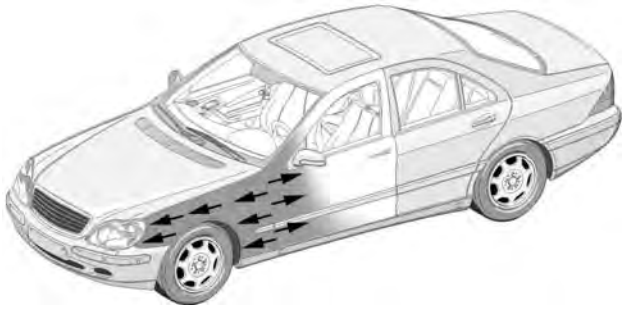
55-Line Extreme

55-Line Basecoat	2:1 352-50 / -91	HVLP 1.2-1.3 mm	1 coat fading out towards the edges of the panel	flash off until matte

55-Line Basecoat	2:1 352-50 / -91	HVLP 1.2-1.3 mm	1/2 coat fading out on both panels



55-Line Basecoat	2:1 352-50 / -91	HVLP 1.2-1.3 mm	1/2 coat to match effect



923-Clearcoat	2:1+10% 929- 352-	HVLP 1.2-1.3 mm	1-2 coats	30 mins. at 140°F/60°C

Blend-in Refinishing System

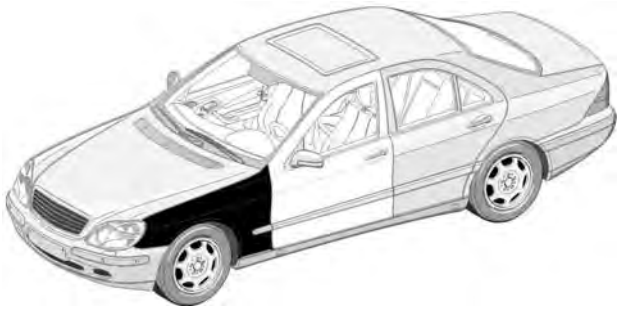
Glasurit® 55-Line 3-Stage Basecoat

Properties: Translucent pearl effect finishes cannot be repaired by edge-to-edge panel refinishing because different spraying techniques and film thicknesses give different effects. A successful repair requires large-scale blending into the adjacent surfaces.

To obtain a perfect result the refinisher has to use the same ground coat color and pearl effect basecoat that were used for the OE finish.

Spot repairs on the panel being repaired do not give a satisfactory result. Always fade out on the adjacent panel(s).

541-5 Silicone and Tar Remover	1x	Wipe dry	**563-808 Sand Fix Paste**	563-808 + Sanding pad



541-5 Silicone and Tar Remover	1x	Wipe dry	

Ground Coat: 55-Line Basecoat	2:1 352-50 / -91	HVLP 1.2-1.3 mm	2 coats or to coverage

Mask adjacent surfaces.

55-Line w/ hardener

55-Line Extreme

Solid Color Ground Coat: 55-Line Basecoat	2:1 352-50 / -91	HVLP 1.2-1.3 mm	2 coats fading out on adjacent surfaces	flash off until matte

Blend-in Refinishing System

Glasurit® 55-Line 3-Stage Basecoat

55-Line w/ hardener

55-Line Extreme

55-Line 3-Stage Basecoat	2:1 352-50 / -91	HVLP 1.2-1.3 mm

1 coat	flash off until matte	1 coat	flash off until matte	1/2 coat	flash off until matte

923-Clearcoat	2:1+10% 929- 352-	HVLP 1.2-1.3 mm	2 coats	30 mins. at 140°F/60°C

Blend-in Refinishing System

Glasurit® 90-Line Basecoat

Properties: In principle, panel repairs with metallic basecoat/clearcoat systems are possible, and, as a rule, it is not necessary to respray adjacent body parts. When color differences beyond allowable limits are to be expected and when the areas to be resprayed are not limited by trim strips or edges, the more appropriate method to overcome color differences may be to blend in the damaged area and the adjacent part, if required. This procedure can be considerably more efficient and economical than time-consuming color matching.

Blending-in on the panel being repaired

700-1 Waterbased Cleaner	1x	Wipe dry	**563-808 Sand Fix Paste**	563-808 + Sanding pad
700-1 Waterbased Cleaner	1x	Wipe dry		

90-M5 Blending Clear	2:1 93-E3 or 93-E3S	HVLP 1.2-1.3 mm	1 coat

Not required in case of 90-Line Solid Color Basecoat.

90-Line Basecoat	2:1 93-E3 or 93-E3S	HVLP 1.2-1.3 mm	1-2 coats	flash off until matte

90-Line
w/ hardener

Blend-in Refinishing System

Glasurit® 90-Line Basecoat

Add 90-M5 1:1 to 2:1 with 90-Line Basecoat

90-Line Basecoat	2:1 93-E3 or 93-E3S	HVLP 1.2-1.3 mm	1/2 coat fading out on adjacent surfaces	flash off until matte

90-Line
w/ hardener

923-Clearcoat	2:1+10% 929- 352-	HVLP 1.2-1.3 mm	2-3 coats	30 mins. at 140°F/60°C

When blending in on fade-out areas / clearcoat transition

352-1500 Blend-in Reducer	1-2 coats	30 mins. at 140°F/60°C

Blend-in Refinishing System

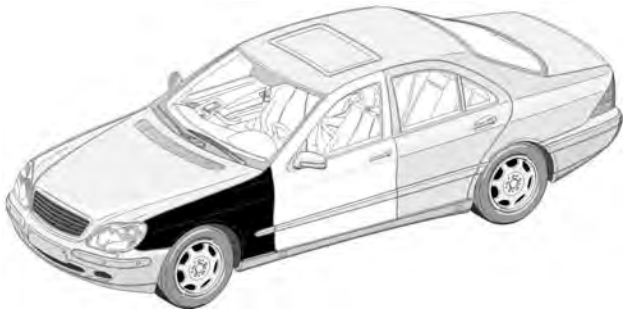
Glasurit® 90-Line Basecoat

Properties: In principle, panel repairs with metallic basecoat/clearcoat systems are possible, and, as a rule, it is not necessary to respray adjacent body parts. When color differences beyond allowable limits are to be expected and when the areas to be resprayed are not limited by trim strips or edges, the more appropriate method to overcome color differences may be to blend in the damaged area and the adjacent part, if required. This procedure can be considerably more efficient and economical than time-consuming color matching.

Blending-in on the adjacent panel

700-1 Waterbased Cleaner	1x	Wipe dry	**563-808 Sand Fix Paste**	563-808 + Sanding pad

700-1 Waterbased Cleaner	1x	Wipe dry

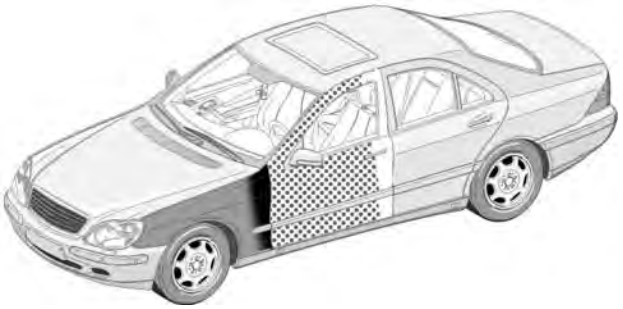


90-Line Basecoat	2:1 93-E3 or 93-E3S	HVLP 1.2-1.3 mm	1 coat	flash off until matte

90-Line
w/ hardener

90-M5 Blending Clear	2:1 93-E3 or 93-E3S	HVLP 1.2-1.3 mm	1 coat

Not required in case of 90-Line Solid Color Basecoat.



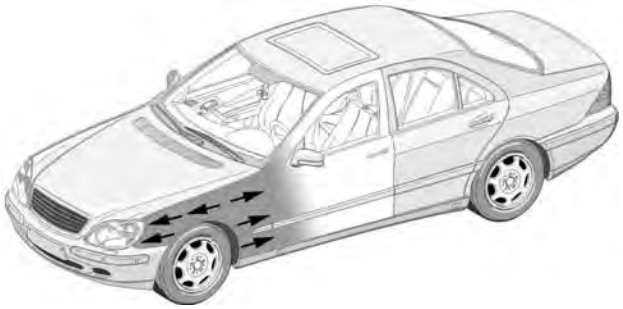
Blend-in Refinishing System

Glasurit® 90-Line Basecoat

90-Line Basecoat	2:1 93-E3 or 93-E3S	HVLP 1.2-1.3 mm	1 coat fading out on both panels

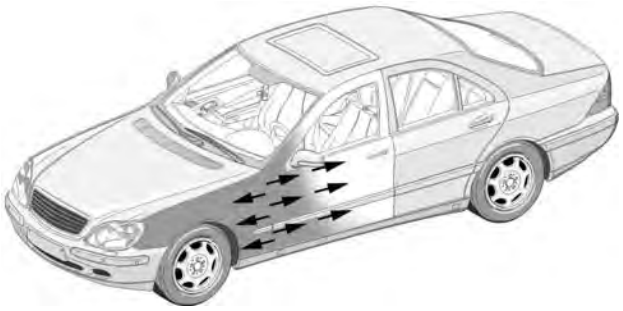
90-Line
w/ hardener

90-Line Basecoat	2:1 93-E3 or 93-E3S	HVLP 1.2-1.3 mm	1 coat fading out towards the edges of the panel	flash off until matte



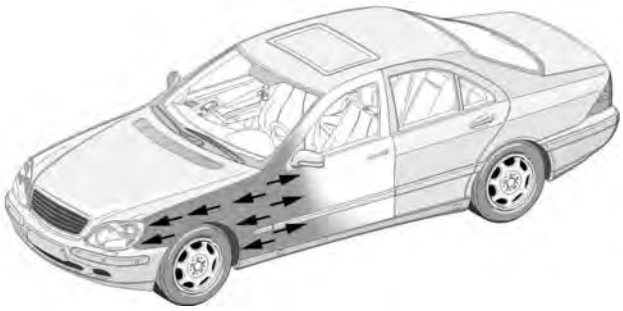
Add 90-M5 1:1 to 2:1 with 90-Line Basecoat (optional)

90-Line Basecoat	2:1 93-E3 or 93-E3S	HVLP 1.2-1.3 mm	1/2 coat fading out on both panels



Add 90-M5 1:1 to 2:1 with 90-Line Basecoat (optional)

90-Line Basecoat	2:1 93-E3 or 93-E3S	HVLP 1.2-1.3 mm	1/2 coat fading out towards the edges of the panel



923-Clearcoat	2:1+10% 929- 352-	HVLP 1.2-1.3 mm	1-2 coats	30 mins. at 140°F/60°C

Blend-in Refinishing System

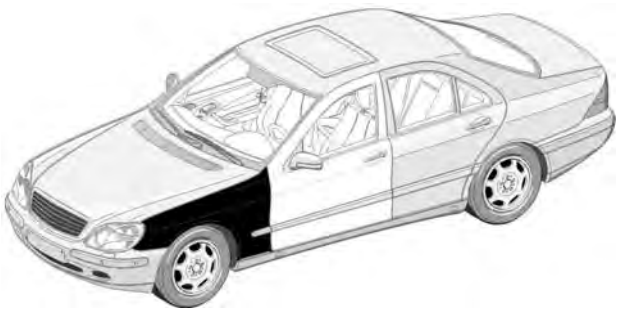
Glasurit® 90-Line Pearl Effect Basecoat

Properties: Translucent pearl effect finishes cannot be repaired by edge-to-edge panel refinishing because different spraying techniques and film thicknesses give different effects. A successful repair requires large-scale blending into the adjacent surfaces.

To obtain a perfect result the refinisher has to use the same ground coat color and pearl effect basecoat that were used for the OE finish.

Spot repairs on the panel being repaired do not give a satisfactory result. Always fade out on the adjacent panel(s).

700-1 Waterbased Cleaner	1x	Wipe dry	**563-808 Sand Fix Paste**	563-808 + Sanding pad



700-1 Waterbased Cleaner	1x	Wipe dry

Solid Color Ground Coat: 90-Line Basecoat	2:1 93-E3 or 93-E3S	HVLP 1.2-1.3 mm	2 coats	flash off until matte

Mask adjacent surfaces.

90-Line
w/ hardener

Solid Color Ground Coat: 90-Line Basecoat	2:1 93-E3 or 93-E3S	HVLP 1.2-1.3 mm	1 coat fading out on adjacent surfaces	flash off until matte

Blend-in Refinishing System

Glasurit® 90-Line Pearl Effect Basecoat

90-Line
w/ hardener

90-Line Pearl Effect Basecoat	2:1 93-E3 or 93-E3S	HVLP 1.2-1.3 mm

1 coat	flash off until matte	1 coat	flash off until matte	1/2 coat	flash off until matte

923-Clearcoat	2:1+10% 929- 352-	HVLP 1.2-1.3 mm	2 coats	30 mins. at 140°F/60°C

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Matte Clear System

US National VOC Rule Compliant

Properties: Refinishing process for 90-Line basecoat / clearcoat systems with Glasurit 923-55 Urethane Acrylic Extra Matte and Glasurit 923-57 Matte Elastified Clear.

Substrates: Please see the Glasurit technical data sheet for the refinishing steps up to the application of 90-Line.

Notes:

- Due to the different mixing ratios of the clears to be used, you may achieve a gloss level **between 20-65 units (at an angle of 60°)**. The gloss level may be higher for light and pure silver colors. Additionally, car bodies may show gloss level differences between vertically and horizontally coated panels. Therefore, we recommend that you make a spray-out sample before each refinishing job and to compare it with the area to be repaired.
- Stir the 923-55 and 923-57 clears well before use!
- In order to avoid any gloss deviation when refinishing matte clearcoats, it is important.
  - to observe the recommended film thicknesses for basecoat and clearcoat.
  - to apply staggered overlaps to produce consistent basecoat and clearcoat film thicknesses.
  - to allow the clear to flash off until completely matte after each spraycoat. (Generally, after the first spraycoat 10-15 minutes and after the second spraycoat 15-20 minutes. That depends on air speed and spraybooth temperature.) Do not flash off for more than 25 min after each spraycoat.
- With matte surfaces it is **NOT** possible.
  - to remove dust inclusions by polishing because polishing changes the gloss level. Therefore, it is very important to work very carefully during cleaning and application.
  - to fade out the clear because the film thickness in the blending area varies, which changes the gloss level. Therefore, always apply the clear to the whole panel!
- Please also observe the technical data sheets for Glasurit 923-55 Urethane Acrylic Extra Matte and Glasurit 923-57 Matte Elastified Clear.

Cleaning	**700-1 Waterbased Cleaner**	 1x	 Wipe dry	 400-600	**700-1 Waterbased Cleaner**	 1x	 Wipe dry

Basecoat	**90-Line Basecoat**	**93-E3 Adjusting Base**	 2:1	 HVLP 1.3 mm	 2 + 1/2 coats	 flash off until matte between coats and before clear

Mixing ratio of Glasurit clears to achieve a **gloss level of 20-65 units** when using Glasurit 929-93 HS Topcoat Hardener			
Gloss level +/- 2 at an angle of 60°	**923-55**	**923-57**	**923-255**
	Mixing ratio (% by weight):		
20	100	-	—
25	60	40	—
30	40	60	—
40	20	80	—
53	—	100	—
65	—	75	25

Clear	**Mixture of 923-55 or 923-57 Clears**	**929-93 HS Hardener**	**352-91 Reducer**	 2:1+10%	 HVLP 1.3 mm	 2 coats	 flash off until matte between coats and before clear	 30 mins. at 140°F/60°C

Note: Flash off until matte after each spraycoat and before baking. After the first spraycoat, allow to flash off for at least 10 minutes, after the second spraycoat for at least 15 minutes. Do not flash off for more than 25 minutes after each spraycoat.

Further treatment: Matte surfaces cannot be polished to remove dust inclusions.

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E Color Information

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Checking the color

When performing a repair, it is necessary (in some cases) to match the color by tinting, blending in, or polishing the old paintwork.

Therefore, careful comparison between the new paint and the original finish is essential. Any variation in color must be modified before application. The mixing formula shown on SmartTrak and SmartColor can assist in this. A color should only be altered with base colors contained in the formula or with bases listed in the tinting guide (see section E 4 tables).

A perfect color comparison can only be carried out on a sprayed (not handpainted) dry paint film in daylight, or under a daylight lamp. With metallics, the test should be made by the operator who will be actually spraying.

Due to weathering, age and general use, almost all paint finishes are subject to change in appearance and color. This is caused by absorption of dirt, exhaust fumes, industrial waste etc. Compounding and polishing will assist in the removal of most of this film.

When dealing with air-dried synthetic resin paints, care must be taken in the case of delicate colors such as white, ivory etc. Recommended drying times and temperatures must be observed, so that no “yellowing” appears.

Repairing of metallics is more of a problem, as color and appearance depend very much on the application used:

1. On the size of the nozzle in the spray gun and the spraying pressure.

e. g. With a small nozzle and high spraying pressure, the atomization is finer and thus the color shade is lighter.

2. On the reducer and the spraying viscosity.

e. g. With fast reducer, the silver effect can usually be pronounced more brilliantly than with slow reducer. The higher the viscosity, the coarser the distribution of metal particles and thus the tendency to mottle.

3. On the spraying method.

e. g. If a dry mist coat is sprayed, the color shade appears to be lighter and more metallic. If a wetter spray is used, the color appears fuller and darker. Between these, many variations of metal effect and color can be obtained. By allowing suitable flash-off periods, mottling can be avoided.

4. On the distance of the spray gun from the object to be painted.

With a short distance the paint film is more wet, the color appears darker, more colorful.

A wider distance keeps the paint film more dry, the color appears lighter, more metalic.

Color variation

It can happen that Original Equipment Finishes are altered for technical or application reasons, without the color code/number and name being changed. We supply repair paint as per the latest color information. In the case of large differences, we offer additional color variations (see Color Information and information under “remarks” in the respective mixing formulas on SmartTrak and SmartColor).

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Tips for color matching

Tinting Guide for Glasurit® Urethane Acrylic 22-Line

Tinting direction	Color Group									
	white	grey	yellow	beige	orange	red	bordeaux	brown	green	blue
lighter	M 60	M 60	M 60	M 60	M 60	A 160	A 160	M 60	M 60	M 60
dirtier	A 126	M 26/ M 974	A 126	A126	A126	A 126	M 26	M 26	M 26	M 26
darker	A126	M 26/ M 974	A 126	A 126	M 201	M 55/ A 346	M 26/ M 30	M 26	M 68/ M 96	M 52/ M 63
bluer	A 131	A 131	–	M 55	A 346	M 30	M 30	M 30	M 52/ M 63	M 52/ M 63
greener	A 168	A 168	A 168	A 168	M 146	A 126	M 26	M 26	M 68/ M 96	M 68
yellower	A 105	A 105	M 77*	M 05	M 77*	M 43	M 43	M 05	M 77*	M 5/ A 105
more orange	A 172	A 172	A 172	A 172	M 201	M 201	M 201	M 06	–	–
redder	A 172	M 30	M 43	M 06	M 326	A 346/ M 55	A 346	M 30	M 06	A 127/ M 30
more purple	A 127	A 127	–	M 30	–	M 30	M 30	M 30	–	A 127/ M 30

Tinting Guide for Glasurit® Basecoat Metallics 55-Line

Tinting direction	Angle	Color group							
		grey	beige	golden	brown	red	bordeaux	blue	green
lighter	face view side view	M 99/10◆ A 125*	M 99/10◆ A 125*	M 99/10◆ A 125*	M 99/10◆ A 125*	M 99/10◆ A 125*	M 99/10◆ A 125*	M 99/10◆ A 125*	M 99/10◆ A 125*
dirtier	face view side view	A 929	A 929	A 929	A 929	A 929	A 929	A 929	A 929
darker	face view side view	A 929	A 335 A 335	A 335 A 335	A 347 A 347	A 347 A 347	A 430 A 430	A 552 A 552	A 640 A 640
bluer	face view side view	A 552 A 552	A 347 A 347	A 347 A 347	A 347 A 347	A 430 A 430	A 430 A 430	A 552 A 552	A 552 A 552
greener	face view side view	A 640 A 640	M 177 M 177	M 177 M 177	M 177 M 177	A 929	A 929	A 548 A 555	A 640 A 640
yellower	face view side view	A 136 M 105*	A 136 M 105*	A 136 M 105*	A 136 M 105*	A 350 A 350	A 350 A 350	– –	A 143 M 105*
more orange	face view side view	M 306 M 306	M 201 M 201	M 201 M 201	A 350 A 350	A 350 A 350	A 350 A 350	– –	– –
redder	face view side view	A 353 A 353	A 347 A 347	A 347 A 347	A 347 A 347	A 350 A 350	A 347 A 347	A 531 A 531	A 531 A 531
more purple	face view side view	A 430 A 430	A 353 A 353	A 353 A 353	A 353 A 353	A 353 A 353	A 430 A 430	A 427 A 427	– –

A 372 to be used only if strongly needed, not to tint with.

To avoid metamerism, only the mixing bases contained in the relevant mixing formula may be used for tinting.

* To be used in low concentration only.
◆ Any aluminum or mica in mixing formula will lighten color.

Tips for color matching

Tinting Guide for Glasurit® 90-Line Metallics/Solids

Tinting direction	Angle	Color group							
		grey	beige	golden	brown	red	bordeaux	blue	green
lighter	face view side view	M 99/02◆ A 32*	M 99/02◆ A 32*	M 99/02◆ A 32*	M 99/02◆ A 32*	M 99/02◆ A 32*	M 99/02◆ A 32*	M 99/02◆ A 32*	M 99/02◆ A 32*
dirtier	face view side view	A 926 A 926	A 926 A 926	A 926 A 926	A 926 A 926	A 926 A 926	A 926 A 926	A 926 A 926	A 926 A 926
darker/ more intense	face view side view	A 926 A 926	A 329 A 329	A 329 A 329	A 349 A 349	A 349 A 349	A 430 A 430	A 589 A 589	A 640 A 696
bluer	face view side view	A 589 A 589	A 349 A 349	A 349 A 349	A 349 A 349	A 430 A 430	A 430 A 430	A 589 A 589	A 589 A 589
greener	face view side view	A 696 A 696	A 148 A 148	A 148 A 148	A 115 A 115	A 926 A 926	A 926 A 926	A 503 A 640	A 696 A 640
yellower	face view side view	A 136 A 105*	A 136 A 105*	A 136 A 105*	A 136 A 105*	A 378 A 378	A 378 A 378	A 136 A 105*	A 136 A 105*
more orange	face view side view	M 306 M 306	A 201 A 201	A 201 A 201	A 378 A 378	A 378 A 378	A 378 A 378	– –	– –
redder	face view side view	A 359 A 359	A 349 A 349	A 349 A 349	A 349 A 349	A 378 A 378	A 349 A 349	A 531 A 531	A 531 A 531
more purple	face view side view	A 430 A 430	A 359 A 359	A 359 A 359	A 359 A 359	A 359 A 359	A 430 A 430	A 427 A 427	– –

A 372 to be used only if strongly needed, not to tint with.

To avoid metamerism, only the mixing bases contained in the relevant mixing formula may be used for tinting.

* To be used in low concentration only.
◆ Any aluminum or mica in mixing formula will lighten color.

F Important Info / Tables

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Temperature table

Which hardener, which reducer at which working temperature when using HS-System?

Urethane Acrylic 22- Line		**Clear**	
22- Line	2 vol. parts	Clear	2 vol. parts
Hardener 929-9X	1 vol. part	Hardener 929-9X	1 vol. part
Reducer	10%	Reducer	10%

Above 86°F/30°C

HS-Hardener slow 929-94 Reducer slow 352-216 or Retarder 352-319	HS-Hardener slow 929-94 Reducer slow 352-216 or Retarder 352-319

68°F/20°C to 86°F/30°C

HS-Hardener slow 929-94 Reducer normal 352-91 or slow 352-216	HS-Hardener slow 929-94 Reducer normal 352-91
HS-Hardener normal 929-93 Reducer slow 352-216 or normal 352-91	**HS-Hardener normal 929-93** Reducer normal 352-91 or slow 352-216 (complete resprays)

Below 68°F/20°C

HS-Hardener fast 929-91 Reducer normal 352-91 or Reducer fast 352-50 for part resprays	HS-Hardener fast 929-91 Reducer normal 352-91 or Reducer fast 352-50 for part resprays

The hardeners and reducers at the corresponding temperatures are recommended for complete resprays. In case of part resprays the recommendation for the lower temperature can be of advantage.

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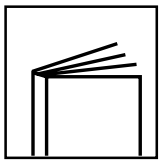
Survey of processing pictograms

Technical Information

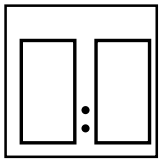


See Tech Book

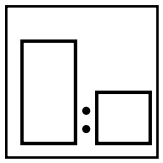
Preparation

Cleaning

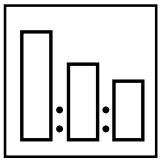
Mixing



Mixing Ratio

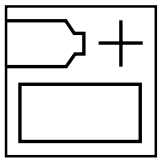


Mixing Ratio



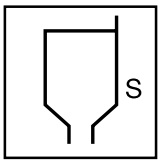
Mixing Ratio

Use
Mixing Stick



Hardener
Addition

Viscosity Adjustment



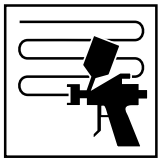
Spray Viscosity

Water Thinnable

Application

Gravity Gun

Schutz Gun



Spray Coats

Airless

Putty Knife

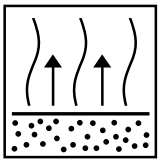
Brush

Roller

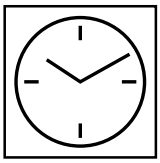
Aerosol

Survey of processing pictograms

Drying



Flash Off



Dry Time

I R

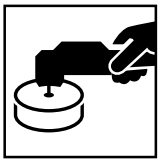
Sanding

Sand By Hand Wet

Sand By Hand Dry

Random Orbit Dry

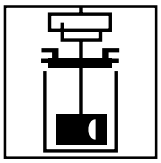
Jitterbug Dry



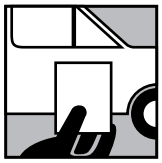
Polish

Miscellaneous

Stir

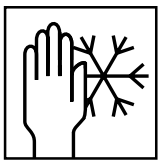


Stir in Mixing Machine

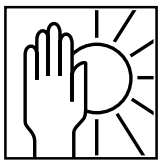


Check Color

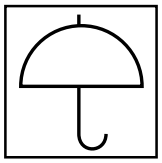
Storage



Do Not Freeze

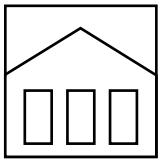


Store in Cool Place



Protect from Moisture

Close Lid



Shelf Life

Advice on the use of sprayguns
HVLP application - general overview

There is no doubt that HVLP spray equipment has come a long way in a few short years. All the major spray gun manufacturers now have HVLP equipment which is able to adequately atomize refinish paint, while still allowing high fluid outputs. High quality finishes are achievable using Glasurit material with the present state of HVLP technology. These finishes are comparable to those produced using conventional spray equipment. However, there are certain guidelines which should be followed when HVLP equipment is being used to apply Glasurit refinish products.

Technical Discussion

The basic difference between HVLP (High Volume, Low Pressure) spray equipment and conventional spray equipment is the air pressure with which the paint is atomized. Generally, there is only 15%-25% of the atomization air pressure (pressure measured at the air cap) available with a conventional gun, obtainable with an HVLP gun. However, while the atomization air should not exceed 10 psi with an HVLP gun (conventional gun is 40-60 psi), the incoming air pressure (measured at the gun intake) and, more importantly, the **volume** of incoming air, must both remain high (40-70 psi; 13-25 cfm).

It has been well established that there are certain advantages to HVLP spray applications:

Less overspray = less wasted material;

Fewer volatiles into the environment.

However, as previously mentioned, certain guidelines should be followed when HVLP equipment is to be used with Glasurit materials. These guidelines become even more meaningful when low VOC materials are being used in conjunction with HVLP equipment.

The guidelines are as follows:

A. Spray-gun tip or fluid nozzle selection should be matched to the ready-for-use spray viscosity of the material to be applied (see Technical Data Sheets.)

B. Incoming air volume (to the spray booth) should not be restricted by insufficiently sized air lines.

Recommendations:

1. Piping into the spray booth - minimum 1” inside diameter;
2. Filtering systems, gun connectors, coalescers, regulators, etc. must be capable of delivering the required volume (cubic feet per minute) of air;
3. Air line to the spray gun - minimum of 3/8” inside diameter.

C. HVLP application of low VOC materials achieves high film thickness with each applied coat. Excessive film thickness can cause the following:

Slow dry
Die-back
Solvent popping
Poor long-term adhesion

Recommendations:

1. Do not exceed the number of coats specified in the Tech Data Sheets;
2. Do not spray excessively wet coats;
3. Extra care should be taken when choosing a Hardener/Reducer for an HVLP application, since that selection will have a greater impact on the dry time and appearance than with conventional equipment.

Advice on the use of sprayguns
The airless spray method

This application technique is increasing more and more in significance in the repair industry and in the commercial vehicle finishing field, due to the reduced spray dust.

Working method:

High paint impact via pneumatic, electric or electro-hydraulic high-pressure pumps (600–4500 psi) is usual for this process. The paint is fed to an airless spray-gun via a flexible high-pressure hose. The gun is fitted with special wear-resistant hard metal nozzles, the average diameter of which corresponds to circa 0.1 to 0.5 mm. The atomization is by means of the expulsion of a stream of paint which flows from the nozzle at high speed, into a broader or less broad fan-shape with a sharply limited spray pattern, depending on the nozzle element fitted. By using adjustable nozzles, the width of the spray pattern can be altered without refitting and can be suited to the size of the object to be painted. Pre-atomizers allow, when required, the correction of the fineness of the spray and contribute to the homogenization of the spray pattern. The main advantages of this method can be given as follows:

a) Suitable for objects with a medium to large surface area for the application of primer, filler and “thick-coat” materials.

b) High painting performance on account of high paint throughput quantities of 300–2000 ml/min. (1/2 to 2 Ltrs. per min.).

c) High coat thickness per spray application can be achieved because processing is carried out with higher viscosities (saving in thinners/reducers).

d) Less bounce-back effect from the spray mist and thus considerably less annoyance caused by spray dust flying about in badly ventilated rooms.

The main disadvantages are:

a) The process is not suitable for the processing of small paint quantities of different colors (a lot of cleaning is involved).

b) With genuine airless machines, adjusting the quantity of the paint expelled (mist) is not possible and is therefore only partly suitable for the application of topcoats. Systems have recently been developed which work with extra air. While the paint is atomized by the airless principle (at pressures between 600 to 1050 psi), the extra air serves exclusively for the homogenization and the “softening” of the sharp edge zones of the airless spray pattern. Some of these systems are also fitted with a paint flow control thus application of topcoats is possible at a reasonable result.

Advice on the use of sprayguns Electrostatic hand-spray method

For reasons of cost and safety, the electrostatic hand-spray process with additional air atomization is practicable for repairs, because less voltage is used than with automatic spraying without air atomization. You can work more quickly with an electrostatic hand spray-gun which makes it ideal for use where a large number of bodies or individual body parts are to be painted with the same color. The process is too complicated for frequent color changes and for painting minor damage.

Comparative tests were carried out in which vehicles were painted respectively with an electrostatic hand spray-gun and a conventional pressure pot gun. In each case the same color was used, straight and metallic. As a result of these tests, we can state that it is possible to paint cars electrostatically in repair shops.

To summarize, we would like to state the following based on our experience:

- Slightly less material consumption.
- Less spray-dust formation.
- Considerably shorter spraying time.
- Cleaning involved when changing color only slightly higher.
- Consumption of cleaning thinners is greater.

Learning the spraying technique

Paint quantity adjustment is only possible by altering the pressure from the pot. There is no adjustment possible on the spray-gun itself (comparable with the airless method). A more even movement of the spray-gun is necessary. The distance of the gun from the object must be kept shorter (20 cm/8 ins).

Viscosity:

Set lower (circa 2–4 s less) and if required use slower thinner/reducer which results in finer dispersion of dry-spray.

Conductive ability setting:

With solid colors, generally no special thinning is necessary. With metallic colors the resistance should be around 1000 kil-ohms, otherwise there is a danger of marking areas which have been thickly filled with polyester body filler. Special thinner/reducer is needed.

In the case of metallic colors with a high metal content, the voltage field can break down. The high voltage must then be lowered.

The process is well suited to complete resprays. When carrying out a partial respray you must mask large areas most carefully, as there is the danger of spray dust creeping under the masking.

The safety, technical guidelines, and regulations must be strictly observed. The booth and the grids must be kept very clean so that the process is correctly grounded and the influence of dust can be avoided.

The introduction of the process involves a large investment.

Products with a flash-point above +68°F/20°C are the only ones that can be processed.

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A glossary of refinishing terms

Acrylate Resins

Polymerized resins made of acrylic or methacrylic esters.

Adhesion

The ability of a film of paint to adhere to the surface beneath.

Alkyd Resins

Phthalate resins (made of phthalic acid and glycerine) modified with fatty acids. Synthetic resins for air and oven-dried enamels, often used in combination with other synthetic resins or nitro-cellulose.

Analysis

Chemical separation of a substance to determine its constituent parts.

Binding Agent

The non-volatile, soluble part of paint that binds the pigment particles together and forms a cohesive film of paint when dried by physical or chemical means.

Blushing (Blooming)

White film caused by the cold due to evaporation and the formation of dew when the relative humidity is high.

Bonding

The adhesion between the individual coats that make up the structure of the finish, due to adhesion-promoting additives and slight biting into the previous layer. Sanding promotes bonding. Bonding is reduced by very hard old paintwork, undercoats that are not completely dry, and moisture.

Catalyst

Substance that induces or considerably accelerates a chemical reaction. An example is the hardening of priming materials with a polyester resin base using peroxide as a catalyst.

Color

The term color is often wrongly used for the pigment or the ready-to-use paint but in fact refers to the appearance of the paint, i.e. red, yellow, green, etc. White light is made up of a number of colored rays of light that can be separated by means of a prism due to the fact that the different colors are refracted to different degrees into the so-called spectrum. The range of color that is visible to the human eye extends from the long-wave red rays through orange, yellow, green and indigo to the short-wave violet rays.

Color Loss

Surface disturbances in the binding agents (due to weathering or the effect of chemicals) expose the pigment particles and loosen them from the paint structure: color is then lost when the paintwork is wiped over. Good care of the paintwork with moderate polishing helps prevent such damage.

Color Stability

The resistance of white and colored pigments to light, i.e. ultra-violet light, under the influence of which they can either fade or darken. In addition, there is the tendency to yellow with the aging of the binding agent. Despite the pigments' high degree of color stability, there are no finishes that are absolutely light resistant (light fast) with colors that remain exactly the same for years.

Combination Enamels

Combinations of nitro-cellulose and alkyd resins are distinguished from pure nitro enamels by greater filling properties, good gloss and weather resistance. Because of their high gloss, polishing is unnecessary, although possible.

Condensation

The liquification of vapors on cooling. In paint technology, condensation is understood as a kind of chemical reaction that occurs during the drying and manufacture of certain synthetic resins.

Consistency

This means the external quality of a material and its reaction to changes in shape, e.g. brittle, viscous, pasty.

Control Primer (Guide Coat)

An area that is lightly sprayed over with a filler of a different color in order to visually facilitate the sanding of the area.

Curing

After flashing-off and surface drying, the paint film reaches a stage in which it is completely hard. If the surface dries too quickly, it prevents the absorption of oxygen and the evaporation of the residual solvent still in the film, thus delaying curing.

A glossary of refinishing terms

Defective Drying

In the case of paints that dry by oxidation, this usually occurs if the coat is too thick and the surface is sealed too quickly. For baking enamels, the causes are too low a temperature or too short a baking time. The individual causes can be found in connection with curing, film thickness, forced drying, hot spraying, oxidation, siccatives and thinners.

Degreasing

Grease reduces the adhesion of paint. The pre-treatment of the surface must therefore include thorough removal of grease.

Demulsification

If too much thinner is added at one time or if the wrong thinner is used, precipitation of the binding agent can occur or the binding agent can separate from the pigment so that the paint becomes unusable (see also Flocculation).

Dew Point

Dew forms on objects that are brought in from outside or from cooler areas into the workshop where the temperature is higher. The higher the humidity, the smaller the difference in temperature needed for dew to form. The table below is based on a spraying temperature of 20°C/68°F:

Relative humidity	Dew Point	Difference in temperature
50%	8.6°C/47.5°F	11.4°C/20.5°F
70%	14.1°C/57.4°F	5.9°C/10.6°F
90%	18.2°C/64.8°F	1.8°C/ 3.2°F
95%	19.1°C/66.4°F	0.9°C/ 1.6°F

This shows, for example, that with a temperature of 20°C/68°F in the workshop and 90% relative humidity, dew forms if the object to be painted is only 1.8°C/3.2°F colder. It can hardly be seen with the naked eye, but can lead to considerable damage to the finish (lack of adhesion, diminished gloss, the formation of blisters or pores).

Diffusion

The slow penetration of porous walls, paint layers etc. by liquids and solutions. Lightweight molecules diffuse more quickly than heavy ones. If the components of the diffusing substance have different weights, a partial separation of the particles may occur.

Dry Spraying

Deliberate or incorrect spraying with a reduced paint feed, excessive pressure, paint that is too thick, or with too great a spraying distance.

Elasticity (Flexibility)

The ability of a body to return to its original form after being subjected to deforming pressure. Elasticity plays an important part in vehicle finishes since the paintwork is subjected to considerable vibration, as well as stress due to the variations of heat and cold.

Electrostatic Painting

This process is based on the establishment of an electric field in which the very fine, negatively-charged particles of paint are deposited on the surface of any object placed within the field. Since the paint particles follow the lines of force, the paint is deposited all around the object, e.g. a tube, so that its whole surface is coated without it having to be turned.

Epoxy Resins

This type of binding agent can be used for baking enamels and air or oven-drying systems, but is particularly useful in reactive products such as primers or fillers. They are distinguished by their exceptionally good adhesion properties, elasticity and resistance to abrasion, water, oil, alkali and solvents.

Equipment Cleaning

It is important that the spray gun be cleaned immediately after applying two-component materials, especially polyester primer filler, because cleaning is much more difficult if they set in the nozzle and perhaps could even damage the tool.

Film Formation (Skinning)

Despite anti-skinning agents, paint materials that dry by oxidation form a skin on contact with oxygen. Do not deform the lid when opening a can. Opened cans should be carefully and tightly closed. Transfer the contents of half-full cans to smaller containers. Remove skins carefully and filter the paint, as there is a risk of color discrepancies.

A glossary of refinishing terms

Film Thickness

It is the thickness of the dry film of paint that is measured, i.e. the thickness of the film adhering to the surface after the solvent has evaporated. The unit of measurement is the micron (µm) which equals 1/1000th of a millimeter, or mil, which is .001 inch. The dry film thickness mentioned in the manufacturer's instructions or the number of cross (spray) coats needed to obtain a specific thickness of the film should be adhered to as closely as possible.

Flash Point

The lowest temperature at which the vapors above a volatile combustible substance ignite momentarily in air when tested by applying a flame under specific conditions. Classification in danger categories is determined by the flash test. Attention should be paid to the critical limit of 21°C/70°F.

Floating or Flooding

Finish paints with pigments of very different specific weights and different particle sizes (e.g. pastel blue) are susceptible to flooding. Varying shades of color are obtained when spraying and this must be taken into account when matching colors. Stir thoroughly and do not apply too thickly or too wet.

Flocculation

A disturbance in the relationship between binding agent and pigments, usually caused by the addition of the wrong thinner or other unsuitable additives or mixtures. The paint becomes unusable.

Forced Drying

The drying times of air-drying paints can be considerably shortened by raising the temperature. In certain cases, this reduction is due to the accelerated evaporation of the solvent from the film of paint; in other cases, it is due to the increased rate of the reaction at a higher temperature.

Gelling

Defective or premature thickening of the binding agent which makes the paint unusable, due to polymerization or other chemical reaction (see also Thickening and Storage).

Hardener Paste

The catalyst, supplied in the form of hardener paste or liquid and consisting of organic peroxides dispersed or dissolved in plasticizers (caution: corrodes skin and mucous membrane). The heat released during the reaction accelerates the hardening process. Consequently, thick layers harden better than thin ones and low room temperatures have a delaying effect. If necessary, the reaction can be initiated or accelerated by the use of a radiant drier or oven. Oxygen is not required and is even a disadvantage.

Humidity

The atmosphere can absorb a certain maximum amount of water vapor, depending on the temperature. The maximum absorption of water is:

17.3 grams per cubic meter of air at 20°C/68°F

9.4 grams per cubic meter of air at 10°C/50°F

4.8 grams per cubic meter of air at 0°C/32°F

Hygroscopic

Substances that attract and retain water are said to be hygroscopic. They are hostile to paints, cannot be used to make paints, and are difficult to paint. For refinishers, they are a great hazard as a possible cause of blistering.

Ion Exchanger

Device used to desalt tap water. The water is passed through a container filled with two types of synthetic resin granules, the surface of which is either negatively or positively charged. The negative charge retains the positive ions - the cations in the water - while the positive charge of the other synthetic resin retains the negative ions - anions - so that completely desalted water leaves the container. The synthetic resin granules must be regenerated at certain intervals, depending on the quantity of water passing through and its degree of hardness.

Lifting

The swelling up of paint films due to excessively strong solvents in the paint, as occurs when spraying over airdrying synthetic resin paints with nitro materials. A dry first spray reduces the risk of lifting.

Light Metal

This requires particularly thorough degreasing with nitro thinner. An etching primer, e.g. Wash Primer "extra mild", is absolutely essential for an opaque finish.

A glossary of refinishing terms

Metallic Finishes

Pigmentation with dye stuffs and the addition of aluminium results in a metallic surface effect. Metallic effect finishes can only be obtained by spraying, and the different shades of color are achieved by varying the spraying technique. Wet spraying gives a darker shade while misting and dry spraying give paler effects.

Micron - µm

A micron is 0.000,001 of a meter. It is the unit of measurement for short lengths. A dry film of paint is usually 30-50 microns thick, and the total thickness of a finish is 85-350 microns (25 microns = 1 thousandth of an inch).

Miscibility

The mutual compatibility of different paints is always doubtful, unless the manufacturer expressly confirms their miscibility. Paint compatibility with thinners from other manufacturers is equally questionable. Each paint manufacturer adjusts its paint so that the addition of the specified thinner in the specified quantity optimizes the results. The use of the wrong thinner can seriously impair the properties of the material, the quality can deteriorate and there may be failures.

Opacity

Poor opacity may be due to inadequate stirring or the addition of too much thinner. White and pastel colors usually have good opacity. Poor opacity does not mean that the paint should be applied more thickly, it should be compensated for with a suitable undercoat.

Oxidation

The reaction of a substance with oxygen to form an oxide, e.g. rust in the case of steel, or the formation of zinc oxide (zinc white) when zinc is oxidized. An important oxidation process in paint technology is the drying of oil-modified synthetic-resin paints by the absorption of oxygen (see also Siccatives). The supply of oxygen to air-drying synthetic-resin paints must not be obstructed. Spraying and drying booths need good ventilation.

Passivating

A corrosion-retarding pre-treatment of metallic surfaces by phosphating.

Peroxides

Highly reactive organic substances that facilitate the handling of hardener pastes or liquids for polyester paints.

Phosphating

A very thin, fine crystalline protective coating with passivating and adhesion-promoting properties, which is obtained by chemical treatment with a phosphoric acid solution after the degreasing process. It is followed by a thorough rinsing with water. This rinsing with completely desalted water (see Ion Exchanger) is extremely important because any trace of soluble salts left on this phosphating coat can cause blistering later.

Pigment

The name for color solids, as opposed to soluble organic dye-stuffs.

Polyester Resins

These are certain unsaturated polyesters, and one of their uses is as a very filling binding agent for primers and paints. Styrene is used as a solvent and, after polymerization, becomes a solid component of the paint film which consequently hardens under the influence of a catalyst with almost no loss of build.

Pot Life

The period during which two-component material can be used after they have been mixed with the hardener. Usually, the end of the pot life is indicated by a visible increase in viscosity that prevents further use. Some products, e.g. wash primers, show no clear increase in viscosity. The technical data must therefore be consulted in order to avoid defective finishing.

Primer

The name of the first adhesion-promoting coat on the surface to be painted.

RAL

Abbreviation of “Reichsausschuß für Lieferbedingungen”, the old name of a section of the German Standards Committee (DNA). Not only are its numerous definitions of terms and qualities of interest to the paint manufacturer and consumer, but of particular significance is the rationalization achieved by the standardization of a limited selection of colors that always remain the same and are defined in the RAL 840 HR Color Index.

A glossary of refinishing terms

Reversible

Only those film-forming substances that dry by the evaporation of the solvent are reversible, because they can be redissolved completely in their solvent . These include nitro and thermoplastic acrylic enamels. In contrast, alkyd and other synthetic-resin enamels are non-reversible and cannot be reconverted to their liquid states.

Salt/Blistering

Paint films act as semi-permeable membranes. They allow small quantities of pure water, water vapor, dew or moisture from the air to pass through in both directions, but do not let solutions pass back again. If there are any traces of soluble salts under the paint film, e.g. residue from the evaporation of the tap water used for sanding, salt solutions are formed under the paint film due to the action of pure water on the surface of the finish, and osmotic pressure is created. These solutions constantly strive towards further dilution. The result is fluid-filled blisters that lift the paint film from the underlying surface.

Sanding Properties

Given the great expenditure of time and sanding paper, it is understandable that there be a desire for faster and easier sanding of fillers and stoppers, although the quality and strength of the paintwork must not suffer as a result. Since hardness increases with age, the determination of the best time for sanding is important.

Sealer

An agent used to isolate and seal absorbent and relatively porous surfaces instead of spraying and sanding another filler.

Sedimentation (Settling)

Heavily pigmented primers are given a longer shelf life by the incorporation of anti-sedimentation agents. Paint materials already diluted to spraying viscosity should not be kept, however, since their low viscosity can no longer prevent sedimentation. Products where heavy sedimentation has occured can no longer be stirred sufficiently to ensure a good finish.

Separation

During storage, the various components of paint materials separate out into distinct layers in the can because of their different specific weights, and they must be stirred back into a homogeneous state. Remove any dust from the rim of the can before opening.

Siccatives (Driers)

Drying agents that are compounds of metals with organic acids. They accelerate the absorption of oxygen by paints that dry by oxidation, and thus speed up the drying process. Excessive use of siccatives can make the finish crack or stick.

Silicones

Binding agents based on silicone resins are distinguished by their great resistance to constant high temperatures and their weather-resistant properties. Silicone oils are used as flow agents, release agents and anti-flooding agents in polishes and autocare products, as skin creams and in many everyday products - often to the annoyance of many refinishers who have come to the conclusion that silicones are the cause of cratering during finishing.

Skin Formation

See “Film Formation”

Solid Content

That part of a paint which is left after all the volatile components have evaporated. It is made up of the film building components and pigments.

Solvents

Low-viscosity liquids used to dissolve the substances that form the paint film. The thinner that is used to dilute a paint must be adapted to the components of the solvents contained in the paint.

Staining

Due to their greater absorbency, unsaturated or isolated patches of body filler may appear as matt areas on the surface. Sunken patches of body filler or stopper, or an under-surface that can be seen through the paint, may cause color discrepancies. Alkaline splashes (e.g. on construction sites) corrode the surface. Soot, when combined with humidity, forms sulfurous acid and can lead to stains on finishes with pigments that contain lead. The addition of fillers can also cause staining when painted over with certain color shades.

A glossary of refinishing terms

Sticky (Tacky)

Sticky surfaces can result if paints are not thoroughly cured.

Storage

Paint materials other than those needed for the day's work should be kept tightly closed and stored in an orderly way in a special area that is dry and temperate. Note that there are local fire or police regulations governing the storage of flammable liquids which must be complied with. Polyester fillers and their hardeners must be stored in a cool place.

Swelling

The absorption of fluids into the paint film. The swelling capacity of high-quality paints must be as low as possible.

Thermoplasticity

The transformation of substances from a hard to a malleable state by heating. In paint technology, thermoplasticity permits dried acrylic finishes to be softened again to obtain a smoother, more glossy surface.

Thickening

Due to a swelling of the pigments, chemical reaction, or the evaporation of the solvent. It can usually be corrected by adding thinner. If the paint has already set or gelled, it can no longer be processed.

Thinners

Liquids used to prepare the paint materials for use, in addition to the solvents they already contain. Their effect depends on their composition since they must be exactly adapted to the paint materials while still leaving plenty of flexibility in the processing conditions. The rates of evaporation of the various solvents in the thinner affect the flow, setting, film formation and final drying.

Thixotropy

The property of certain substances of being relatively viscous or gelatinous when at rest but which liquify when energy is applied, e.g. by brushing, shaking, spraying, etc., and then return to their original state when at rest again.

Tinting

The mixing of a color, or the final adjustment of the color of a ready-mixed shade, to match the old paintwork. Only use well-stirred mixing paints of the same type.

Viscosity

The thickness or internal friction of a liquid that decreases with increasing temperature. Viscosity is determined by allowing a certain quantity of the liquid to flow at a specific temperature for a specific length of time through a specific nozzle.

Wash Primer

A pre-treatment for sheet metal that reacts with the metal. Good adhesion to the surface to be painted is obtained with phosphoric acid and the reaction between the various components of the primer. Zinc chromate in the pigmentation provides corrosion protection and also prevents the dreaded sub-surface rusting around the damaged spot in the case of minor perforations of the paint film, e.g. by the impact of small stones.

Water-thinnable Paints

There is a difference between:

A) Paints dispersed in water for the purpose of priming by electrophoretic dipping. The advantages are the evenness of the coating and a saving in solvents, they are non-combustible, and there is no longer any problem with solvent fumes (see Electrophoresis).

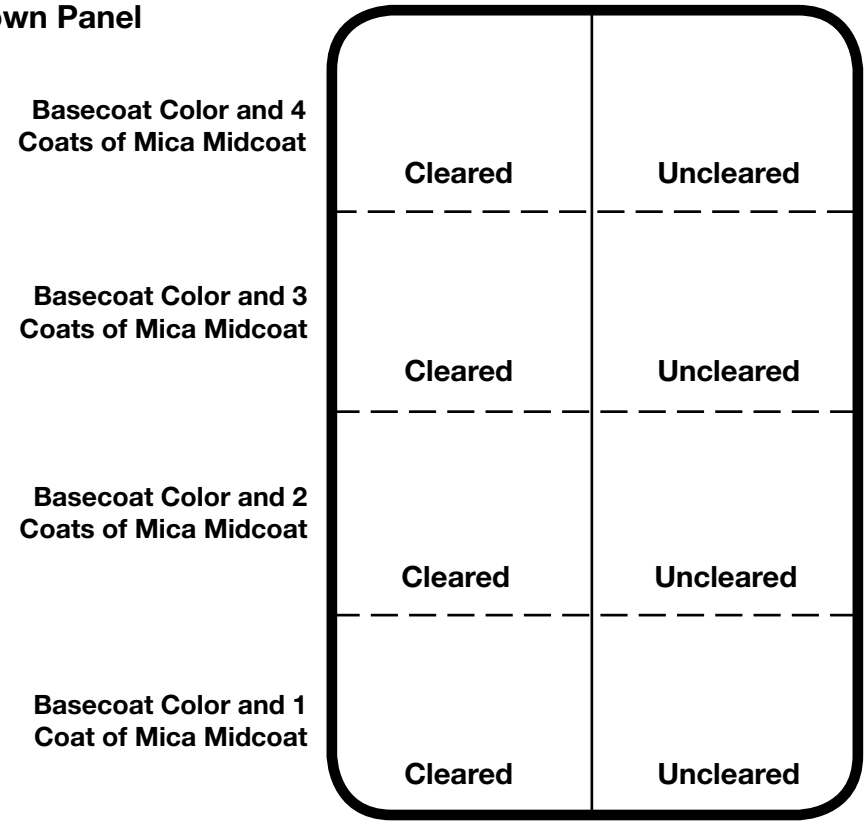
B) Paint products based on a special combination of synthetic resins, that can be air or oven-dried and are diluted with water and that are used for top coats, chassis enamel or primers.

Procedure for making a let-down panel

The **Mica Midcoat Color** is the key to matching a Three-Stage color. The color match is controlled by the number of coats of the **Mica Midcoat Color**, as more coats are applied, the darker the color will appear. It is important to determine how many coats of the **Mica Midcoat Color** need to be applied to achieve a color match. One way of determining the number of mica midcoat color coats is to spray a letdown panel as illustrated below or spray individual panels, each panel sprayed with a different number of coats.

1. Prepare a test panel with the same color undercoat as used on the job.
2. Apply the **Basecoat Color** in the same amount and manner as will be used on the job.
3. When the test panel dries, divide the panel into four sections. Use masking paper to cover 3/4 of the panel and expose the top quarter of the panel. Apply 1 coat of **Mica Midcoat Color** over the top quarter of the panel.
4. After the first coat has flashed, remove the masking paper and move it down to the middle of the panel, exposing the top half of the panel. Now apply a coat of **Mica Midcoat Color** over the exposed half of the panel.
5. After the second coat has flashed, remove the masking paper and move it down so that 3/4 of the panel is exposed. Now apply a coat of **Mica Midcoat Color** over the exposed 3/4 of the panel.
6. After the third coat has flashed, remove the masking paper and expose the entire panel. Now apply a coat of **Mica Midcoat Color** over the entire panel.
7. After the panel has dried, mask off half of the panel, dividing it lengthwise. Apply 2 coats of clear to the exposed side.
8. After the let-down panel has completely dried, lay the let-down panel on the vehicle to determine the number of **Mica Midcoat Color** coats needed to match the vehicle.

Illustration of Let-Down Panel



Let-Down Panel

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Conversion tables

LINEAR MEASURE			
1 mil	0.00254 cm (25/1000 mm)	1 Micron	0.0394 mil
1 inch (in.)	2.54 cm	1 Millimeter (mm)	0.00394 in.
1 foot (ft.)	30.48 cm	1 Centimeter (cm)	0.394 in.
1 yard (yd.)	91.44 cm	1 Meter (m)	39.4 in. (1.09 yds.)

LIQUID MEASURE			
1 ounce	29.57 ml	1 Milliliter (ml)	0.00106 quart
1 pint (pt.) .	473 ml	1 Liter (l)	1.06 quart
1 quart (qt.) .	946 ml		
1 gallon (gal.)	3.785 l		

AVOIRDUPOIS WEIGHT			
1 grain (gr.)	0.648 g	1 Gram (g)	15.4 grains
1 ounce (oz.)	28.35 g	1 Kilogram (Kg)	2.205 pounds
1 pound (lb.)	453.59 g		

AIR PRESSURE			
1 psi (1 lb./sq. inch)	0.00689 bar	1 Bar	14.5 psi

TEMPERATURES			
°C	**°F**	**°C**	**°F**
–5°	23°	45°	113°
0°	32°	50°	122°
5°	41°	55°	131°
10°	50°	60°	140°
15°	59°	65°	149°
20°	68°	70°	158°
25°	77°	75°	167°
30°	86°	80°	176°
35°	95°	85°	185°
40°	104°	90°	194°

VISCOSITY	
SEC./DIN CUP 4	**SEC./FORD CUP 4**
12	15
14	18
16	20
18	22
20	25
22	27
24	31
30	37
40	45
60	68
80	87

Conversion tables

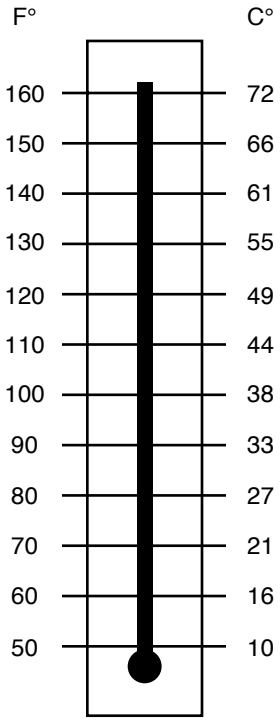
1. SPECIAL INFORMATION

P-Grit Classification
To establish more uniform distribution of grains on sand paper, the FEPA (Federation of European Material Manufacturers) devised the P-Grit Classification. The range of grit particle size distribution is narrowed down with P-papers and are therefore more consistent in their performance.

Note: 3M has introduced a line of sand paper using a "P" classification. However these are designed to produce finishes equivalent to U. S. grades.

All references to sandpaper in this manual are to U.S. grade paper.

U. S. Grade Paper	FEPA P-Paper	3M P-Paper
180	P180	P180
220	P220	P220
	P240	
240		P240
	P280	
	P320	
280		P280
	P360	
	P400	
320		P320
	P500	
360		P360
	P600	
400		P400
	P800	
500	P1000	P500
600	P1200	P600
		P800
Ultra Fine		P1000
Micro Fine 1200		P1200
Micro Fine 1500		
Micro Fine 2000		



Fahrenheit to Centigrade
To convert fahrenheit to centigrade: Subtract 32 from fahrenheit temperature and then multiply by 5/9 (.56).

Example: 90°F - 32 = 58
58 x .56 = 32.48°C

Centigrade to Fahrenheit
To convert centigrade to fahrenheit: Multiply centigrade temperature by 9/5 (1.8) and then add 32.

Example: 33 x 1.8 = 59.4
59.4 + 32 = 91.4°F

Conversion tables

2. SPECIAL INFORMATION

Mils to Microns	
1 mil = 25.4 µm	
mils	microns µm
0.5	12.7
1.0	25.4
1.5	38.1
2.0	50.8
2.5	63.5
3.0	76.2
4.0	101.6
5.0	127.0
6.0	152.4
8.0	203.2
10.0	254.0
15.0	381.0
20.0	508.0

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G Product Information

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G BF Body Fillers

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839-20 Double Plus Body Filler
White

Application: A high-solids coarse and fine putty for use on bare metal, galvanized steel and aluminum.

Properties: Fast drying, easy to sand, good adhesion.

Remarks:
- Remove all corrosion and rust beforehand by sanding or blasting.
- Sand damaged parts to bare metal; use 839-20 on bare metal only.
- Do not use 839-20 on acid treated surfaces or on etch primers (283-).
- Before use, mix 839-20 and 948-36 well without leaving streaks of hardener.
- Do not exceed 3% hardener; excess peroxide can cause discoloration in the finish.
- Must prime or seal 839-20 prior to topcoating.

	Application	Coarse and fine putty
	Paint System	B1, B2, B6, B8, C1, C2, C3, D.S1, D.S4
	VOC ready for use	60 gms/liter; 0.5 lbs/gal
	Mixing ratio	100% by weight 839-20
	Hardener	2 - 3% by weight 948-36
	Potlife at 68°F / 20°C	4 - 5 mins.
	Drying at 68°F / 20°C	20 - 30 mins.
IR	**Infrared short wave**	3 - 5 mins.
	Dry Sanding: machine	80 - 150, guide coat then finish sand with 240 - 320

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Technical Information

G BF

839-90 Plastic Body Filler

Application: A flexible, fine body filler for application to paintable plastic parts. Covers small damages (scratches).

Properties: Flexible, high solids content, universally suitable for use on all paintable plastics on cars, fast drying, easy to sand, good adhesion.

Remarks:
- Mix body filler and hardener paste before use (homogenous color, no marble effect).
- Do not exceed 3% hardener; excess peroxide can cause discoloration in the finish.
- Must prime or seal 839-90 prior to topcoating.

	Application	Fine body filler
	Paint System	B1, B4, B6, B8, C1, C2, C3, D.S3, D.S3a
	VOC ready for use	410 gms/liter; 3.4 lbs/gal
	Mixing ratio	100% by weight 839-90
	Hardener	2 - 3% by weight 948-36
	Potlife at 68°F / 20°C	4 - 5 mins.
	Drying at 68°F / 20°C	25 - 35 mins.
	at 140°F / 60°C	15 mins.
	Infrared short wave	8 mins.
	medium wave	5 - 10 mins.
	Dry Sanding: machine	80 - 150, guide coat, then finish sand body-filled area and old paintwork with 240 - 320

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Technical Information

G BF

1006-26 Sprayable Body Filler
Grey

Application: Fine putty/body filler for spray application on bare metal and well-cured old paintwork.

Properties: High filling capacity, application of thick coats possible.

Remarks:
- Remove all rust prior to application.
- Do not apply 1006-26 on acid treated surfaces or etch primers (283-).
- Aluminum and galvanized steel must be preprimed with Epoxy Primers (801-).
- In order to obtain good resistance to humidity, prime or seal 1006-26 prior to topcoating.
- Store 1006-26 in a cool place.
- Shelf life - 8 months at 68°F/20°C.

	Application	Fine putty/body filler for spray application
	Paint System	B1, B2, B4, B6, B8, C1, C2, C3, D.S1
	VOC ready for use	250 gms/liter; 2.1 lbs/gal
	Mixing ratio **Hardener**	1.4 kg 1006-26 50 ml 948-22 75 ml 948-22 at temperature below 60°F / 15°C
	Potlife at 68°F / 20°C	20 - 30 mins.
	Gravity cup / Spraying pressure	HVLP: 2.5 - 3.0 mm / 10 psi at air cap (max.)
	Number of spray coats	3 - 5
	Brushing	Possible
	Film thickness	6-12 mils (150-300 µm) *
	Drying at 68°F / 20°C **at 140°F / 60°C** **Infrared short wave** **medium wave**	3 - 4 hrs. 30 mins. 10 mins. 15 mins.
	Dry Sanding: machine	P150, guide coat, then finish sand with P240 DO NOT WET SAND!

* If film thickness of > 12 mils is required, a second application of 1006-26 can be applied without intermediate sanding after having dried the first layer.

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G P Pretreatments and Adhesion Promoters

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Technical Information

G P

283-155 Etching Primer

Chromate Free

Application: Primer filler with good rust protective properties for low cost repairs. Etch primer on steel, aluminum and zinc plated (galvanized) steel.

Properties: For fast and economical car refinishing. Isocyanate free.

Remarks:

- **Do not** apply polyester based products such as Body Fillers 839- or Sprayable Body Filler 1006-26 over 283-155.
- **Do not** apply topcoats directly to 283-155.
- **Do not** use directly under 176-72.

	Application	Pretreatment
	**Paint System**	B1, B3, B5, B8, C1, C2, C3
	VOC ready for use	731 gms/liter; 6.1 lbs/gal
	**Mixing ratio**	1:1+30% 100 parts by volume 283-155
	**Hardener**	100 parts by volume 583-660
	**Reducer**	30 parts by volume 352-91
	**Spray viscosity DIN 4 at 68°F / 20°C**	14 - 16 s
	Potlife at 68°F / 20°C	48 hrs.
	**Gravity cup / Spraying pressure**	HVLP: 1.3 mm / 10 psi at air cap Conventional: 1.3 - 1.5 mm / 40 - 50 psi
	**Number of spray coats**	1 light coat
	Film thickness	0.25 - 0.5 mil
	**Flash-off at 68°F / 20°C**	10 mins. before next step

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Technical Information

G P

283-155 Etching Primer (Low VOC)
Chromate Free

Application: Primer filler with good rust protective properties for low cost repairs. Etch primer on steel, aluminum and zinc plated (galvanized) steel.

Properties: For fast and economical car refinishing. Isocyanate free.

Remarks:
- **Do not** apply polyester based products such as Body Fillers 839- or Sprayable Body Filler 1006-26 over 283-155.
- **Do not** apply topcoats directly to 283-155.
- **Do not** use directly under 176-72.

	Application	Pretreatment for low VOC areas
	**Paint System**	B1, B1a, B3, B5, B8, C1, C2, C3
	VOC ready for use	660 gms/liter; 5.5 lbs/gal
	**Mixing ratio**	1:1+150% 100 parts by volume 283-155
	**Hardener**	100 parts by volume 583-660
	**Reducer**	150 parts by volume 352-25 or -45
	**Spray viscosity DIN 4 at 68°F / 20°C**	14 - 16 s
	Potlife at 68°F / 20°C	48 hrs.
	**Gravity cup / Spraying pressure**	HVLP: 1.3 mm / 10 psi at air cap Conventional: 1.3 - 1.5 mm / 40 - 50 psi
	**Number of spray coats**	1 light coat
	Film thickness	0.25 - 0.5 mil
	**Flash-off at 68°F / 20°C**	10 mins. before next step

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Technical Information

G P

801-72 Epoxy Primer Filler
Grey

Application: Primer

Properties: Good corrosion protection on bare metal, galvanized steel and aluminum.

Remarks:
- Chromate Free
- Primer on galvanised substrates for 1006-26 and for 285- primers.
- Minimum temperature for air drying: +60°F / 15°C.
- May be used as primer under Glasurit® 839- body fillers, Glasurit® 1006-26 (after 30 minutes at 68°F / 20°C) and certain 285- series primer fillers.

	Application	Primer
	Paint System	B1, B3, B5, B8, C1, C2, C3, D.S1
	VOC ready for use	540 gms/liter; 4.5 lbs/gal
	Mixing ratio **Hardener** **Reducer**	4:1:1 100 parts by volume 801-72 25 parts by volume 965-60 25 parts by volume 352-91 or -216
	Spray viscosity DIN 4 at 68°F / 20°C	18 - 20 s
	Potlife at 68°F / 20°C	8 hrs.
	Gravity cup / Spraying pressure	HVLP: 1.3 - 1.4 mm / 10 psi at air cap
	Number of spray coats	1
	Film thickness	0.6 - 0.8 mil
	Flash-off at 68°F / 20°C	10 - 20 mins.

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Technical Information

G P

801-703 Chromated Epoxy Primer

Application: Primer.

Properties: Primer for galvanized sheets, aluminum and bare metal. Excellent corrosion protection, good solvent resistance and hold out of topcoat.

Remarks:

- With air drying a minimum temperature of 60°F/15°C is required.
- Prior to refinishing, remove all corrosion (e.g. rust) by blasting or sanding.
- May be used as primer under Glasurit 839- Body Fillers, Glasurit 1006-26 (After 30 minutes at 68°F/20°C) and certain 285- series primer fillers.

	Application	Primer
	**Paint System**	B1, B3, B5, B8, C1, C2, C3
	VOC ready for use	540 gms/liter; 4.5 lbs/gal
	**Mixing ratio** **Hardener** **Reducer**	4:1:1 100 parts by volume 801-703 25 parts by volume 965-60 25 parts by volume 352-50, -91 or -216
	**Spray viscosity DIN 4 at 68°F / 20°C**	18 - 20 s
	Potlife at 68°F / 20°C	8 hrs.
	**Gravity cup / Spraying pressure**	HVLP: 1.5 mm / 10 psi at air cap Conventional: 1.6 mm / 45 - 60 psi
	**Number of spray coats**	1
	Film thickness	0.6 - 0.8 mil
	**Flash-off at 68°F / 20°C**	10 - 20 mins.

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G P

934-30 1K Clear Plastic Ad-Pro

Application: Adhesion promoter for plastics.

Properties: Multi-purpose adhesion promoter suitable for all paintable plastics on cars.

Remarks:

- Suitable primer surfacers:
  Glasurit 285- * HS fillers/primer fillers
  * Add 522-111 Elastifier Additive or 522-333 Low VOC Elastifier Additive according to system D.S3a
- **Shake 15 to 30 seconds before each use**.
- See matrices B1 and B1a for proper plastic substrate cleaning and preparation procedures.
- Suitable for both raw plastic as well as (non-soluble) primed plastic.

	Application	Adhesion promoter
	**Paint System**	B1, B1a, B4, B8, C1, C2, C3, D.S3a
	VOC ready for use	803 gms/liter; 6.7 lbs/gal
	Aerosol: **VOC ready for use** **PWMIR**	 737 gms/liter; 6.2 lbs/gal 1.19
	**Mixing ratio**	Ready for use.
	**Gravity cup /** **Spraying pressure**	HVLP: 1.2 - 1.3 mm / 10 psi at air cap Conventional: 1.3 - 1.4 mm / 45 - 60 psi
	**Number of spray coats**	1 - 2 (entire part should be covered with med. wet coats)
	Film thickness	0.2 - 0.4 mil
	**Flash-off at 68°F / 20°C**	10 - 15 mins. prior to filler or topcoat application

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934-40 Low VOC 1K Adhesion Promoter

Application: Adhesion promoter for plastics.

Properties: Multi-purpose adhesion promoter suitable for all paintable plastics on cars.

Remarks:

- Suitable primer surfacers:
  Glasurit 285- * HS fillers/primer fillers
  * Add 522-333 Low VOC Elastifier Additive according to system D.S3a
- **Shake 15 to 30 seconds before each use**.
- See matrices B1 and B1a for proper plastic substrate cleaning and preparation procedures.
- Suitable for both raw plastic as well as (non-soluble) primed plastic.

	Application	Adhesion promoter
	Paint System	B1, B1a, B4, B8, C1, C2, C3, D.S3a
	VOC ready for use	540 gms/liter; 4.5 lbs/gal
	Mixing ratio	Ready for use.
	Gravity cup / Spraying pressure	HVLP: 1.2 - 1.3 mm / 10 psi at air cap Conventional: 1.3 - 1.4 mm / 45 - 60 psi
	Number of spray coats	1 - 2 (entire part should be covered with med. wet coats)
	Film thickness	0.2 - 0.4 mil
	Flash-off at 68°F / 20°C	10 - 15 mins. prior to filler or topcoat application

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Technical Information

G P

934-70 2K One-Step Plastics Adhesion Promoter

Application: Adhesion promoter for repair of all paintable plastics on cars.

Properties: Good adhesion on all paintable plastics used in car production. Suitable for use as an adhesion promoter in three stage systems.

Remarks:

- 30 minutes of forced drying at 140°F/60°C are necessary when more than one coat is applied.
- See matrices B1 and B1a for proper plastic substrate cleaning and preparation procedures.
- Suitable for both raw plastic as well as (non-soluble) primed plastic.
- 934-70 can not be used over 'pure' polypropylene or polyethylene.

	Application	Adhesion promoter	
	Paint System	B1, B4, B7, B8, C1, C2, C3, D.S3	
	VOC ready for use	580 gms/liter; 4.8 lbs/gal	
	Mixing ratio **Hardener** **Reducer**	4:1:1 100 parts by volume 934-70 25 parts by volume 929-53 25 parts by volume 352-50 or -91	
	Spray viscosity DIN 4 at 68°F / 20°C	17 - 19 s	
	Potlife at 68°F / 20°C	8 hrs.	
	Gravity cup / Spraying pressure	HVLP: 1.2 - 1.3 mm / 10 psi at air cap	
	Number of spray coats	1 coat minimum	> 1 coat
	Film thickness	0.5 mil minimum	1.0 mil minimum
	Flash-off at 68°F / 20°C	20 mins.	—
	Drying at 140°F / 60°C	—	30 mins.

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Technical Information

G P

934-70 2K One-Step Plastics Adhesion Promoter Low VOC version

Application: Adhesion promoter for repair of all paintable plastics on cars.

Properties: Good adhesion on all paintable plastics used in car production. Suitable for use as an adhesion promoter in three stage systems.

Remarks:

- 30 minutes of forced drying at 140°F/60°C are necessary when more than one coat is applied.
- See matrices B1 and B1a for proper plastic substrate cleaning and preparation procedures.
- Suitable for both raw plastic as well as (non-soluble) primed plastic.
- 934-70 can not be used over 'pure' polypropylene or polyethylene.

	Application	Adhesion promoter	
	Paint System	B1, B4, B7, B8, C1, C2, C3, D.S3	
	VOC ready for use	< 540 gms/liter; < 4.5 lbs/gal	
	Mixing ratio	4:1:1 100 parts by volume 934-70	
	Hardener	25 parts by volume 929-100, -110, -120 or -130	
	Reducer	25 parts by volume 352-50 or -91	
	Spray viscosity DIN 4 at 68°F / 20°C	16 - 18 s	
	Potlife at 68°F / 20°C	8 hrs.	
	Gravity cup / Spraying pressure	HVLP: 1.2 - 1.3 mm / 10 psi at air cap	
	Number of spray coats	1 coat minimum	> 1 coat
	Film thickness	0.5 mil minimum	1.0 mil minimum
	Flash-off at 68°F / 20°C	20 mins.	—
	Drying at 140°F / 60°C	—	30 mins.

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G PS Primer Surfacers

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Technical Information

G PS

151-70 UV Light-Activated Primer Filler

Application: A one component UV cured primer.

Properties: High build, easy application. Good corrosion and weather resistance. Excellent topcoat holdout.

Remarks:

- Film will build rapidly with this product- do not spray to hiding.
- Do not apply more than two coats.
- If cleaning of the primer surfacer is desired prior to sanding, wipe surface with 541-30 or 700-1.
- Do not apply in direct sunlight.
- Do not cure in the rain.

	Application	Primer filler
	Paint System	B1, B1a, B3, B6, B7, C1, C2, C3
	VOC ready for use	204 gms/liter; 1.7 lbs/gal
	Mixing ratio	Ready to spray (mix well before use)
	Spray viscosity DIN 4 at 68°F / 20°C	14 - 18 s
	Gravity cup / Spraying pressure	HVLP: 1.0 - 1.5 mm / 10 psi at air cap Conventional: 1.0 - 1.5 mm / 45 - 60 psi
	Number of spray coats	1 - 2
	Film thickness	1.5 - 5.0 mils (10 mils maximum)
	Flash-off at 68°F / 20°C	1 - 2 mins. minimum flash between coats 3 - 5 mins. minimum flash before UV curing
	Drying with UVA Lamp	3 - 10 inches away for 2 - 3 mins. UV primer can be cured by sunlight. Exposure time is dependent on UV intensity (average time is 5 - 20 mins.). Allow to flash before exposing to sunlight. Surface cure will indicate extent of cure.
	Dry Sanding: hand **machine** **Wet Sanding: hand**	320 - 500 320 - 500 320 - 500 Surface will be slightly tacky but can be sanded without wiping, and will not load sandpaper when wet sanded.

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176-72 1K Waterborne Primer Surfacer

Dark Gray, Water Dilutable

Application: Primer Filler (corrosion protector and filler). Barrier primer for TPA (acrylic lacquer). Can be used as guide coat (1:1 with 93-E3).

Properties: Good adhesion on bare metal and galvanized steel. Contains less than 5% organic solvents.

Remarks:

- Minimum working temperature is 60°F/15°C.
- Drying is strongly dependent on temperature, humidity, air circulation and film build.
- Keep spray gun head under water when the gun is not in use.
- Use 90-VE to clean sanding residue
- Use 700-1 to clean spray gun and tools.
- Collect left-over paints and waste water, treat them with 700-7 Coagulating Powder and dispose of them according to the relevant technical data sheets.
- Keep product from freezing (store at temperature 40°F-105°F/5°C-40°C)
- Shelf life - 18 months.
- Not suitable for use on flexible plastic parts.
- Do not apply 176-72 directly over or under peroxide cured body fillers or over acid containing pretreatments.

	Application	Primer filler
	Paint System	B1, B1a, B3, B5, B6, B7, B8, C1, C2, C3
	VOC ready for use	180 gms/liter; 1.5 lbs/gal
	Mixing ratio **Reducer**	1:10% 100 parts by volume 176-72 10 parts by volume 93-E3
	Spray viscosity DIN 4 at 68°F / 20°C	25 - 35 s
	Gravity HVLP & Conventional	1.6 - 1.8 mm / 10 psi at air cap (max.)
	Number of spray coats	2
	Film thickness	1.6 - 2.4 mils
	Flash-off at 68°F / 20°C	5 mins. between coats and before drying or until matte.
	Drying at 68°F / 20°C **at 140°F / 60°C** **Infrared short wave** **medium wave**	2 hrs. at 50% rel. humidity 30 mins. 3 - 5 mins. 15 - 20 mins.
	Dry Sanding: hand **machine**	360, clean with DI water or 90-VE. 400 - 600, clean with DI water or 90-VE.

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285-10 Low VOC DTM Primer
Black

Application: A black primer surfacer for easy sanding.

Properties: Excellent sag resistance and leveling. Very good adhesion on substrates such as galvanized, aluminum, steel, old paint, plastics, fiberglass and SMC. No need for any pretreatment primers except for raw plastic parts. May be intermixed with 285-20 (White) to get different grey colors.

Remarks:
- 285-10 may be elastified with 25% by volume of Low VOC Elastifier Additive 522-333 for use over flexible parts. See matrix B4.
- Surface cleaning and preparation are critical to the success of the 285-10. All grease, rust and dirt must be properly removed.

	Application	Primer filler
	Paint System	B1, B1a, B3, B4, B6, B7, B8, C1, C2, C3
	VOC ready for use	188 gms/liter; 1.6 lbs/gal
	Mixing ratio **Hardener** **Reducer**	4:1:1 100 parts by volume 285-10 25 parts by volume 929-100, -110, -120 or -130 25 parts by volume 352-25 or -45
	Spray viscosity DIN 4 at 68°F / 20°C	15 - 17 s
	Potlife at 68°F / 20°C	1 - 2 hrs.
	Gravity cup / Spraying pressure	HVLP: 1.5 - 1.8 mm / 10 psi at air cap
	Number of spray coats	2 - 3
	Film thickness	2.0 - 2.5 mils (4.0 mils max)
	Flash-off at 68°F / 20°C	5 - 10 mins.
	Drying at 68°F / 20°C **at 140°F / 60°C**	40 - 50 mins. 20 mins.
	Dry Sanding: hand **machine** **Wet Sanding: hand**	320 - 500 400 - 500 320 - 500

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285-13 DTM Urethane Primer

Dark Gray

Application: 285-13 is a fast curing, easy sanding primer that provides easy handling from mixing to spraying to sanding. The primer is fast in air dry applications and still retains a long potlife.

Properties: Excellent sag resistance and leveling. Very good adhesion on substrates such as galvanized, aluminum, steel, old paint, fiberglass and SMC. No need for any pretreatment primers except for raw plastic parts.

Remarks:

- 285-13 may be elastified with 25% by volume of Elastifier Additive 522-111 or Low VOC Elastifier Additive 522-333 for use over flexible parts. See matrix B4.
- Surface cleaning and preparation are critical to the success of the 285-13. All grease, rust and dirt must be properly removed.

	Application	Primer filler
	**Paint System**	B1, B3, B4, B6, B7, B8, C1, C2, C3
	VOC ready for use	527 gms/liter; 4.3 lbs/gal
	**Mixing ratio** **Hardener**	4:1 100 parts by volume 285-13 25 parts by volume 929-51, or -53
	**Spray viscosity DIN 4 at 68°F / 20°C**	12 - 14 s
	Potlife at 68°F / 20°C	3 - 4 hrs.
	**Gravity cup / Spraying pressure**	HVLP gun: 1.5 - 1.8 mm / 10 psi at air cap
	**Number of spray coats**	2 - 3
	Film thickness	3.0 - 4.0 mils
	**Flash-off at 68°F / 20°C**	4 - 5 mins.
	**Drying at 68°F / 20°C** **at 140°F / 60°C**	40 - 50 mins. 20 mins.
	**Dry Sanding: hand** **machine** **Wet Sanding: hand**	320 - 500 400 - 500 320 - 500

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285-20 Low VOC DTM Primer

White

Application: A white primer surfacer for easy sanding.

Properties: Excellent sag resistance and leveling. Very good adhesion on substrates such as galvanized, aluminum, steel, old paint, plastics, fiberglass and SMC. No need for any pretreatment primers except for raw plastic parts. May be intermixed with 285-10 (Black) to get different grey colors.

Remarks:

- 285-20 may be elastified with 25% by volume of Low VOC Elastifier Additive 522-333 for use over flexible parts. See matrix B4.
- Surface cleaning and preparation are critical to the success of the 285-20. All grease, rust and dirt must be properly removed.

	Application	Primer filler
	Paint System	B1, B1a, B3, B4, B6, B7, B8, C1, C2, C3
	VOC ready for use	188 gms/liter; 1.6 lbs/gal
	Mixing ratio **Hardener** **Reducer**	4:1:1 100 parts by volume 285-20 25 parts by volume 929-100, -110, -120 or -130 25 parts by volume 352-25 or -45
	Spray viscosity DIN 4 at 68°F / 20°C	15 - 17 s
	Potlife at 68°F / 20°C	1 - 2 hrs.
	Gravity cup / Spraying pressure	HVLP: 1.5 - 1.8 mm / 10 psi at air cap
	Number of spray coats	2 - 3
	Film thickness	2.0 - 2.5 mils (4.0 mils max)
	Flash-off at 68°F / 20°C	5 - 10 mins.
	Drying at 68°F / 20°C **at 140°F / 60°C**	40 - 50 mins. 20 mins.
	Dry Sanding: hand **machine** **Wet Sanding: hand**	320 - 500 400 - 500 320 - 500

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Technical Information

G PS

285-20 Low VOC DTM Primer - Rapid Process
White

Application: A white primer surfacer for easy sanding.

Properties: Excellent sag resistance and leveling. Very good adhesion on substrates such as galvanized, aluminum, steel, old paint, plastics, fiberglass and SMC. No need for any pretreatment primers except for raw plastic parts.

Remarks:
- May be sanded in as little as 15 minutes air dry.
- Surface cleaning and preparation are critical to the success of the 285-20 Rapid Process. All grease, rust and dirt must be properly removed.
- **This must be weighed by scale.**

	Application	Primer filler
	**Paint System**	B1, B1a, B3, B4, B6, B7, B8, C1, C2, C3
	VOC ready for use	250 gms/liter; 2.1 lbs/gal
	**Mixing ratio**	3:1:1 (200 gram sample weight) 285-20* (133.0 grams)
	**Hardener**	929-110 or -120* (32.0 grams)
	**Reducer**	522-48 (35.0 grams)
		* Mix 285-20 and 929-110 or -120 thoroughly before incorporating 522-48
	**Spray viscosity DIN 4 at 68°F / 20°C**	15 - 17 s
	Potlife at 68°F / 20°C	15 - 20 mins.
	**Gravity cup / Spraying pressure**	HVLP: 1.7 - 1.9 mm / 10 psi at air cap
	**Number of spray coats**	2
	Film thickness	2.0 - 2.5 mils
	**Flash-off at 68°F / 20°C**	No flash off required between coats.
	**Drying at 68°F / 20°C** **at 140°F / 60°C**	15 - 20 mins. 10 mins.
	**Dry Sanding: hand** **machine**	320 - 500 400 - 500
	**Wet Sanding: hand**	320 - 500

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Technical Information

G PS

285-20 Low VOC DTM Primer - Rapid Process

White - Flexible Version

Application: A white primer surfacer for easy sanding.

Properties: Excellent sag resistance and leveling. Very good adhesion on substrates such as galvanized, aluminum, steel, old paint, plastics, fiberglass and SMC. The use of a Glasurit Plastic Adhesion Promoter is needed prior to application over raw plastic parts..

Remarks:

- May be sanded in as little as 15 minutes air dry.
- Surface cleaning and preparation are critical to the success of the 285-20 Rapid Process. All grease, rust and dirt must be properly removed.
- Up to 30% of 285-10 may be added to the 285-20 to create a grey color prior to adding the hardener and 522-48. Adding more than the 30% will create a pot life too short to be useable.
- **This must be weighed by scale.**

	Application	Primer filler
	Paint System	B1, B1a, B3, B4, B6, B7, B8, C1, C2, C3
	VOC ready for use	250 gms/liter; 2.1 lbs/gal
	Mixing ratio	3:1:1:1 (200 gram sample weight) 285-20* (100.0 grams)
	Elastifier	522-333 * (33.0 grames)
	Hardener	929-110 or -120* (32.0 grams)
	Reducer	522-48 (35.0 grams)
		* Mix thoroughly after each step
	Spray viscosity DIN 4 at 68°F / 20°C	16 - 18 s
	Potlife at 68°F / 20°C	15 - 20 mins.
	Gravity cup / Spraying pressure	HVLP: 1.7 - 1.9 mm / 10 psi at air cap
	Number of spray coats	2
	Film thickness	2.0 - 2.5 mils
	Flash-off at 68°F / 20°C	No flash off required between coats.
	Drying at 68°F / 20°C **at 140°F / 60°C**	20 mins. 10 mins.
	Dry Sanding: hand **machine** **Wet Sanding: hand**	320 - 500 400 - 500 320 - 500

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285-20/285-10 Low VOC DTM Primer - Rapid Process - Grey

Application: A grey primer surfacer for easy sanding.

Properties: Excellent sag resistance and leveling. Very good adhesion on substrates such as galvanized, aluminum, steel, old paint, plastics, fiberglass and SMC. No need for any pretreatment primers except for raw plastic parts.

Remarks:

- May be sanded in as little as 15 minutes air dry.
- Surface cleaning and preparation are critical to the success of the 285-20/285-10 Rapid Process. All grease, rust and dirt must be properly removed.
- The addition of more than 30% of the 285-10 to the 285-20 will create a pot life too short to be useable.
- **This must be weighed by scale.**

	Application	Primer filler
	**Paint System**	B1, B1a, B3, B4, B6, B7, B8, C1, C2, C3
	VOC ready for use	250 gms/liter; 2.1 lbs/gal
  	**Mixing ratio** **Hardener** **Reducer**	3:1:1 (200 gram sample weight) 285-20 * (93.0 grams) 285-10 * (40.0 grams) 929-110 or -120* (32.0 grams) 522-48 (35.0 grams) * Mix thoroughly after each step
	**Spray viscosity DIN 4 at 68°F / 20°C**	15 - 17 s
	Potlife at 68°F / 20°C	15 mins.
	**Gravity cup / Spraying pressure**	HVLP: 1.7 - 1.9 mm / 10 psi at air cap
	**Number of spray coats**	2
	Film thickness	2.0 - 2.5 mils
	**Flash-off at 68°F / 20°C**	No flash off required between coats.
	**Drying at 68°F / 20°C** **at 140°F / 60°C**	15 - 20 mins. 10 mins.
 	**Dry Sanding: hand** **machine** **Wet Sanding: hand**	320 - 500 400 - 500 320 - 500

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Technical Information

G PS

285-21 2.1 VOC Primer

Application: A low VOC primer with outstanding dry sanding characteristics.

Properties: Fast drying at ambient temperatures. Excellent for baking application. Excellent corrosion/weather resistance.

Remarks:

- Use guide coat to achieve better sanding results.
- Choose hardeners and reducers according to temperature and size of object to be painted.
- This primer may be elastified with 25-50% (by volume) Low VOC Elastifier Additive 522-333 for use over flexible parts.

	Application	Primer filler
	**Paint System**	B1, B1a, B3, B4, B5, B6, B7, B8, C1, C2, C3
	VOC ready for use	245 gms/liter; 2.0 lbs/gal
  	**Mixing ratio** **Hardener** **Reducer**	4:1:1 100 parts by volume 285-21 25 parts by volume 929-100, -110, -120 or -130 25 parts by volume 352-25 or -45
	**Spray viscosity DIN 4 at 68°F / 20°C**	14 s
	Potlife at 68°F / 20°C	45 mins.
	**Gravity cup / Spraying pressure**	HVLP: 1.5 - 1.7 mm / 10 psi at air cap
	**Number of spray coats**	2 - 3 medium wet coats
	Film thickness	2.0 mils (6.0 mils max.)
	**Flash-off at 68°F / 20°C**	5 mins. between coats
 	**Drying at 68°F / 20°C** **at 140°F / 60°C** **Infrared short wave**	90 mins. 30 mins. 5 - 6 mins.
 	**Dry Sanding: hand** **machine** **Wet Sanding: hand**	320 - 360 320 - 360 320 - 360

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Technical Information

G PS

285-50 HS Primer Filler
Grey

Application: A high solids primer surfacer with outstanding dry sanding characteristics.

Properties: Fast drying even at low temperatures. High build, easy to apply. Good corrosion and weather resistance. Excellent topcoat holdout.

Remarks:
- Choose hardeners and reducers according to temperature and size of object to be painted.
- Use a guide coat to obtain better sanding results.
- Can be applied as a high build filler in 3-4 coats (6.0 mils max), however dry times will be lengthened.
- This primer may be elastified with 25-50% (by volume) of Elastifier Additive 522-111 or Low VOC Elastifier Additive 522-333 for use over flexible parts.

	Application	Primer filler
	Paint System	B1, B3, B4, B5, B6, B7, B8, C1, C2, C3
	VOC ready for use	575 gms/liter; 4.8 lbs/gal
	Mixing ratio **Hardener** **Reducer**	4:1:1 100 parts by volume 285-50 25 parts by volume 929-51 or -53 25 parts by volume 352-50, -91 or -216
	Spray viscosity DIN 4 at 68°F / 20°C	16 - 20 s
	Potlife at 68°F / 20°C	1 hr. with 929-51; 1.5 hrs. with 929-53
	Gravity cup / Spraying pressure	HVLP: 1.5 - 1.8 mm / 10 psi at air cap Conventional: 1.4 - 1.6 mm / 45 - 60 psi
	Number of spray coats	2 - 3
	Film thickness	2.0 - 2.5 mils (6.0 mils max.)
	Flash-off at 68°F / 20°C	5 mins. between coats
	Drying at 68°F / 20°C **at 140°F / 60°C** **Infrared short wave** **medium wave**	2.5 hrs. (929-51) 3.5 hrs. (929-53) 25 mins. 8 mins. 10 - 15 mins.
	Dry Sanding: hand **machine** **Wet Sanding: hand**	360 - 400 400 - 500 400 - 600

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Technical Information

G PS

285-60 Universal HS Primer

Application: A high solids tintable primer surfacer and filler with outstanding wet sanding characteristics.

Properties: Fast drying even at low temperatures. High build, easy to apply. Good corrosion and weather resistance. Excellent topcoat holdout. Dry sandable if force dried.

Remarks:

- Use only unreduced 55-Line tinting bases to tint 285-60.
- Choose hardeners and reducers according to temperature and size of object to be painted.
- Use a guide coat to obtain better sanding results.
- Can be applied as a high build filler in 3-4 coats (6.0 mils max), however dry times will be lengthened.
- This primer may be elastified with 25-50% (by volume) of Elastifier Additive 522-111 or Low VOC Elastifier Additive 522-333 for use over flexible parts.

	Application	Primer filler	Primer surfacer (tinted)
	Paint System	B1, B3, B4, B5, B6, B7, B8, C1, C2, C3	B1, B3, B4, B5, B6, B7, B8, C1, C2, C3
	VOC ready for use	531 gms/liter; 4.4 lbs/gal	515 gms/liter; 4.3 lbs/gal
	Mixing ratio **Hardener** **Reducer**	4:1:1 100 parts by vol. 285-60 25 parts by vol. 929-51 or -53 25 parts by vol. 352-50, -91 or -216	**Step 1 - 2:1** 100 parts by vol. 285-60 50 parts by vol. 55-Line **Step 2 - 4:1:1** 100 parts by vol. mixture 25 parts by vol. 929-51 or -53 25 parts by vol. 352-25 or -45
	Spray viscosity DIN 4 at 68°F / 20°C	18 - 22 s	20 - 24 s
	Potlife at 68°F / 20°C	1 hr.	1 hr.
	Gravity cup / HVLP **Spraying pressure Conventional**	1.8 - 1.9 mm / 10 psi at air cap 1.4 - 1.8 mm / 45 - 60 psi	1.5 - 1.9 mm / 10 psi at air cap 1.4 - 1.8 mm / 45 - 60 psi
	Number of spray coats	2 - 4	2 - 4
	Film thickness	2.0 - 3.0 mils (6.0 mils max.)	2.0 - 3.0 mils (6.0 mils max.)
	Drying at 68°F / 20°C **at 140°F / 60°C** **Infrared short wave** **medium wave**	2 hrs. 30 mins. 2 mins. @ 50% + 6 mins. @ 100% 10 - 15 mins.	2 hrs. 30 mins. 2 mins. @ 50% +6 mins. @ 100% 10 - 15 mins.
	Dry Sanding: machine **Wet Sanding: hand**	320 - 360 (only after force drying) 400 - 600	320 - 360 (only after force drying) 400 - 600

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Technical Information

G PS

285-81 Dry Sand MS Primer Filler
Light Beige Chromate Free

Application: Primer filler / high build filler.

Properties: Medium-solids, high filling capacity, and good resistance to solvents and weathering conditions. Easy to sand.

Remarks:
- Choose hardeners and reducers according to temperature and size of object to be painted.
- Not suitable for flexible plastics - do not use Elastifier Additive 522-111 or Low VOC Elastifier Additive 522-333 with 285-81.
- Use a guide coat to obtain better sanding results.

	Application	Primer filler / high build filler
	**Paint System**	B1, B3, B5, B6, B7, B8, C2, C3
	VOC ready for use	566 gms/liter; 4.7 lbs/gal
  	**Mixing ratio** **Hardener** **Reducer**	4:1+10% 100 parts by volume 285-81 25 parts by volume 929-51 or -53 10 parts by volume 352-50, -91 or -216
	**Spray viscosity DIN 4 at 68°F / 20°C**	16 - 18 s
	Potlife at 68°F / 20°C	1.5 hrs.
	**Gravity cup / Spraying pressure**	HVLP: 1.3 - 1.5 mm / 10 psi at air cap Conventional: 1.5 - 1.6 mm / 45 - 60 psi
	**Number of spray coats**	2
	Film thickness	2.0 - 2.8 mils
 	**Drying at 68°F / 20°C** **at 140°F / 60°C** **Infrared short wave** **medium wave**	75 mins. (2.0 mils.) 20 mins. 5 mins. 8 mins.
	**Dry Sanding: hand** **machine**	320 320

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Technical Information

G PS

801-72 Epoxy Primer Filler
Grey

Application: Primer filler.

Properties: Good corrosion protection, high build, good finish, on bare metal, galvanized steel and aluminum.

Remarks:
- Chromate Free
- Minimum temperature for air drying: +60°F / 15°C.
- Best possible finish if 801-72 is force-dried.

	Application	Primer Filler
	Paint System	B1, B3, B6, B7, B8, C1, C2, C3, D.S1
	VOC ready for use	540 gms/liter; 4.5 lbs/gal
	Mixing ratio **Hardener** **Reducer**	4:1:1 100 parts by volume 801-72 25 parts by volume 965-60 25 parts by volume 352-91 or -216
	Spray viscosity DIN 4 at 68°F / 20°C	18 - 20 s
	Potlife at 68°F / 20°C	8 hrs.
	Gravity cup / Spraying pressure	HVLP: 1.7 - 1.9 mm / 10 psi at air cap Conventional: 1.6 - 1.8 mm / 45 - 60 psi
	Number of spray coats	2
	Film thickness	1.6 - 2.4 mils
	Flash-off at 68°F / 20°C	5 - 10 mins. between coats
	Drying at 68°F / 20°C **at 140°F / 60°C** **Infrared short wave** **medium wave**	8 hrs. 30 mins. 11 mins. 10 - 15 mins.
	Dry Sanding: machine **Wet Sanding: hand**	320 400 When used as a high build filler, coarse sand first with 240

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Technical Information

G PS

801-73 Low VOC Epoxy Primer

Application: Low VOC Epoxy Primer Filler.

Properties: Primer for galvanized sheets, aluminum and bare metal. Excellent corrosion protection, high filling ability, good solvent resistance and hold out of topcoat.

Remarks:
- Chromate Free
- With air drying a minimum temperature of 60°F/15°C is required.
- Prior to refinishing, remove all corrosion (e.g. rust) by blasting or sanding.

	Application	Primer Filler
	Paint System	B1, B3, B6, B7, B8, C1, C2, C3
	VOC ready for use	240 gms/liter; 2.0 lbs/ga
	Mixing ratio **Hardener** **Reducer**	4:1:1 100 parts by volume 801-73 25 parts by volume 965-61 25 parts by volume 352-25 or -45
	Spray viscosity DIN 4 at 68°F / 20°C	18 - 20 s
	Potlife at 68°F / 20°C	8 hrs.
	Gravity cup / Spraying pressure	HVLP: 1.5 mm / 10 psi at air cap Conventional: 1.6 mm / 45 - 60 psi
	Number of spray coats	1 - 2 medium wet coats
	Film thickness	1.5 - 2.5 mils
	Flash-off at 68°F / 20°C	60 mins.
	Drying at 68°F / 20°C **at 140°F / 60°C** **Infrared short wave** **medium wave**	8 - 10 hrs. 30 mins. 11 mins. 10 - 15 mins.
	Dry Sanding: machine **Wet Sanding: hand**	320 - 400 320 - 400 When used as a high build filler, coarse sand first with 240.

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Technical Information

G PS

801-703 Chromated Epoxy Primer

Application: Chromated Epoxy Primer Filler.

Properties: Primer for galvanized sheets, aluminum and bare metal. Excellent corrosion protection, high filling ability, good solvent resistance and hold out of topcoat.

Remarks:
- With air drying a minimum temperature of 60°F/15°C is required.
- Prior to refinishing, remove all corrosion (e.g. rust) by blasting or sanding.

	Application	Primer Filler
	Paint System	B1, B3, B6, B7, B8, C1, C2, C3
	VOC ready for use	540 gms/liter; 4.5 lbs/gal
	Mixing ratio	4:1:1 100 parts by volume 801-703
	Hardener	25 parts by volume 965-60
	Reducer	25 parts by volume 352-50, -91 or -216
	Spray viscosity DIN 4 at 68°F / 20°C	18 - 20 s
	Potlife at 68°F / 20°C	8 hrs.
	Gravity cup / Spraying pressure	HVLP: 1.5 mm / 10 psi at air cap Conventional: 1.6 mm / 45 - 60 psi
	Number of spray coats	2 - 3
	Film thickness	1.5 - 2.0 mils
	Flash-off at 68°F / 20°C	60 mins.
	Drying at 68°F / 20°C	8 - 10 hrs.
	Drying at 140°F / 60°C	30 mins.
	Infrared short wave	11 mins.
	Infrared medium wave	10 - 15 mins.
	Dry Sanding: machine	320 - 400
	Wet Sanding: hand	320 - 400

When used as a high build filler, coarse sand first with 240.

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G S Sealers

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Technical Information

G S

285-02 Low VOC Transparent Sealer

National Rule Recommendation

Application: Wet-on-wet sealer for National Rule areas.

Properties: May be elastified 25% - 50% with 522-333. No sanding before topcoating.

Remarks:
- Prime bare-metal exposure with Glasurit 283- etch primer filler, Glasurit 285-50, -60 or Glasurit 801-703.
- Prime raw plastic exposure with plastic adhesion promoter.

	Application	Untinted
	Paint System	B1, B1a, B3, B4, B5, B7, B8, C1, C2, C3
	VOC ready for use	510 gms/liter; 4.3 lbs/gal
	Mixing ratio **Hardener** **Reducer**	3:1:1 75 parts by vol. 285-02 25 parts by vol. 929-51 or -53 25 parts by vol. 352-50, -91 or -216
	Spray viscosity DIN 4 at 68°F / 20°C	12 - 16 s
	Potlife at 68°F / 20°C	1 hr.
	Gravity cup / Spraying pressure	HVLP: 1.3 - 1.4 mm / 10 psi at air cap
	Number of spray coats	1 - 2
	Film thickness	1.0 - 1.4 mils
	Flash-off at 68°F / 20°C	5 - 10 mins. between coats 15 - 20 mins. before topcoating
	Dry Sanding: hand	Dust nibs can be removed with 600 grit

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Technical Information

G S

285-02 Low VOC Transparent Sealer

Application: Wet-on-wet sealer for low VOC areas.

Properties: May be elastified 25% - 50% with 522-333. No sanding before topcoating. Tintable sealer with a near color match to the vehicle's exterior color. Excellent for painting jambs.

Remarks:
- Prime bare-metal exposure with Glasurit 283- etch primer filler, Glasurit 285-10, -20 or Glasurit 801-73.
- Prime raw plastic exposure with plastic adhesion promoter.
- When tinting, tint first, then elastify.

	Application	Untinted	Tinted
	**Paint System**	B1, B1a, B3, B4, B5, B7, B8, C1, C2, C3	B1, B1a, B3, B4, B5, B7, B8, C1, C2, C3
	VOC ready for use	189 gms/liter; 1.6 lbs/gal	241 gms/liter; 2.0 lbs/gal
	**Mixing ratio** **Hardener** **Reducer**	4:1:1 100 parts by vol. 285-02 25 parts by vol. 929-100, -110, -120 or -130 25 parts by vol. 352-25 or -45 For a smoother finish an extra part of reducer may be added (4:1:2).	**Step 1 - 10:1** 100 parts by vol. 285-02 10 parts by vol. 90-Line toner **Step 2 - 4:1:2** 100 parts by vol. mixture 25 parts by vol. 929-100, -110, -120 or -130 50 parts by vol. 352-25 or -45
	**Spray viscosity DIN 4 at 68°F / 20°C**	12 - 16 s	12 - 16 s
	Potlife at 68°F / 20°C	1 hr.	1 hr.
	**Gravity cup / Spraying pressure**	HVLP: 1.3 - 1.4 mm / 10 psi at air cap	HVLP: 1.3 - 1.4 mm / 10 psi at air cap
	**Number of spray coats**	1 - 2	1 - 2
	Film thickness	1.0 - 1.4 mils	1.0 - 1.4 mils
	**Flash-off at 68°F / 20°C**	5 - 10 mins. between coats 15 - 20 mins. before topcoating	5 - 10 mins. between coats 15 - 20 mins. before topcoating
	**Dry Sanding: hand**	Dust nibs can be removed with 600 grit	Dust nibs can be removed with 600 grit

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Technical Information

G S

285-18 Low VOC Sealer
White

Application: Wet-on-wet sealer for economical repairs.

Properties: No sanding; very safe to spray; good weathering resistance.

To get different grey colors, mix 285-18 with 285-29 Glasurit Low VOC Sealer black.

Remarks:

- Before sealer application, fine sand body-filled areas and old paintwork with 280 - 320 (dry). Use Guide Coat.
- Glasurit 285-18 will provide adequate adhesion and corrosion protection over steel and aluminum. For areas larger than 1 inch x 1 inch, Glasurit 285-18 should be applied over Glasurit 283-155 Etching Primer or Glasurit 801- Epoxy Primers.
- 285-18 may be elastified for use over flexible plastic parts by adding 25% (by volume) of Low VOC Elastifier Additive 522-333.
- 285-18 may be reduced with an additional part with 352-45 for improved flow. (4:1:2)
- 285-18 may be hardened with 929-210 for greater adhesion to aluminum substrate.

	Application	Wet-on-wet sealer
	Paint System	B1, B1a, B3, B4, B5, B7, B8, C1, C2, C3, D.S4
	VOC ready for use	216 gms/liter; 1.8 lbs/gal
	Mixing ratio **Hardener** **Reducer**	4:1:1 100 parts by volume 285-18 25 parts by volume 929-100, -110, -120 or -130 25 parts by volume 352-25 or -45
	Spray viscosity DIN 4 at 68°F / 20°C	16 - 18 s
	Potlife at 68°F / 20°C	1 - 2 hrs.
	Gravity cup / Spraying pressure	HVLP: 1.3 - 1.4 mm / 10 psi at air cap RP: 1.3 - 1.4 mm / 10 psi at air cap
	Number of spray coats	2
	Film thickness	0.8 - 1.4 mils
	Flash-off at 68°F / 20°C	15 - 20 mins.

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Technical Information

G S

285-21 2.1 VOC Primer

Application: A low VOC sealer with outstanding holdout for topcoat.

Properties: Fast drying at ambient temperatures. Excellent for baking application. Excellent corrosion/weather resistance.

Remarks:
- Choose hardeners according to temperature and size of areas to be painted.
- This sealer may be elastified with 25% (by volume) Low VOC Elastifier Additive 522-333 for use over flexible parts.

	Application	Wet-on-wet sealer
	**Paint System**	B1, B1a, B3, B5, B7, B8, C1, C2, C3
	VOC ready for use	240 gms/liter; 2.0 lbs/gal
	**Mixing ratio**	4:1:2 100 parts by vol. 285-21
	**Hardener**	25 parts by vol. 929-120 or -130
	**Reducer**	50 parts by vol. 352-25 or -45
	**Spray viscosity DIN 4 at 68°F / 20°C**	11 s
	Potlife at 68°F / 20°C	2 hrs.
	**Gravity cup / Spraying pressure**	HVLP: 1.3 - 1.4 mm / 10 psi at air cap
	**Number of spray coats**	1 - 2 medium wet coats
	Film thickness	0.75 - 1.25 mils
	**Flash-off at 68°F / 20°C**	5 mins. between coats; 20 mins. before topcoating

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Technical Information

G S

285-29 Low VOC Sealer
Black

Application: Wet-on-wet sealer for economical repairs.

Properties: No sanding; very safe to spray; good weathering resistance.

To get different grey colors, mix 285-29 with 285-18 Glasurit Low VOC Sealer white.

Remarks:

- Before sealer application, fine sand body-filled areas and old paintwork with 280 - 320 (dry). Use Guide Coat.
- Glasurit 285-29 will provide adequate adhesion and corrosion protection over steel and aluminum. For areas larger than 1 inch x 1 inch, Glasurit 285-29 should be applied over Glasurit 283-155 Etching Primer or Glasurit 801- Epoxy Primers.
- 285-29 may be elastified for use over flexible plastic parts by adding 25% (by volume) of Low VOC Elastifier Additive 522-333.
- 285-29 may be reduced with an additional part with 352-45 for improved flow. (4:1:2)
- 285-29 may be hardened with 929-210 for greater adhesion to aluminum substrate.

	Application	Wet-on-wet sealer
	Paint System	B1, B1a, B3, B4, B5, B7, B8, C1, C2, C3, D.S4
	VOC ready for use	216 gms/liter; 1.8 lbs/gal
	Mixing ratio **Hardener** **Reducer**	4:1:1 100 parts by volume 285-29 25 parts by volume 929-100, -110, -120 or -130 25 parts by volume 352-25 or -45
	Spray viscosity DIN 4 at 68°F / 20°C	16 - 18 s
	Potlife at 68°F / 20°C	1 - 2 hrs.
	Gravity cup / Spraying pressure	HVLP: 1.3 - 1.4 mm / 10 psi at air cap RP: 1.3 - 1.4 mm / 10 psi at air cap
	Number of spray coats	2
	Film thickness	0.8 - 1.4 mils
	Flash-off at 68°F / 20°C	15 - 20 mins.

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Technical Information

G S

285-38 HS Non-Sanding Sealer
White

Application: Wet-on-wet sealer for economical repairs.

Properties: To get different grey colors, mix 285-38 with 285-49 Glasurit Non-Sanding Sealer black. Color formulations are available (see AD2902G).

Remarks:
- Before filler application, fine sand body-filled areas and old paintwork with 280 - 320 (dry). Use Guide Coat.
- Glasurit 285-38 will provide adequate adhesion and corrosion protection over steel and aluminum. For areas larger than 1 inch x 1 inch, Glasurit 285-38 should be applied over Glasurit 283-155 Etching Primer or Glasurit 801- Epoxy Primers..

	Application	Wet-on-wet sealer
	**Paint System**	B1, B1a, B3, B4, B5, B7, B8, C1, C2, C3, D.S4, D.S4a
	VOC ready for use	540 gms/liter; 4.5 lbs/gal
  	**Mixing ratio** **Hardener** **Reducer**	2:1+30% 100 parts by volume 285-38 50 parts by volume 929-51 or -53 30 parts by volume 352-91 or -216
	**Spray viscosity DIN 4 at 68°F / 20°C**	16 - 18 s
	Potlife at 68°F / 20°C	2 hrs.
	**Gravity cup / Spraying pressure**	HVLP: 1.3 - 1.4 mm / 10 psi at air cap Conventional: 1.3 - 1.4 mm / 45 - 60 psi
	**Number of spray coats**	2 (one on body-filled area and one on entire surface to be painted)
	Film thickness	0.8 - 1.4 mils
	**Flash-off at 68°F / 20°C**	10 mins. solids 15 - 20 mins. topcoat / basecoat metallics (matte)

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Technical Information

G S

285-49 HS Non-Sanding Sealer
Black

Application: Wet-on-wet sealer for economical repairs.

Properties: To get different grey colors, mix 285-49 with 285-38 Glasurit Non-Sanding Sealer white. Color formulations are available (see AD2902G).

Remarks:
- Before filler application, fine sand body-filled areas and old paintwork with 280 - 320 (dry). Use Guide Coat.
- Glasurit 285-49 will provide adequate adhesion and corrosion protection over steel and aluminum. For areas larger than 1 inch x 1 inch, Glasurit 285-49 should be applied over Glasurit 283-155 Etching Primer or Glasurit 801- Epoxy Primers..

	Application	Wet-on-wet sealer
	**Paint System**	B1, B1a, B3, B4, B5, B7, B8, C1, C2, C3, D.S4, D.S4a
	VOC ready for use	540 gms/liter; 4.5 lbs/gal
  	**Mixing ratio** **Hardener** **Reducer**	2:1+30% 100 parts by volume 285-49 50 parts by volume 929-51 or -53 30 parts by volume 352-91 or -216
	**Spray viscosity DIN 4 at 68°F / 20°C**	16 - 18 s
	Potlife at 68°F / 20°C	2 hrs.
	**Gravity cup / Spraying pressure**	HVLP: 1.3 - 1.4 mm / 10 psi at air cap Conventional: 1.3 - 1.4 mm / 45 - 60 psi
	**Number of spray coats**	2 (one on body-filled area and one on entire surface to be painted)
	Film thickness	0.8 - 1.4 mils
	**Flash-off at 68°F / 20°C**	10 mins. solids 15 - 20 mins. topcoat / basecoat metallics (matte)

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Technical Information

G S

285-60 Universal HS Primer

Primer Filler (Sealer)

Application: A high solids primer surfacer that can be mixed as a tintable wet-on-wet sealer.

Properties: Tinted with 22-Line. Easy application. Excellent topcoat holdout. Good corrosion and weather resistance.

Remarks:

- **Do not use straight 22-Line mixing bases to tint 285-60, be sure to mix them first with 522-M0 (4:1 by volume).**
- Choose hardener according to temperature and size of areas to be painted.
- 285-60 may be elastified with 25-50% (by volume) Elastifier Additive 522-111 or Low VOC Elastifier Additive 522-333 for use over flexible parts.

	Application	Wet-on-wet sealer
	Paint System	B1, B3, B5, B7, B8, C1, C2, C3
	VOC ready for use	550 gms/liter; 4.6 lbs/gal maximum
	Mixing ratio **Hardener** **Reducer**	**Step 1 - 1:1** 100 parts by volume 285-60 100 parts by volume 22-Line (mixed 4:1 with 522-M0) **Step 2 - 2:1+30%** 100 parts by volume mixture 50 parts by volume 929-51 or -53 30 parts by volume 352-50, -91 or -216
	Spray viscosity DIN 4 at 68°F / 20°C	16 - 18 s
	Potlife at 68°F / 20°C	2 hrs.
	Gravity cup / Spraying pressure	HVLP: 1.3 - 1.4 mm / 10 psi at air cap Conventional: 1.4 - 1.7 mm / 45 - 60 psi
	Number of spray coats	1 - 2
	Film thickness	0.8 - 1.2 mils
	Flash-off at 68°F / 20°C	20 - 30 mins.

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Technical Information

G S

801-72 Epoxy Primer Filler
Grey

Application: Wet-on-wet sealer.

Properties: Good corrosion protection on bare steel, galvanized steel and aluminum.

Remarks:
- Chromate free
- Minimum temperature for air drying: +60°F / 15°C.

	Application	Wet-on-wet sealer
	**Paint System**	B1, B3, B7, B8, C1, C2, C3
	VOC ready for use	540 gms/liter; 4.5 lbs/gal
  	**Mixing ratio** **Hardener** **Reducer**	4:1:1 100 parts by volume 801-72 25 parts by volume 965-60 25 parts by volume 352-91 or -216
	**Spray viscosity DIN 4 at 68°F / 20°C**	18 - 20 s
	Potlife at 68°F / 20°C	8 hrs.
	**Gravity cup / Spraying pressure**	HVLP: 1.3 - 1.4 mm / 10 psi at air cap
	**Number of spray coats**	1/2 + 1
	Film thickness	1.0 - 1.4 mils
	**Flash-off at 68°F / 20°C**	20 mins.

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Technical Information

G S

801-73 Low VOC Epoxy Primer

Application: Low VOC Epoxy Primer Sealer.

Properties: Primer sealer for properly prepared galvanized sheets, aluminum and bare metal. Excellent corrosion protection, high filling ability, good solvent resistance and hold out of topcoat.

Remarks:
- Chromate free
- With air drying a minimum temperature of 60°F/15°C is required.
- Prior to refinishing, remove all corrosion (e.g. rust) by blasting or sanding.

	Application	Primer Sealer
	**Paint System**	B1, B3, B7, B8, C1, C2, C3
	VOC ready for use	240 gms/liter; 2.0 lbs/gal
	**Mixing ratio**	4:1:1 100 parts by volume 801-73
	**Hardener**	25 parts by volume 965-61
	**Reducer**	25 parts by volume 352-25 or -45
	**Spray viscosity DIN 4 at 68°F / 20°C**	18 - 20 s
	Potlife at 68°F / 20°C	8 hrs.
	**Gravity cup / Spraying pressure**	HVLP: 1.5 mm / 10 psi at air cap Conventional: 1.6 mm / 45 - 60 psi
	**Number of spray coats**	1 medium wet coat
	Film thickness	1.0 mil
	**Flash-off at 68°F / 20°C**	60 mins.

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Technical Information

G S

801-703 Chromated Epoxy Primer

Application: Chromated Epoxy Primer Sealer.

Properties: Primer sealer for properly prepared galvanized sheets, aluminum and bare metal. Excellent corrosion protection, good solvent resistance and hold out of topcoat.

Remarks:
- With air drying a minimum temperature of 60°F/15°C is required.
- Prior to refinishing, remove all corrosion (e.g. rust) by blasting or sanding.

	Application	Primer Sealer
	**Paint System**	B1, B3, B7, B8, C1, C2, C3
	VOC ready for use	540 gms/liter; 4.5 lbs/gal
  	**Mixing ratio** **Hardener** **Reducer**	4:1:1 100 parts by volume 801-703 25 parts by volume 965-60 25 parts by volume 352-50, -91 or -216
	**Spray viscosity DIN 4 at 68°F / 20°C**	18 - 20 s
	Potlife at 68°F / 20°C	8 hrs.
	**Gravity cup / Spraying pressure**	HVLP: 1.5 mm / 10 psi at air cap Conventional: 1.6 mm / 45 - 60 psi
	**Number of spray coats**	1 - 2
	Film thickness	1.0 - 1.4 mils
	**Flash-off at 68°F / 20°C**	20 mins.

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G T Topcoats

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Technical Information

G T

22-Line Urethane Acrylic

55-9100 Velvet Silver

55-9190 Velvet Silver II

Application: High solids, 2 component urethane acrylic topcoat with fast drying and excellent adhesion.

Properties: Ideal properties that give good flow, film build, hardness and gloss. Superior resistance to salt, yellowing, gasoline, adverse weather conditions and industrial pollution. Two-coat application with HS hardener.

Substrates:

- Choose hardener and reducer according to temperature and size of object to be painted.
- New tinting bases must be shaken for 15 minutes on a mechanical paint shaker before placing on a mixing machine. To ensure good color match, agitate tinting bases on a mixing machine for 15 minutes at the beginning of the day, and every 4 hours during the work day.
- Tinting bases should not be used straight, they must be mixed with 522-M0 **(4:1 by volume)** before use.
- To polish or remove dust particles: after 24 hrs. air dry, or when cool after force drying, wet sand with 1200 grit or finer sandpaper, then polish with fine polishing compound and/or liquid polish. Two mils (dry film) of color must remain after polishing. If extensive color sanding is anticipated, apply an additional coat of color.

	Application	Single stage topcoat
	Paint System	B7, B9, C3, D.S1, D.S3, D.S3a, D.S4, D.S4a, D.S7
	VOC ready for use	Refer to mixed color formula to calculate applied VOC.
	Mixing ratio **Hardener** **Reducer**	2:1+10% 100 parts by volume 22-Line 50 parts by volume 929-91, -93 or -94 10 parts by volume 352-50, -91, -216 or -319
	Spray viscosity DIN 4 at 68°F / 20°C	20 - 22 s
	Potlife at 68°F / 20°C	2 - 3 hrs.
	Gravity cup / Spraying pressure	HVLP: 1.2 - 1.4 mm / 10 psi at air cap (max.) Conventional: 1.3 - 1.5 mm / 45 - 60 psi
	Number of spray coats	2 - 3
	Film thickness	2.0 - 2.8 mils
	Flash-off at 68°F / 20°C	3 mins. between coats
	Drying at 68°F / 20°C **at 140°F / 60°C** **Infrared short wave** **medium wave**	8 hrs. 30 mins. 7 - 10 mins. 15 mins.

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Technical Information

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22-Line Urethane Acrylic

340 gms/liter (2.8 lbs/gal) VOC

Application: 22-Line color is an acrylic urethane enamel to be applied as a single stage finish over well cured old paintwork and primers. 22-Line colors, when mixed with the appropriate hardener, reducer and Low VOC mixing clear, meet the 340 gms/liter (2.8 lbs/gal) VOC system requirement.

Remarks:

- Choose hardener and reducer according to temperature and size of object to be painted.
- New tinting bases must be shaken for 15 minutes on a mechanical paint shaker before placing on a mixing machine. To ensure good color match, agitate tinting bases on a mixing machine for 15 minutes at the beginning of the day, and every 4 hours during the work day.
- Tinting bases should not be used straight, they must be mixed with 522-MC35 **(4:1 by volume)** before use.
- To polish or remove dust particles: after 24 hrs. air dry, or when cool after force drying, wet sand with 1200 grit or finer sandpaper, then polish with fine polishing compound and/or liquid polish. Two mils (dry film) of color must remain after polishing. If extensive color sanding is anticipated, apply an additional coat of color.

	Application	Single stage topcoat
	**Paint System**	B7, B9, C3, D.S1, D.S3, D.S3a, D.S4, D.S4a, D.S7
	VOC ready for use	Refer to mixed color formula to calculate applied VOC.
  	**Mixing ratio** **Hardener** **Reducer**	2:1+10% 100 parts by volume 22-Line 50 parts by volume 929-100, -110, -120 or -130 10 parts by volume 352-25 or -45
	**Spray viscosity DIN 4 at 68°F / 20°C**	20 - 24 s
	Potlife at 68°F / 20°C	90 mins.
	**Gravity cup / Spraying pressure**	HVLP: 1.3 mm / 10 psi at air cap (max.)
	**Number of spray coats**	2
	Film thickness	2.2 - 3.0 mils
	**Flash-off at 68°F / 20°C**	5 mins. between coats
 	**Drying at 68°F / 20°C** **at 140°F / 60°C** **Infrared short wave** **medium wave**	Tack free in 8 hrs. 30 mins. 7 mins. 10 mins.

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22-Line Urethane Acrylic

420 gms/liter (3.5 lbs/gal) VOC

Application: 22-Line color is an acrylic urethane enamel to be applied as a single stage finish over well cured old paintwork and primers. 22-Line colors, when mixed with the appropriate hardener, reducer and Low VOC mixing clear, meet the 420 gms/liter (3.5 lbs/gal) VOC system requirement.

Remarks:

- Choose hardener and reducer according to temperature and size of object to be painted.
- New tinting bases must be shaken for 15 minutes on a mechanical paint shaker before placing on a mixing machine. To ensure good color match, agitate tinting bases on a mixing machine for 15 minutes at the beginning of the day, and every 4 hours during the work day.
- Tinting bases should not be used straight, they must be mixed with 522-MC35 **(4:1 by volume)** before use.
- To polish or remove dust particles: after 24 hrs. air dry, or when cool after force drying, wet sand with 1200 grit or finer sandpaper, then polish with fine polishing compound and/or liquid polish. Two mils (dry film) of color must remain after polishing. If extensive color sanding is anticipated, apply an additional coat of color.

	Application	Single stage topcoat
	**Paint System**	B7, B9, C3, D.S1, D.S3, D.S3a, D.S4, D.S4a, D.S7
	VOC ready for use	Refer to mixed color formula to calculate applied VOC for a specific color. 420 gms/liter (3.5 lbs/gal) VOC is the maximum
  	**Mixing ratio** **Hardener** **Reducer**	2:1+10% 100 parts by volume 22-Line 50 parts by volume 929-100, -110, -120 or -130 10 parts by volume 352-50, -91 or -216
	**Spray viscosity DIN 4 at 68°F / 20°C**	20 - 24 s
	Potlife at 68°F / 20°C	90 mins.
	**Gravity cup / Spraying pressure**	HVLP: 1.3 mm / 10 psi at air cap (max.)
	**Number of spray coats**	2
	Film thickness	2.2 - 3.0 mils
	**Flash-off at 68°F / 20°C**	5 mins. between coats
 	**Drying at 68°F / 20°C** **at 140°F / 60°C** **Infrared short wave** **medium wave**	Tack free in 8 hrs. 30 mins. 7 mins. 10 mins.

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55-Line Basecoat Metallic / Solid

Application: Basecoat/Clearcoat (BC/CC). Wet-on-wet process with clear 923-.

Remarks:

- Be sure to observe flash-off times between spray coats.
- Clearcoat as soon as possible (after proper flash-off) to minimize dirt or other substances landing on the basecoat.
- New tinting bases must be shaken for 15 minutes on a mechanical paint shaker before placing on a mixing machine. To ensure good color match, agitate tinting bases on a mixing machine for 15 minutes at the beginning of the day, and every 4 hours during the work day.
- When completing a repair, it may not be possible to obtain an exact panel-to-panel color match. Where color variations are expected, or where there is no natural break (such as a seam or trim strip), it is more practical to blend the color into the areas surrounding the repair. Blending in can be more economical and efficient than time-consuming color tinting.

	Application	Basecoat
	**Paint System**	B7, B10, C2, D.S1, D.S3, D.S3a, D.S4a, D.S8, D.S8.1, D.S8.2
	VOC ready for use	Refer to mixed color formula to calculate applied VOC.
	**Mixing ratio** **Reducer**	2:1 100 parts by volume 55-Line 50 parts by volume 352-50, -91 or -216
	**Spray viscosity DIN 4 at 68°F / 20°C**	15 - 18 s
	Potlife at 68°F / 20°C	indefinite
	**Gravity cup / Spraying pressure**	HVLP: 1.2 - 1.4 mm / 10 psi at air cap (max.) Conventional: 1.3 - 1.5 mm / 45 - 55 psi
	**Number of spray coats**	2 (to hiding) plus 1/2 to match effect
	Film thickness	0.6 - 0.8 mil (1.5 mils max.)
	**Flash-off at 68°F / 20°C**	3 - 5 mins. between coats 10 mins. or until matte before next step

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55-Line Basecoat Metallic / Solid

Application: Basecoat/Clearcoat (BC/CC). Wet-on-wet process with clear 923-.

Remarks:

- Be sure to observe flash-off times between spray coats.
- Clearcoat as soon as possible (after proper flash-off) to minimize dirt or other substances landing on the basecoat.
- New tinting bases must be shaken for 15 minutes on a mechanical paint shaker before placing on a mixing machine. To ensure good color match, agitate tinting bases on a mixing machine for 15 minutes at the beginning of the day, and every 4 hours during the work day.
- When completing a repair, it may not be possible to obtain an exact panel-to-panel color match. Where color variations are expected, or where there is no natural break (such as a seam or trim strip), it is more practical to blend the color into the areas surrounding the repair. Blending in can be more economical and efficient than time-consuming color tinting.

	Application	Basecoat with hardener
	**Paint System**	B7, B9, B10, C2, D.S1, D.S3, D.S3a, D.S4a, D.S8, D.S8.1, D.S8.2
	VOC ready for use	Refer to mixed color formula to calculate applied VOC.
  	**Mixing ratio** **Hardener** **Reducer**	10:1:4 100 parts by volume 55-Line 10 parts by volume 355-55 40 parts by volume 352-50, -91 or -216
	**Spray viscosity DIN 4 at 68°F / 20°C**	17 - 22 s
	Potlife at 68°F / 20°C	24 hrs.
	**Gravity cup / Spraying pressure**	HVLP: 1.2 - 1.4 mm / 10 psi at air cap (max.) Conventional: 1.3 - 1.5 mm / 45 - 55 psi
	**Number of spray coats**	2 (to hiding) plus 1/2 to match effect
	Film thickness	0.6 - 0.8 mil (1.5 mils max.)
	**Flash-off at 68°F / 20°C**	5 - 10 mins. between coats 10 mins. or until matte before next step

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55-Line Extreme Colors

Application: Basecoat/Clearcoat (BC/CC) with a holographic effect.

Remarks:

- Ensure the Extreme Color has been thoroughly shaken and stirred prior to use. Stir every 2 hours for best results.
- 55-Line Extreme Colors are sprayed exactly like other 55-Line basecoat colors. For basecoat colors, spray 2 coats of color to achieve hiding. For tricoat colors, spray groundcoat to hiding, allow 10 - 15 minutes flash, and then apply midcoat color. Allow 10 - 15 minutes flash time prior to clearcoat application.
- For extra control of Extreme mid-coats, add up to 30% (max) 55-M0 Mixing Clear to the unreduced color.
- If using low VOC clearcoats, check local wallcharts to ensure correct basecoat mixture is used.
- Refer to 55-Line technical data sheet for additional remarks.

	Application	Basecoat	Basecoat with hardener
	**Paint System**	B7, B10, C2, D.S1, D.S3, D.S3a, D.S4a, D.S8, D.S8.1, D.S8.2	B7, B9, B10, C2, D.S1, D.S3, D.S3a, D.S4a, D.S8, D.S8.1, D.S8.2
	VOC ready for use	Refer to mixed color formula to calculate applied VOC.	Refer to mixed color formula to calculate applied VOC.
	**Mixing ratio**	2:1 100 parts by volume 55-Line	10:1:4 100 parts by volume 55-Line
	**Hardener**		10 parts by volume 355-55
	**Reducer**	50 parts by volume 352-50, -91 or -216	40 parts by volume 352-50, -91 or -216
	**Spray viscosity DIN 4 at 68°F / 20°C**	15 - 18 s	17 - 22 s
	Potlife at 68°F / 20°C	2 hrs.	8 hrs.
	**Gravity cup / HVLP Spraying pressure Conventional**	1.2 - 1.4 mm / 10 psi at air cap (max.) 1.3 - 1.5 mm / 45 - 55 psi	1.2 - 1.4 mm / 10 psi at air cap (max.) 1.3 - 1.5 mm / 45 - 55 psi
	**Number of spray coats**	2 (to hiding) plus 1/2 to match effect	2 (to hiding) plus 1/2 to match effect
	Film thickness	0.6 - 0.8 mil (1.5 mils max.)	0.6 - 0.8 mil (1.5 mils max.)
	**Flash-off at 68°F / 20°C**	3 - 5 mins. between coats 10 mins. or until matte before next step	5 - 10 mins. between coats 10 mins. or until matte before next step

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55-9100 - 55-Line Basecoat
Velvet Silver

Properties: Basecoat/clearcoat system containing extremely fine aluminum flakes to obtain a chrome-like glossy finish. A uniform, black and level substrate is necessary to achieve the desired effect unless otherwise stated in the intermix formulations.

Substrates: Well-cured old paint work
Glasurit 285-, 185-, and 151- HS Primer Fillers
Glasurit 285-, 801- Primer Fillers
Glasurit 285- Filler Surfacers

Cleaning	**541-5 Silicone and Tar Remover**	1x	Wipe dry	400	600	**541-5 Silicone and Tar Remover**	1x	Wipe dry

Ground coat: 55-Line Basecoat (black)	**55-Line Basecoat**	**355-55 Basecoat Activator**	**352- Reducer**	10:1:4	HVLP 1.2-1.3 mm (30-53 psi)	2	approx. 10 mins.			

or

Ground coat: 22-Line Topcoat (black)	**22-Line Urethane Acrylic**	**929- HS Hardener**	**352- Reducer**	2:1+10%	HVLP 1.2-1.3 mm (30-53 psi)	2	30 mins. at 140°F/60°C	7-10 mins.	800-1200	
Basecoat, Velvet Silver	**55-9100 Basecoat**	**355-55 Basecoat Activator**	**352- Reducer**	10:1:4	HVLP 1.2-1.3 mm (30-53 psi)	3 thin coats + 1 half coat	approx. 10 mins.			
Clear	**923- Clear**	**929- HS Hardener**	**352- Reducer**	See technical data sheet	HVLP 1.2-1.3 mm (30-53 psi)	2	30 mins. at 140°F/60°C	7 - 10 mins.		

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55-9190 - 55-Line Basecoat

Velvet Silver II

Application: Basecoat containing extremely fine aluminum particles to obtain a chrome-like glossy finish. A uniform, black and level substrate is necessary to achieve the desired effect.

Properties: 55-9190 is only compliant in National Rule areas. To meet USEPA National Rule VOC regulations, a 3.5 VOC or lower clearcoat must be used. Check your local regulations for detailed VOC requirements.

Substrates: Well-cured old paint work
Glasurit 285-,185-, and 151- HS Primer Fillers
Glasurit 285-, 801- Primer Fillers
Glasurit 285- HS Filler/Surfacers

Cleaning	**541-5 Silicone and Tar Remover**	1x	Wipe dry	320	400	**541-5 Silicone and Tar Remover**	1x	Wipe dry	
Ground coat: 55-Line Basecoat (black)	**55-Line Basecoat**	**355-55 Basecoat Activator**	**352- Reducer**	10:1:4	HVLP 1.2-1.3 mm (30-53 psi)	2	approx. 10 mins.		

or

Ground coat: 22-Line Topcoat (black)	**22-Line Urethane Acrylic**	**929- HS Hardener**	**352- Reducer**	2:1+10%	HVLP 1.2-1.3 mm (30-53 psi)	2	30 mins. at 60°C/140°F	7 - 10 mins.	400- 600
Basecoat, Velvet Silver II	**55-9190 Basecoat**	**355-55 Basecoat Activator**	10:1	HVLP 1.2-1.3 mm (30-53 psi)	3 thin coats + 1 half coat	approx. 10 mins.			
Clear 3.5 VOC or lower	**Glasurit 923-35 -135 -200 -222**	**929- HS Hardener**	**352- Reducer**	See technical data sheet	See technical data sheet	2	See technical data sheet	See technical data sheet	

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55-Interior - 55-Line Basecoat
Metallic/Solid

Properties: Basecoat to be used in interior applications, clearcoat is not necessary.

Substrates: See Section; D.S3, D.S3a - Plastic Painting System

Remarks: See technical information on 55-Line for more information.

	**Paint System**	B7, B9, D.S3, D.S3a
	VOC ready for use	Refer to mixed color formula to calculate applied VOC.
	**Mixing ratio**	10:1:4 100 parts by vol. 55-Line
	**Hardener**	10 parts by vol. 355-55
	**Reducer**	40 parts by vol. 352-50, -91 or -216
	**Spray viscosity DIN 4 at 68°F / 20°C**	17 - 22 s
	Potlife at 68°F / 20°C	24 hrs.
	**Gravity cup / Spraying pressure**	HVLP: 1.2 - 1.4 mm / 10 psi at air cap (max.) Conventional: 1.3 - 1.5 mm / 45 - 55 psi
	**Number of spray coats**	2 (to hiding) plus 1/2 to match effect
	Film thickness	0.6 - 0.8 mil (1.5 mils max.)
	**Flash-off at 68°F / 20°C**	5 - 10 mins. between coats or until matte
	**Drying at 68°F / 20°C**	20 mins.

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90-Line Basecoat Metallics / Solids

Solids/Metallic/Pearl/Multi-effect

Application: Metallic and solid color basecoat/clearcoat finish. Wet-on-wet process with Glasurit Clears 923-.

Remarks:

- Use water to clean tools. Paint residue dried to the tools can be removed with 700-1.
- Collect and dispose all paint-related waste, including water used to clean tools, in accordance with local, state and federal regulations. Refer to 700-7 technical data sheet for more information.
- Use of an air jet will significantly reduce the flash-off time of 90-Line.
- New tinting bases must be shaken for 15 minutes on a mechanical paint shaker before placing on a mixing machine. To ensure good color match, agitate tinting bases on a mixing machine for 15 minutes at the beginning of the day, and every 4 hours during the work day.
- The following 90-Line materials have reduced shelf lives and must be protected from freezing: 90-M4, 90-M4EDT, 90-M4S, 93-E3, 93-E3S and 90-M5 (12 months from the date of manufacture).
- For ease of blending, the over reduction of up to 80% is recommended.
- It is important to prepare the 90-Line as follows: Mix Color as per formula, mix well until uniform, add 93-E3, mix well until uniform, finally strain before application.

	Application	Basecoat
	**Paint System**	B7, B10, C1, D.S1, D.S3, D.S3a, D.S4a, D.S9, D.S9.1, D.S9.2, D.S12
	VOC ready for use	420 gms/liter; 3.5 lbs/gal or less
	**Mixing ratio** **Reducer**	2:1 100 parts by volume 90-Line (Mix intermix formula well prior to addition of any 93-E3 or 93-E3S) 50 - 80 parts by volume 93-E3 or 93-E3S **(Mix well IMMEDIATELY after addition)** *When using 90-M4S in the mixing formula, 90-E3S must also be used.*
	**Spray viscosity DIN 4 at 68°F / 20°C**	18 - 24 s
	Potlife at 68°F / 20°C	Mixed according to formula stored in plastic or lined cans - 6 month
	**Gravity cup / Spraying pressure**	HVLP: 1.2 - 1.5 mm / 10 psi at air cap (max.)
	**Number of spray coats**	2 plus 1/2 to harmonize the effect (appearance)
	Film thickness	0.4 - 1.0 mil
	**Flash-off at 68°F / 20°C**	Until matte after each coat 2 - 3 mins. or until matte before next step
	Sanding	Dirt nibs can be removed with a fine sanding pad, then blend in the area.

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90-Line Basecoat Metallics / Solids

Solids/Metallic/Pearl/Multi-effect

Application: Metallic and solid color basecoat/clearcoat finish. Wet-on-wet process with Glasurit Clears 923-.

Remarks:

- Use water to clean tools. Paint residue dried to the tools can be removed with 700-1.
- Collect and dispose all paint-related waste, including water used to clean tools, in accordance with local, state and federal regulations. Refer to 700-7 technical data sheet for more information.
- Use of an air jet will significantly reduce the flash-off time of 90-Line.
- New tinting bases must be shaken for 15 minutes on a mechanical paint shaker before placing on a mixing machine. To ensure good color match, agitate tinting bases on a mixing machine for 15 minutes at the beginning of the day, and every 4 hours during the work day.
- The following 90-Line materials have reduced shelf lives and must be protected from freezing: 90-M4, 90-M4EDT, 90-M4S, 93-E3, 93-E3S and 90-M5 (12 months from the date of manufacture).
- For ease of blending, the over reduction of up to 80% is recommended.
- It is important to prepare the 90-Line as follows: Mix Color as per formula, mix well until uniform, add 590-100, mix well until uniform, add 93-E3, mix well until uniform, finally strain before application.

	Application	Basecoat with hardener
	Paint System	B7, B9, B10, C1, D.S1, D.S3, D.S3a, D.S4a, D.S9, D.S9.1, D.S9.2, D.S12
	VOC ready for use	371 gms/liter; 3.3 lbs/gal or less
	Mixing ratio **Hardener** **Reducer**	10:0.5:4 100 parts by volume 90-Line (Mix intermix formula well prior to addition of any 93-E3 or 93-E3S) 5 parts by volume 590-100 40 - 80 parts by volume 93-E3 or 93-E3S **(Mix well IMMEDIATELY after addition)** *When using 90-M4S in the mixing formula, 90-E3S must also be used.*
	Spray viscosity DIN 4 at 68°F / 20°C	23 - 31 s
	Potlife at 68°F / 20°C	24 hrs.
	Gravity cup / Spraying pressure	HVLP: 1.2 - 1.5 mm / 10 psi at air cap (max.)
	Number of spray coats	2 plus 1/2 to harmonize the effect (appearance)
	Film thickness	0.4 - 1.0 mil
	Flash-off at 68°F / 20°C	Until matte after each coat 2 - 3 mins. or until matte before next step
	Sanding	Dirt nibs can be removed with a fine sanding pad, then blend in the area.

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90-Line Basecoat

Underhood (Low VOC)

Application: 90-Line Basecoat to be used for underhood coating without clearcoating.

Remarks:
- New tinting bases must be shaken for 15 minutes on a mechanical paint shaker before placing on a mixing machine. To ensure good color match, agitate tinting bases on a mixing machine for 15 minutes at the beginning of the day, and every 4 hours during the work day.

	Application	Basecoat with 285-02 Low VOC
	VOC ready for use	< 340 gms/liter; < 2.8 lbs/gal or less
	**Mixing ratio**	70 parts by volume 285-02 30 parts by volume 90-Line Toner(s) (no 90-M4 or 93-E3)
	**Hardener**	25 parts by volume 929-100, -110, -120 or -130
	**Reducer**	25 parts by volume 352-25 or -45
	**Spray viscosity DIN 4 at 68°F / 20°C**	11 - 13 s
	Potlife at 68°F / 20°C	3 hrs.
	**Gravity cup / Spraying pressure**	HVLP: 1.3 mm / 10 psi at air cap (max.)
	**Number of spray coats**	2
	Film thickness	1.2 - 1.6 mils
	**Flash-off at 68°F / 20°C**	5 minutes
	**Drying at 68°F / 20°C** **at 140°F / 60°C**	2 hrs. 30 mins.

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90-M15 Underhood Converter

National Rule

Application: 90-M15 is an underhood and interior solution for 90-Line. It can be used without clearcoating.

Remarks:

- New tinting bases must be shaken for 15 minutes on a mechanical paint shaker before placing on a mixing machine. To ensure good color match, agitate tinting bases on a mixing machine for 15 minutes at the beginning of the day, and every 4 hours during the work day.
- 90-M15 is better hiding, better coverage, more durable (because of the use of hardener) and fast drying (not tacky).
- Shaken by hand or by machine is recommended before use.
- For white colors, additional toner may be needed.

	Application	Basecoat with 90-M15 National Rule
	VOC ready for use	600 gms/liter; 5.0 lbs/gal
	**Mixing ratio**	91.0 grams 90-M15 9.0 grams 90-Line Toner(s) (no 90-M4 or 93-E3)
	**Color**	100 parts by volume Mixed Color
	Hardener	10 parts by volume 929-91 , -93 or -94
	**Reducer**	10 parts by volume 352-50 or -91 (may use up to 20%) *For directions on adding more toner please see SmartTrak.
	**Spray viscosity DIN 4 at 68°F / 20°C**	15 - 16 s
	Potlife at 68°F / 20°C	2 hrs.
	**Gravity cup / Spraying pressure**	HVLP: 1.3 mm / 10 psi at air cap (max.)
	**Number of spray coats**	2 - 3 (depending on color used)
	Film thickness	1.8 - 2.8 mils (depending on number of coats)
	**Flash-off at 68°F / 20°C**	5 - 10 mins.
	**Drying at 68°F / 20°C** **at 140°F / 60°C**	20 mins. to 1 hr. (depending on color and number of coats) 30 mins.

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90-M15 Underhood Converter

Low VOC

Application: 90-M15 is an underhood and interior solution for 90-Line. It can be used without clearcoating.

Remarks:

- New tinting bases must be shaken for 15 minutes on a mechanical paint shaker before placing on a mixing machine. To ensure good color match, agitate tinting bases on a mixing machine for 15 minutes at the beginning of the day, and every 4 hours during the work day.
- 90-M15 is better hiding, better coverage, more durable (because of the use of hardener) and fast drying (not tacky).
- Shaken by hand or by machine is recommended before use.
- For white colors, additional toner may be needed.

	Application	Basecoat with 90-M15 Low VOC
	VOC ready for use	340 gms/liter or less; 2.8 lbs/gal
	**Mixing ratio**	91.0 grams 90-M15 9.0 grams 90-Line Toner(s) (no 90-M4 or 93-E3)
	**Color**	100 parts by volume Mixed Color
	Hardener	10 parts by volume 929-100, -110, -120 or -130
	**Reducer**	10 parts by volume 352-45 (may use up to 20%)
		*For directions on adding more toner please see SmartTrak.
	**Spray viscosity DIN 4 at 68°F / 20°C**	14 - 15 s
	Potlife at 68°F / 20°C	2 hrs.
	**Gravity cup / Spraying pressure**	HVLP: 1.3 mm / 10 psi at air cap (max.)
	**Number of spray coats**	2 - 3 (depending on color used)
	Film thickness	1.8 - 2.8 mils (depending on number of coats)
	**Flash-off at 68°F / 20°C**	5 - 10 mins.
	**Drying at 68°F / 20°C** **at 140°F / 60°C**	20 mins. to 1 hr. (depending on color and number of coats) 30 mins.

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90-M15 as a Ground Coat
Low VOC

Application: 90-M15 is a solution for poor hiding ground coats in 90-Line.

Remarks:
- 90-M15 must be vigorously shaken prior to each use.
- New tinting bases must be shaken for 15 minutes on a mechanical paint shaker before placing on a mixing machine. To ensure good color match, agitate tinting bases on a mixing machine for 15 minutes at the beginning of the day, and every 4 hours during the work day.
- 90-M15 is better hiding, better coverage, more durable (because of the use of hardener) and fast drying (not tacky).
- For white colors, additional toner may be needed.

	Application	Basecoat with 90-M15 Low VOC
	VOC ready for use	340 gms/liter or less; 2.8 lbs/gal
	**Mixing ratio**	91.0 grams 90-M15 9.0 grams 90-Line Toner(s) (no 90-M4 or 93-E3)
	**Color**	100 parts by volume Mixed Color
	Hardener	10 parts by volume 929-100, -110, -120 or -130
	**Reducer**	10 parts by volume 352-45 (may use up to 20%) *For directions on adding more toner please see SmartTrak.
	**Spray viscosity DIN 4 at 68°F / 20°C**	14 - 15 s
	Potlife at 68°F / 20°C	2 hrs.
	**Gravity cup / Spraying pressure**	HVLP: 1.3 mm / 10 psi at air cap (max.)
	**Number of spray coats**	2 - 3 (depending on color used)
	Film thickness	1.8 - 2.8 mils (depending on number of coats)
	**Flash-off at 68°F / 20°C**	5 - 10 mins.
	**Drying at 68°F / 20°C** **at 140°F / 60°C**	20 mins. to 1 hr. (depending on color and number of coats) 30 mins.

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G C Clearcoats

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Technical Information

G C

923-27 Rocker Guard

Application: Texture clear for 55- and 90-Line basecoat/clearcoat systems and under low VOC clearcoats

Remarks:
- Choose hardener according to temperature and size of object to be painted.
- Must be clearcoated
- Should be clearcoated within 30 minutes.

	Application	Rocker Guard
	**Paint System**	B9, B10, C1, C2
	VOC ready for use	250 gms/liter; 2.0 lbs/gal
 	**Mixing ratio** **Hardener**	2:1 100 parts by volume 923-27 50 parts by volume 929-100, -110, -120 or -130
	**Spray viscosity DIN 4 at 68°F / 20°C**	> 50 s
	Potlife at 68°F / 20°C	1.5 hrs.
	**Gravity cup / Spraying pressure**	HVLP: 1.7 mm / 6 - 8 psi at air cap
	**Number of spray coats**	2
	Film thickness	1.0 - 2.0 mils
	**Flash-off at 68°F / 20°C**	5 mins. between coats 10 - 20 mins. before clearcoating
	**Drying at 68°F / 20°C** **at 140°F / 60°C**	5 hrs. (after clearcoating) 30 mins. (after clearcoating)

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Technical Information

G C

923-52 Low VOC Matte Clear

Application: Extra matte clear 90-Line basecoat/clearcoat systems.

Properties: Extra matte, plasticized (<10 at 20° angle).

Remarks:
- Suitable for repairing flexible bumper original finishes.
- Choose hardener and reducer according to temperature and size of object to be painted.
- Buffing or polishing 923-52 will increase the gloss level.

	Application	Clearcoat over basecoat
	**Paint System**	B9, B10, C1
	VOC ready for use	191 gms/liter; 1.6 lbs/gal
	**Mixing ratio**	2:1+30% 100 parts by volume 923-52
	**Hardener**	50 parts by volume 929-100, -110, -120 or -130
	**Reducer**	30 parts by volume 352-45
	**Spray viscosity DIN 4 at 68°F / 20°C**	12 - 14 s
	Potlife at 68°F / 20°C	3 hrs.
	**Gravity cup / Spraying pressure**	HVLP: 1.2 - 1.3 mm / 10 psi at air cap
	**Number of spray coats**	2
	Film thickness	1.8 - 2.0 mils
	**Flash-off at 68°F / 20°C**	Flash off until matte between coats and before baking.
	**Drying at 68°F / 20°C** **at 140°F / 60°C**	5 hrs. 30 mins.
	**Infrared short wave** **medium wave**	8 mins. 10 - 15 mins.

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Technical Information

G C

923-55 Urethane Acrylic Extra Matte Clear

Application: Extra matte clear 55-, 90-Line basecoat/clearcoat systems.

Properties: Extra matte, plasticized (<10 at 20° angle).

Remarks:
- Suitable for repairing flexible bumper original finishes.
- Choose hardener and reducer according to temperature and size of object to be painted.
- Buffing or polishing 923-55 will increase the gloss level.

	Application	Clearcoat over basecoat
	**Paint System**	B9, B10, C1, C2, D.S12
	VOC ready for use	840 gms/liter; 7.0 lbs/gal
	**Mixing ratio**	2:1+10% 100 parts by volume 923-55
	**Hardener**	50 parts by volume 929-91, -93 or -94
	**Reducer**	10 parts by volume 352-91
	**Spray viscosity DIN 4 at 68°F / 20°C**	16 s
	Potlife at 68°F / 20°C	4 hrs.
	**Gravity cup / Spraying pressure**	HVLP: 1.2 - 1.3 mm / 10 psi at air cap
	**Number of spray coats**	2
	Film thickness	1.8 - 2.0 mils
	**Flash-off at 68°F / 20°C**	Flash off until matte between coats and before baking.
 	**Drying at 68°F / 20°C** **at 140°F / 60°C** **Infrared short wave** **medium wave**	7 hrs. 30 mins. 8 mins. 10 - 15 mins.

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Technical Information

G C

923-57 Matte Elastified Clear

Application: Matte elastified acrylic clear for metallic and effect finishes.

Properties: Gloss at 60°: 53% +/- 5%. Wet-on-wet process with basecoat color.

Remarks:
- Suitable for painting plastic bumpers **without the addition of Elastifier Additive 522-111 or Low VOC Elastifier Additive 522-333**.
- Choose hardener and reducer according to temperature and size of object to be painted.
- Buffing or polishing 923-57 will increase the gloss level.

	Application	Matte elastified clear for 2-stage finishes, plastics
	Paint System	B9, B10, C1, C2, D.S12
	VOC ready for use	539 gms/liter; 4.5 lbs/gal
	Mixing ratio **Hardener** **Reducer**	2:1+10% 100 parts by volume 923-57 50 parts by volume 929-91, -93 or -94 10 parts by volume 352-50 or -91
	Spray viscosity DIN 4 at 68°F / 20°C	18 - 20 s
	Potlife at 68°F / 20°C	4 hrs.
	Gravity cup / Spraying pressure	HVLP: 1.3 - 1.5 mm / 10 psi at air cap (max.) Conventional: 1.4 - 1.5 mm / 60 psi
	Number of spray coats	2
	Film thickness	2.3 - 2.8 mils
	Flash-off at 68°F / 20°C	Flash off until matte between coats and before baking.
	Drying at 68°F / 20°C **at 140°F / 60°C** **Infrared short wave** **medium wave**	8 hrs. 30 mins. 8 mins. 15 mins.

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Technical Information

G C

923-109 HS UV Klarlack

with 90-series hardeners

Application: Clear for 2 coat paintwork (wet-on-wet procedure).

Properties: Excellent resistance to weathering and yellowing. Very good gloss, hardness and hold out. Applied in two spray coats.

Remarks:

- Choose hardener according to temperature and size of object to be painted. Drying time will vary accordingly.
- To polish or remove dust particles: after 24 hrs. air dry, or when cool after force drying, wet sand with 1200 grit or finer sandpaper and then polish with fine polishing compound and/or liquid polish. Two mils of clearcoat (dry film) must remain over basecoat. If extensive color sanding is anticipated, apply an additional coat of clear.

	Application	Clearcoat over basecoat
	Paint System	B9, B10, C1, C2
	VOC ready for use	486 gms/liter; 4.0 lbs/gal
	Mixing ratio **Hardener**	2:1 100 parts by volume 923-109 50 parts by volume 929-91, -93 or -94
	Spray viscosity DIN 4 at 68°F / 20°C	17 - 19 s
	Potlife at 68°F / 20°C	4 hrs.
	Gravity cup / Spraying pressure	HVLP: 1.3 - 1.5 mm / 10 psi at air cap (max.) Conventional: 1.3 - 1.5 mm / 55 - 65 psi
	Number of spray coats	2
	Film thickness	2.0 - 2.4 mils
	Flash-off at 68°F / 20°C	2 - 3 mins. between coats
	Drying at 68°F / 20°C **at 140°F / 60°C** **Infrared short wave** **medium wave**	8 hrs. 30 mins. 8 mins. 12 mins.

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Technical Information

G C

923-140 Rapid Repair Clear

Application: 2 component clear for topcoating Glasurit basecoat colors.

Properties: Excellent resistance to weathering. Very good gloss, hardness and hold out. Excellent flow and leveling. Fast air drying.

Remarks:

- Choose hardener according to temperature and size of object to be painted. Drying time will vary accordingly.
- To polish or remove dust particles: wet sand with 1200 grit or finer sandpaper and then polish with fine polishing compound and/or liquid polish. Two mils of clearcoat (dry film) must remain over basecoat. If extensive color sanding is anticipated, apply an additional coat of clear.
- For flexible part repair, mix 25% Elastifier Additive 522-111 or Low VOC Elastifier Additive 522-333 with clear before adding hardener.
- Please note that when flexing this product the dry time will be slower.

	Application	Clearcoat over basecoat
	**Paint System**	B9, B10, C1, C2
	VOC ready for use	< 500 gms/liter; < 4.2 lbs/gal
	**Mixing ratio**	2:1+10% 100 parts by volume 923-140
	**Hardener**	50 parts by volume 929-93 (929-94 may be used under high temperature conditions)
	**Reducer**	10 parts by volume 352-50, -91, -216
	**Spray viscosity DIN 4 at 68°F / 20°C**	13 - 16 s
	Potlife at 68°F / 20°C	1 hr.
	**Gravity cup / Spraying pressure**	HVLP: 1.4 mm / 9 - 10 psi at air cap (max.)
	**Number of spray coats**	2 medium wet coats
	Film thickness	1.8 - 2.0 mils
	**Flash-off at 68°F / 20°C**	5 mins. between coats
	**Drying at 68°F / 20°C** **at 120°F / 50°C**	30 mins. for buff and polish time 15 mins.

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Technical Information

G C

923-155 Acrylic Clear

Application: Clear for 2 coat paintwork (wet-on-wet procedure).

Properties: Excellent resistance to weathering and yellowing. Very good gloss, hardness and hold out. Fast drying and taping. Glasurit 923-155 Acrylic Clear may be mixed and applied without a reducer to increase film build per coat and appearance.

Remarks:

- 923-155 with 90-Line bases meets 5.0 lbs/gal VOC requirement. The use of 923-155 Clear over 55-Line Basecoat is **not** US National Rule compliant.
- Choose hardener and reducer according to temperature and size of object to be painted. Drying time will vary accordingly.
- To polish or remove dust particles: after 24 hrs. air dry, or when cool after force drying, wet sand with 1200 grit or finer sandpaper and then polish with fine polishing compound and/or liquid polish. Two mils of clearcoat (dry film) must remain over basecoat. If extensive color sanding is anticipated, apply an additional coat of clear.

	Application	Clearcoat over basecoat
	**Paint System**	B9, B10, C1
	VOC ready for use	588 gms/liter; 4.9 lbs/gal
	**Mixing ratio**	2:1+10% 100 parts by volume 923-155
	**Hardener**	50 parts by volume 929-91, -93 or -94
	**Reducer**	10 parts by volume 352-50, -91 or -216
	**Spray viscosity DIN 4 at 68°F / 20°C**	16 - 18 s
	Potlife at 68°F / 20°C	3 hrs.
	**Gravity cup / Spraying pressure**	HVLP: 1.2 - 1.3 mm / 10 psi at air cap (max.) Conventional: 1.3 - 1.4 mm / 60 psi
	**Number of spray coats**	2 - 3
	Film thickness	2.0 - 2.4 mils
	**Flash-off at 68°F / 20°C**	5 mins. between coats
 	**Drying at 68°F / 20°C** **at 140°F / 60°C** **Infrared short wave** **medium wave**	5 hrs. 30 mins. 8 mins. 15 mins.

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Technical Information

G C

923-200 Ultra Low VOC Clear

Application: HS Clear for 2 coat paintwork (wet-on-wet procedure).

Properties: Excellent resistance to weathering and yellowing. Very good gloss, hardness and hold out. Does not require reactive reducers.

Remarks:

- Choose hardener according to temperature and size of object to be painted. Drying time will vary accordingly.
- When using 923-200 over 55-Line, the use of 355-55 in the basecoat (10:1:4) is optional.
- For flexible part repair, mix 25% Low VOC Elastifier Additive 522-333 with clear before adding hardener.
- To polish or remove dust particles: after 24 hrs. air dry, or when cool after force drying, wet sand with 1200 grit or finer sandpaper and then polish with fine polishing compound and/or liquid polish. Two mils of clearcoat (dry film) must remain over basecoat. If extensive color sanding is anticipated, apply an additional coat of clear.

	Application	Clearcoat over basecoat
	Paint System	B9, B10, C1, C2
	VOC ready for use	223 gms/liter; 1.9 lbs/gal
	Mixing ratio **Hardener**	2:1 100 parts by volume 923-200 50 parts by volume 929-100, -110, -120 or -130
	Spray viscosity DIN 4 at 68°F / 20°C	15 - 18 s
	Potlife at 68°F / 20°C	1 - 2 hrs.
	Gravity cup / Spraying pressure	HVLP: 1.3 - 1.5 mm / 10 psi at air cap (max.) Conventional: 1.3 - 1.5 mm / 45 - 55 psi
	Number of spray coats	2 medium wet coats
	Film thickness	2.0 - 2.5 mils
	Flash-off at 68°F / 20°C	10 mins. between coats
	Drying at 68°F / 20°C **at 140°F / 60°C** **Infrared short wave** **medium wave**	2 hrs. 30 mins. 7 mins. 10 mins.

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Technical Information

G C

923-209 Low VOC HS Klarlack Clear

Application: HS clear for basecoat/clearcoat systems (55-, 90-).

Properties: High solids content, low VOC, excellent resistance to weathering, outstanding finish, resistance to yellowing, very good gloss and holdout.

Remarks:

- Choose hardener and reducer according to temperature and size of object to be painted.
- No flex additive needed for flexible parts.
- To polish or remove dust particles: after 24 hrs. air dry, or when cool after force drying, wet sand with 1200 grit or finer sandpaper and then polish with fine polishing compound and/or liquid polish. Two mils of clearcoat (dry film) must remain over basecoat. If extensive color sanding is anticipated, apply an additional coat of clear.

	Application	Clearcoat over basecoat
	**Paint System**	B9, B10, C1, C2
	VOC ready for use	242 gms/liter; 2.0 lbs/gal
	**Mixing ratio**	2:1 + 10% 100 parts by volume 923-209
	**Hardener**	50 parts by volume 929-100, -110, -120 or -130
	**Reducer**	10 parts by volume 352-25 or -45
	**Spray viscosity DIN 4 at 68°F / 20°C**	14 - 16 s
	Potlife at 68°F / 20°C	2 - 3 hrs.
	**Gravity cup / Spraying pressure**	HVLP: 1.3 - 1.5 mm / 10 psi at air cap
	**Number of spray coats**	2
	Film thickness	2.0 - 2.5 mils
	**Flash-off at 68°F / 20°C**	5 mins. between coats
 	**Drying** at 68°F / 20°C at 140°F / 60°C **Infrared** short wave medium wave	2 - 2.5 hrs. 30 mins. 8 mins. 10 - 15 mins.

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Technical Information

G C

923-220 Low VOC Multi-Purpose Gloss Clear

Application: 2 component clear for topcoating Glasurit basecoat colors.

Properties: Excellent resistance to weathering and yellowing. Excellent flow, leveling and sag resistance. High gloss.

Remarks:

- Choose hardener and reducer according to temperature and size of object to be painted. Drying time will vary accordingly.
- To polish or remove dust particles: wet sand with 1200 grit or finer sandpaper and then polish with fine polishing compound and/or liquid polish. Two mils of clearcoat (dry film) must remain over basecoat. If extensive color sanding is anticipated, apply an additional coat of clear.
- For flexible part repair, mix 25% Low VOC Elastifier Additive 522-333 with clear before adding hardener.
- Please note that when flexing this product the dry time will be slower.

	Application	Clearcoat over basecoat
	**Paint System**	B9, B10, C1, C2
	VOC ready for use	250 gms/liter; 2.1 lbs/gal
  	**Mixing ratio** **Hardener** **Reducer**	2:1 100 parts by volume 923-220 50 parts by volume 929-100, -110, -120 or -130 No reducer is required however up to 10 parts of 352-25 or -45 may be used.
	**Spray viscosity DIN 4 at 68°F / 20°C**	14 - 16 s
	Potlife at 68°F / 20°C	3 - 4 hrs.
	**Gravity cup / Spraying pressure**	HVLP: 1.4 mm / 9 psi at air cap
	**Number of spray coats**	2 medium wet coats
	Film thickness	2.0 - 2.5 mils
	**Flash-off at 68°F / 20°C**	5 mins. between coats
	**Drying at 68°F / 20°C** **at 140°F / 60°C**	2 hrs. 30 mins.

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Technical Information

G C

923-222 Fast Repair Low VOC Clear

Application: 2 component clear for topcoating catalyzed 55-Line and 90-Line basecoat.

Properties: Excellent resistance to weathering and yellowing. Excellent flow, leveling and sag resistance. High gloss.

Remarks:

- When using 923-222 over 55-Line, the use of 355-55 in the basecoat is required (10:1:4).
- Choose hardener and reducer according to temperature and size of object to be painted. Drying time will vary accordingly.
- For flexible part repair, mix 25% Low VOC Elastifier Additive 522-333 with clear before adding hardener.
- To polish or remove dust particles: after 24 hrs. air dry, or when cool after force drying, wet sand with 1500 grit or finer sandpaper and then polish with fine polishing compound and/or liquid polish. Two mils of clearcoat (dry film) must remain over basecoat. If extensive color sanding is anticipated, apply an additional coat of clear.

	Application	Clearcoat over basecoat
	**Paint System**	B9, B10, C1, C2
	VOC ready for use	182 gms/liter; 1.5 lbs/gal
	**Mixing ratio**	2:1+10% 100 parts by volume 923-222
	**Hardener**	50 parts by volume 929-100, -110, -120 or -130
	**Reducer**	10 parts by volume 352-25 or -45
	**Spray viscosity DIN 4 at 68°F / 20°C**	14 - 17 s
	Potlife at 68°F / 20°C	1 - 2 hrs.
	**Gravity cup / Spraying pressure**	HVLP: 1.3 - 1.5 mm / 9 psi at air cap Conventional: 1.3 - 1.5 mm / 45 - 55 psi
	**Number of spray coats**	2 - 3
	Film thickness	2.0 - 2.5 mils
	**Flash-off at 68°F / 20°C**	2 - 5 mins. between coats
 	**Drying at 68°F / 20°C** **at 140°F / 60°C** **Infrared short wave**	2 hrs. 15 mins. 6 - 7 mins.

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Technical Information

G C

923-240 Low VOC Rapid Repair Clear

Application: 2 component clear for topcoating Glasurit basecoat colors.

Properties: Excellent resistance to weathering and yellowing. Excellent flow, leveling and sag resistance. High gloss.

Remarks:

- Choose hardener and reducer according to temperature and size of object to be painted. Drying time will vary accordingly.
- To polish or remove dust particles: wet sand with 1200 grit or finer sandpaper and then polish with fine polishing compound and/or liquid polish. Two mils of clearcoat (dry film) must remain over basecoat. If extensive color sanding is anticipated, apply an additional coat of clear.
- For flexible part repair, mix 25% Low VOC Elastifier Additive 522-333 with clear before adding hardener.
- Please note that when flexing this product the dry time will be slower.

	Application	Clearcoat over basecoat
	**Paint System**	B9, B10, C1, C2
	VOC ready for use	240 gms/liter; 2.0 lbs/gal
  	**Mixing ratio** **Hardener** **Reducer**	2:1+10% 100 parts by volume 923-240 50 parts by volume 929-100, -110 or -120 10 parts by volume 352-25 or -45 (may be reduced up to 30%)
	**Spray viscosity DIN 4 at 68°F / 20°C**	13 - 16 s
	Potlife at 68°F / 20°C	1 hr.
	**Gravity cup / Spraying pressure**	HVLP: 1.4 mm / 9 psi at air cap
	**Number of spray coats**	2 medium wet coats
	Film thickness	2.0 mils
	**Flash-off at 68°F / 20°C**	5 mins. between coats
	**Drying at 68°F / 20°C** **at 120°F / 50°C**	30 mins. for buff and polish time 15 mins.

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Technical Information

G C

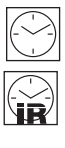
923-255 HS Multi-Clear

Application: HS clear for basecoat/clearcoat systems (55-, 90-).

Properties: High solids content, excellent resistance to weathering, outstanding finish, resistance to yellowing, hardness, fast drying, good polishing behavior and tape resistance.

Remarks:

- Choose hardener and reducer according to temperature and size of object to be painted.
- On vertical surfaces, application in one spraycoat: use 2:1 mixing ratio, no reducer.
- To polish or remove dust particles: after 24 hrs. air dry, or when cool after force drying, wet sand with 1200 grit or finer sandpaper and then polish with fine polishing compound and/or liquid polish. Two mils of clearcoat (dry film) must remain over basecoat. If extensive color sanding is anticipated, apply an additional coat of clear.

	Application	Clearcoat over basecoat
	**Paint System**	B9, B10, C1, C2, D.S12
	VOC ready for use	497 gms/liter; 4.1 lbs/gal
	**Mixing ratio** **Hardener** **Reducer**	2:1+10% 100 parts by volume 923-255 50 parts by volume 929-91, -93 or -94 10 parts by volume 352-25 or -45
	**Spray viscosity DIN 4 at 68°F / 20°C**	18 - 20 s
	Potlife at 68°F / 20°C	4 hrs.
	**Gravity cup / Spraying pressure**	HVLP: 1.2 - 1.3 mm / 10 psi at air cap
	**Number of spray coats**	2
	Film thickness	2.0 - 2.5 mils
	**Flash-off at 68°F / 20°C**	2 - 3 mins. between coats
	**Drying** **at 68°F / 20°C** **at 140°F / 60°C** **Infrared** **short wave** **medium wave**	8 hrs. 30 mins. 8 mins. 10 - 15 mins.

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923-255 HS Multi-Clear

90-Line only

Application: HS clear for basecoat/clearcoat system (90-Line only).

Properties: High solids content, excellent resistance to weathering, outstanding finish, resistance to yellowing, hardness, fast drying, good polishing behaviour and tape resistance.

Remarks:

- This version of 923-255 may only be used over 90-Line, as use of this version over 55-Line is not compliant with U.S. National Rule.
- Choose hardener and reducer according to temperature and size of object to be painted.
- On vertical surfaces, application in one spraycoat: use 2:1 mixing ratio, no reducer.
- To polish or remove dust particles: after 24 hrs. air dry, or when cool after force drying, wet sand with 1200 grit or finer sandpaper and then polish with fine polishing compound and/or liquid polish. Two mils of clearcoat (dry film) must remain over basecoat. If extensive color sanding is anticipated, apply an additional coat of clear.

	Application	Clearcoat over basecoat
	**Paint System**	B9, B10, C1, D.S12
	VOC ready for use	527 gms/liter; 4.4 lbs/gal
	**Mixing ratio**	2:1+10% 100 parts by volume 923-255
	**Hardener**	50 parts by volume 929-91, -93 or -94
	**Reducer**	10 parts by volume 352-50, -91 or -216
	**Spray viscosity DIN 4 at 68°F / 20°C**	18 - 20 s
	Potlife at 68°F / 20°C	4 hrs.
	**Gravity cup / Spraying pressure**	HVLP: 1.2 - 1.3 mm / 10 psi at air cap
	**Number of spray coats**	2
	Film thickness	2.0 - 2.5 mils
	**Flash-off at 68°F / 20°C**	2 - 3 mins. between coats
 	**Drying at 68°F / 20°C** **at 140°F / 60°C** **Infrared short wave** **medium wave**	8 hrs. 30 mins. 8 mins. 10 - 15 mins.

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923-345 Anti-Scratch 2.1 VOC HS Clear

Application: A scratch-resistant HS clear 55-, 90-Line basecoat/clearcoat systems.

Properties: High solids content; scratch-resistant; outstanding weathering and yellowing resistance; excellent finish quality.

Remarks:

- The addition of the elastifier additive (Glasurit Elastifier Additive 522-111 or Low VOC Elastifier Additive 522-333) will change the scratch resistance characteristics of this clearcoat. As such, Glasurit 923-345 is not recommended for use over flexible parts.
- Suitable for repairing scratch-resistant original finishes.
- Choose reducer according to temperature and size of object to be painted.
- You may add up to 2% of 522-10 Rapid Additive for improved through dry and dust free times.

	Application	Clearcoat over basecoat
	Paint System	B9, B10, C1, C2
	VOC ready for use	250 gms/liter; 2.1 lbs/gal maximum
	Mixing ratio **Hardener** **Reducer**	1:1+10% 100 parts by volume 923-345 100 parts by volume 929-346 10 parts by volume 352-25 or -45
	Spray viscosity DIN 4 at 68°F / 20°C	16 - 17 s
	Potlife at 68°F / 20°C	2 hrs.
	Gravity cup / Spraying pressure	HVLP: 1.2 - 1.3 mm / 10 psi at air cap
	Number of spray coats	2 med. coats
	Film thickness	2.0 - 2.4 mils
	Flash-off at 68°F / 20°C	5 mins. between coats
	Drying at 68°F / 20°C **at 140°F / 60°C** **Infrared short wave** **medium wave**	10 hrs. 45 mins. 10 mins. 20 - 30 mins.

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Technical Information

G C

923-450 Multi-Temp Baking Clear

Application: Clear for 2 coat paintwork (wet-on-wet procedure).

Properties: Excellent resistance to weathering. Very good gloss, hardness and hold out. Fast drying and taping. Recommended for baking conditions ranging in temperature from 100°F / 38°C to 180°F / 82°C.

Remarks:

- Choose hardener and reducer according to temperature and size of object to be painted. Drying time will vary accordingly.
- Must be activated with 929-91 for spot and medium panel repairs, 929-93 for large panel applications and completes at temperatures less than 85°F/29°C, and 929-94 for large panel and complete applications at temperatures greater than 85°F/29°C. DO NOT force dry when using 929-91 hardener.
- For flexible part repair, mix 25% Elastifier Additive 522-111 or Low VOC Elastifier Additive 522-333 with clear before adding hardener.
- For best results, flash five minutes prior to baking.
- Vehicle can be immediately recoated, sanded and compounded when cooled.
- To polish or remove dust particles: when cool after force drying, wet sand with 1200 grit or finer sandpaper and then polish with fine polishing compound and/or liquid polish. Two mils of clearcoat (dry film) must remain over basecoat. If extensive color sanding is anticipated, apply an additional coat of clear.

	Application	Clearcoat over basecoat
	Paint System	B9, B10, C1, C2
	VOC ready for use	500 gms/liter; 4.1 lbs/gal
	Mixing ratio **Hardener** **Reducer**	2:1+10% 100 parts by volume 923-450 50 parts by volume 929-91, -93 or -94 10 parts by volume 352-50, -91, -216 or -319
	Spray viscosity DIN 4 at 68°F / 20°C	12 - 15 s
	Potlife at 68°F / 20°C	2 hrs. with 929-91 - sprayable potlife 3 hrs. with 929-93 or -94 - sprayable potlife
	Gravity cup / Spraying pressure	HVLP: 1.3 - 1.5 mm / 9 - 10 psi at air cap (max.) Conventional: 1.3 - 1.5 mm / 55 - 60 psi
	Number of spray coats	2 medium wet coats
	Film thickness	2.0 - 2.5 mils
	Flash-off at 68°F / 20°C	5 - 15 mins. between coats

		929-91	**929-93**	**929-94**
Drying at	**68°F/20°C**	3 hrs.	n/a	n/a
	100°F/38°C	n/a	n/a	n/a
	120°C/50°C	n/a	30 - 40 mins.	n/a
	140°F/60°C	n/a	30 - 35 mins.	30 mins.
	160°F/71°C	n/a	15 mins.	15 mins.
	180°F/82°C	n/a	10 mins.	10 mins.
Infra red	**short wave**	10 - 12 mins.	10 - 12 mins.	10 - 12 mins.

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G C

923-460 Multi-Purpose Gloss Clear

Application: 2 component clear for topcoating Glasurit basecoat colors.

Properties: Excellent resistance to weathering and yellowing. Excellent flow, leveling and sag resistance. High gloss.

Remarks:

- Choose hardener and reducer according to temperature and size of object to be painted. Drying time will vary accordingly.
- To polish or remove dust particles: wet sand with 1200 grit or finer sandpaper and then polish with fine polishing compound and/or liquid polish. 1.9 - 2.2 mils of clearcoat (dry film) must remain over basecoat. If extensive color sanding is anticipated, apply an additional coat of clear.
- For flexible part repair, mix 25% Elastifier Additive 522-111 or Low VOC Elastifier Additive 522-333 with clear before adding hardener.
- Please note that when flexing this product the dry time will be slower.

	Application	Clearcoat over basecoat
	Paint System	B9, B10, C1, C2
	VOC ready for use	500 gms/liter; 4.2 lbs/gal
	Mixing ratio **Hardener** **Reducer**	2:1+10% 100 parts by volume 923-460 50 parts by volume 929-91, -93 or -94 10 parts by volume 352-50, -91 or -216
	Spray viscosity DIN 4 at 68°F / 20°C	14 - 16 s
	Potlife at 68°F / 20°C	2 hrs.
	Gravity cup / Spraying pressure	HVLP: 1.3 - 1.5 mm / 9 psi at air cap
	Number of spray coats	2 medium wet coats
	Film thickness	1.9 - 2.2 mils
	Flash-off at 68°F / 20°C	5 mins. between coats
	Drying at 68°F / 20°C **at 140°F / 60°C** **Infrared short wave**	3 hrs. 30 mins. 8 - 10 mins. (Do not use 929-91 when curing with IR.)

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Technical Information

G C

923-550 High Performance Clear

Application: Clear for 2 coat paintwork (wet-on-wet procedure)

Properties: Excellent resistance to weathering. Very good gloss, hardness and hold out. Excellent flow and leveling. Fast air drying. 923-550 Clear mixed with 929-91, -93 or -94 meets a 5.0 lbs/gal VOC requirement for multi-stage when used over 55-Line.

Remarks:

- Choose hardener according to temperature and size of object to be painted. Drying time will vary accordingly.
- For flexible part repair, mix 25% Elastifier Additive 522-111 or Low VOC Elastifier Additive 522-333 with clear before adding hardener.
- For best results, flash five minutes prior to baking.
- To polish or remove dust particles: when cool after force drying, wet sand with 1200 grit or finer sandpaper and then polish with fine polishing compound and/or liquid polish. Two mils of clearcoat (dry film) must remain over basecoat. If extensive color sanding is anticipated, apply an additional coat of clear.

	Application	Clearcoat over basecoat
	Paint System	B9, B10, C1, C2
	VOC ready for use	503 gms/liter; 4.2 lbs/gal
	Mixing ratio **Hardener**	2:1 100 parts by volume 923-550 50 parts by volume 929-91, -93 or -94
	Spray viscosity DIN 4 at 68°F / 20°C	12 - 14 s
	Potlife at 68°F / 20°C	1 hr.
	Gravity cup / Spraying pressure	HVLP: 1.3 - 1.5 mm / 9 - 10 psi at air cap (max.) Conventional: 1.3 - 1.5 mm / 55 - 60 psi
	Number of spray coats	2
	Film thickness	2.0 - 2.5 mils
	Flash-off at 68°F / 20°C	5 mins. between coats
	Drying at 68°F / 20°C **at 140°F / 60°C** **Infrared short wave**	2 hrs. 15 mins. 7 - 10 mins.

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G A Additives

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355-55 Basecoat Activator

Application: Activator for use in 55-Line Basecoat colors only.

Properties:
- Used to meet low VOC requirements for basecoat/clearcoat systems.
- Used in 55-Line Interior applications.
- Significantly improves the adhesion of the basecoat to the clearcoat.

Remarks:
- Seal cans with left over material carefully - hardeners are moisture sensitive.
- Do not add more or less 355-55 Activator to the basecoat color.
- See technical information on 55-Line for more detailed information.

	Application	Activator for use in 55-Line only
	**Paint System**	B9, C2
  	**Mixing ratio** **Activator** **Reducer**	10:1:4 100 parts by volume 55-Line Color 10 parts by volume 355-55 40 parts by volume 352-50, -91 or -216
	Potlife at 68°F / 20°C	24 hrs.
	**Flash-off at 68°F / 20°C**	10 mins. until matte
	**Drying at 68°F / 20°C**	20 mins.

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522-10 Rapid Additive

Application: Drying accelerator for clearcoats for blending. Drying accelerator for Glasurit HS Urethane Topcoat 22-Line.

Properties: Fast through dry, dust free and polishability. Used at low temperatures (60°-65°F/15°-18°C) or when fast curing, polishing and masking tape resistance is required. Used with signwriting and multi-color finishes.

Remarks:

- **Use only for blending.**
- Measure amount of 522-10 carefully!
- In 923- Clearcoats, use 2% max. Add up to 0.65 oz / 17 gms per quart of ready-to-spray material.
- In 22-Line, use 4% max. Add up to 1.25 oz / 33 gms per quart of ready-to-spray material.

	Application	Drying accelerator for 22-Line	Drying accelerator for 923- clearcoats
	**Paint System**	C3	—
	VOC ready for use	**VOC as packaged:** 871 gms/liter; 7.3 lbs/gal **VOC as applied:** Varies depending on mixed formula or clearcoat	
	**Mixing ratio**	100 parts by volume 22-Line	100 parts by volume 923-
	**Hardener**	50 parts by volume 929-91 up to 4 parts by volume 522-10	50 parts by volume 929-91 up to 2 parts by volume 522-10
	**Reducer**	10 parts by volume 352-91 or -216	10 parts by volume 352-91 or -216

For additional technical information, refer to specific 923- clearcoat or 22-Line technical data sheets.

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522-111 Elastifier Additive

Application: Plasticizing additive for plastics painting.

Remarks:

- 522-111 can be used in 285- undercoats. However, 522-111 **can not** be used in 285-81.
- For rigid plastics, no 522-111 is required.
- For soft plastics and foams, use 25% - 50% of 522-111.
- No 522-111 required in undercoats for painting of fiberglass reinforced plastics.
- Allow approximately 50% more dry time when using 50% 522-111.
- All bumpers to be considered flexible.

	Application	Elastifier Additive for 285- undercoats	Elastifier Additive for topcoats
	**Paint System**	B4, D.S3a	C3, D.S3, D.S3a
	VOC ready for use	**As packaged:** 316 gms/liter; 2.6 lbs/gal **As applied:** Varies depending on mixed formula or clearcoat	
	**Mixing ratio**	**Step 1** 100 parts by vol. 285- 25 - 50 parts by vol. 522-111	**Step 1** 100 parts by vol. 22-Line or 923- 25 - 50 parts by vol. 522-111
	**Hardener**	**Step 2 - 4:1:1** 100 parts by vol. 285- & 522-111 mixture	**Step 2 - 2:1+10%** 100 parts by vol. 22-Line or 923- & 522-111 mixture
	**Reducer**	25 parts by vol. 929- 25 parts by vol. 352-	50 parts by vol. 929- 10 parts by vol. 352-

For additional technical information, refer to specific 285- primer, 923- clearcoat or 22-Line technical data sheets.

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522-322 Flexible Gloss Reducing Additive
Matte Paste

Application: Flexible gloss reducer for 22-Line and 923- Clearcoats.

Remarks:
- Not for use in pre-flatten clearcoats.
- Prepare only the quantity of paint or clear that will be used the same day because the gloss level may change when the mixture is stored.
- Stir well after adding 522-322.
- May be used in combination with Glasurit Texture Additive 522-345.
- May be used on plastic parts without the addition of Elastifier Additive 522-111 or Low VOC Elastifier Additive 522-333.

	Application		22-Line	923- Clearcoats
	Paint System		C3	—
	VOC ready for use	**As packaged:** 683 gms/liter; 5.7 lbs/gal **As applied:** Varies depending on mixed formula or clearcoat		

			Gloss Level	22-Line (mixed by weight)	923- (mixed by weight)
	Mixing ratio	Step 1	Semi-gloss	100 parts 22-Line Color + 25 parts 522-322	100 parts 923- Clear + 25 parts 522-322
			Egg shell (satin)	100 parts 22-Line Color + 35 parts 522-322	100 parts 923- Clear + 50 parts 522-322
			Matte	100 parts 22-Line Color + 45 parts 522-322	100 parts 923- Clear + 70 parts 522-322
	Hardener Reducer	Step 2	2:1:10% 100 parts by volume 22-Line or 923- mixture 50 parts by volume 929- (Refer to 923- clearcoat or 22-Line technical data sheets) 10 parts by volume 352-		

Check SmartTrak / SmartColor for recommendations for a specific clearcoat.

For additional technical information, refer to specific 923- clearcoat or 22-Line technical data sheets.

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Technical Information

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522-333 Low VOC Elastifier Additive

Application: Plasticizing additive for plastics painting.

Remarks:

- Use only 285- series when using 522-333 in undercoats. However, 522-333 **can not** be used in 285-81.
- For rigid plastics, no 522-333 is required.
- For soft plastics and foams, use 25% - 50% of 522-333.
- No 522-333 required in undercoats for painting of fiberglass reinforced plastics.
- Allow approximately 50% more dry time when using 50% 522-333.
- All bumpers to be considered flexible.

	Application	Low VOC Elastifier Additive for 285- undercoats	Low VOC Elastifier Additive for topcoats
	**Paint System**	B4, D.S3a	C3, D.S3, D.S3a
	VOC ready for use	**As packaged:** 222 gms/liter; 1.8 lbs/gal **As applied:** Varies depending on mixed formula or clearcoat	
	**Mixing ratio**	**Step 1** 100 parts by vol. 285- 25 - 50 parts by vol. 522-333	**Step 1** 100 parts by vol. 22-Line or 923- 25 - 50 parts by vol. 522-333
	**Hardener**	**Step 2 - 4:1:1** 100 parts by vol. 285- & 522-333 mixture	**Step 2 - 2:1+10%** 100 parts by vol. 22-Line or 923- & 522-333 mixture
	**Reducer**	25 parts by vol. 929- 25 parts by vol. 352-	50 parts by vol. 929- 10 parts by vol. 352-

For additional technical information, refer to specific 285- primer, 923- clearcoat or 22-Line technical data sheets.

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522-345 Texture Additive Fine

Application: Texture-giving, plasticizing and matting additive that gives a 2K-texture finish to 22-Line and 923- Clearcoats.

Remarks:
- Do not strain the material.

	Application	Texture Additive for 22-Line	Texture Additive for 923- clearcoats
	Paint System	C3	—
	VOC ready for use	**As packaged:** 632 gms/liter; 5.27 lbs/gal **As applied:** Varies depending on mixed formula or clearcoat	
	Mixing ratio	**Step 1 - 1:1** 100 parts by vol. 22-Line 100 parts by vol. 522-345	**Step 1 - 2:1** 100 parts by vol. 923- 50 parts by vol. 522-345
	Hardener	**Step 2 - 2:1 + 10%** 100 parts by vol. mixture	**Step 2 - 2:1+10%** 100 parts by vol. mixture
	Reducer	50 parts by vol. 929- 10 parts by vol. 352-	50 parts by vol. 929- 10 parts by vol. 352-

For additional technical information, refer to specific 923- clearcoat or 22-Line technical data sheets.

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522-422 Low VOC Gloss Reducing Additive
Matte Paste

Application: Low VOC gloss reducer for low VOC 22-Line and low VOC 923- Clearcoats.

Remarks:
- Stir product thoroughly for 5-10 minutes before using.
- Not for use in pre-flatten clearcoats.
- Prepare only the quantity of paint or clear that will be used the same day because the gloss level may change when the mixture is stored.
- Stir well after adding 522-422.
- May be used in combination with Glasurit Texture Additive 522-345.
- The gloss reduction will not be sufficient if used with Elastifiers.
- Filter with a fine strainer after mixing.

	Application		22-Line	923- Clearcoats
	Paint System		C3	—
	VOC ready for use	**As packaged:** < 250 gms/ltr; < 2.1 lbs/gal **As applied:** Varies depending on mixed formula or clearcoat		

			Gloss Level	22-Line (mixed by weight)	923- (mixed by weight)
	Mixing ratio	Step 1	Semi-gloss Egg shell (satin) Matte	100 parts 22-Line Color + 25 parts 522-422 100 parts 22-Line Color + 35 parts 522-422 100 parts 22-Line Color + 45 parts 522-422	100 parts 923- Clear + 25 parts 522-422 100 parts 923- Clear + 50 parts 522-422 100 parts 923- Clear + 70 parts 522-422
	Hardener Reducer	Step 2	2:1:10% 100 parts by volume 22-Line or 923- mixture 50 parts by volume 929- (Refer to 923- clearcoat or 22-Line technical data sheets) 10 parts by volume 352-25 or -45		

Glasurit 522-422 may be added up to a maximum of 1:1 to the clearcoat prior to addition of hardener and reducer. Additional reduction is optional.

Check SmartTrak / SmartColor for recommendations for a specific clearcoat.

For additional technical information, refer to specific 923- clearcoat or 22-Line technical data sheets.

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580-100 Anti-Silicone Additive

Application: Fisheye eliminator. Used to avoid craters caused by silicone.

Properties: Use only when **absolutely** necessary. Use as little as possible - do not exceed a maximum of 5% (by vol.).

Remarks:

- For use in 22-Line and clearcoats only.
- Use 580-100 only outside of the spray booth.
- Throw out rags contaminated with fisheye eliminator immediately.
- If 580-100 is in the first coat, then it must be added to following coats (minimum of same amount).

	Application	Fisheye eliminator
	Paint System	C3
	VOC ready for use	841 gms/liter; 7.0 lbs/gal
	Mixing ratio	Add 2% - 5% max. (by volume) 580-100 to ready-to-spray topcoat material

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G M Miscellaneous

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55-B500 Blending Clear

Application: Blending Clear 55-B500 is used for blending in 55-Line metallic basecoats. This Blending Clear helps to achieve a smooth homogeneous overspray area in the fade-out zone, avoiding dark shadows around the repair area.

Properties: May be used as an orientation coat (uniform finish blender) before application of metallic basecoat.

Remarks: The same spray gun can be used for Glasurit 55-B500 Blending Clear and 55-Line basecoat without having to be cleaned in between.

	Application	For blending in 55-Line basecoat.
	**Paint System**	C2, D.S8, D.S8.1
	VOC ready for use	825 gms/liter; 6.9 lbs/gal
	**Mixing ratio**	Ready for use, mix well before using.
	**Spray viscosity DIN 4 at 68°F / 20°C**	17 - 19 s
	**Gravity cup / Spraying pressure**	HVLP: 1.2 - 1.3 mm / 10 psi at air cap
	**Number of spray coats**	1 wet coat

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90-M5 Blending Clear

Application: Blending Clear 90-M5 is used for blending in 90-Line waterborne basecoats. In addition, 90-M5 is used in some 90-Line 3-stage colors to achieve a translucent effect.

Properties: This Blending Clear helps to achieve a smooth homogeneous overspray area in the fade-out zone, avoiding dark shadows around the repair area.

Remarks:
- The same spray gun can be used for Glasurit 90-M5 Blending Clear and 90-Line basecoat without having to be cleaned in between
- Shelf life: 12 months from date of manufacture.

	Application	For blending in 90-Line Waterborne basecoat.
	Paint System	C1, D.S9, D.S9.1
	VOC ready for use	420 gms/liter; 3.5 lbs/gal
	Mixing ratio **Hardener**	2:1 100 parts by volume 90-M5 50 parts by volume 93-E3
	Spray viscosity DIN 4 at 68°F / 20°C	18 - 22 s
	Gravity cup / Spraying pressure	HVLP: 1.3 mm / 10 psi at air cap (max.)
	Number of spray coats	1 wet coat

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Technical Information

G M

352-1500 Spot Blender

Aerosol

Application: A specific combination of solvents used to melt in clearcoat fade-out areas in spot repairs or when fading out the clear in blend-in repairs.

	Application	For blending in clearcoats.
	**Paint System**	D.S7, D.S8, D.S9
	VOC ready for use **PWMIR**	729 gms/liter; 6.1 lbs/gal 1.49
	**Mixing ratio**	Ready for use
	**Number of spray coats**	2 or 3 light spray coats to the clearcoat fade-out areas to melt them in.
	**Drying**	As recommended for the Glasurit clear used.

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360-4 Metal Cleaner

Application: 360-4 is used to:

- Remove oil and grease (easily, quickly and thoroughly).
- Clean bare metal panels before and after sanding.

Remarks:

- Apply Glasurit 360-4 to a clean cloth/rag.
- Wipe off surface contaminants, sanding residue, oil or grease.
- In the case of hard to remove materials, a second cleaning with a new clean cloth/rag may be required.
- Also available in Aerosol.

	Application	Clean bare metal panels before and after sanding.
	**Paint System**	B1, B1a (aerosol version only)
	VOC ready for use	807 gms/liter; 6.7 lbs/gal
	Aerosol: **VOC ready for use** **PWMIR**	 6.1 lbs/gal; 725 gms/liter 2.82

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Technical Information

G M

541-5 Silicone and Tar Remover

Application: 541-5 is used to clean:

- The substrate before the application of 2K Primer Surfacers.
- After finish sanding of the primers.
- Cleaning agent for 22-, 55-, 90-Line systems.

Remarks:

- Clean areas with lint free cloth and 541-5, then wipe dry with a lint free cloth.
- Also available in aerosol.

	Application	Silicone and Tar Remover
	Paint System	B1, B1a (aerosol version only), C2, C3, D.S1, D.S4, D.S7, D.S8, D.S8.1, D.S8.2
	VOC ready for use	779 gms/liter; 6.5 lbs/gal
	Aerosol: **VOC ready for use** **PWMIR**	 761 gms/liter; 6.4 lbs/gal 2.06

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Technical Information

G M

541-30 Universal Cleaner for Plastics

Application: 541-30 is used to clean:

- Plastic substrates
- After finish sanding of the primers.
- Cleaning agent for 22-, 55-, 90-Line systems.

Remarks:

- Clean areas with lint free cloth and 541-30, then wipe dry with a lint free cloth.
- Also available in aerosol.

	Application	Universal Cleaner for Plastics
	Paint System	B1, B1a (aerosol version only), D.S3, D.S3a
	VOC ready for use	794 gms/liter; 6.6 lbs/gal
	Aerosol: **VOC ready for use** **PWMIR**	 735 gms/liter; 6.1 lbs/gal 1.91

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563-808 Sand Fix Paste

Application: Glasurit Sand Fix Paste is a wax and silicone free sanding paste. It is used to prepare panels that are to be blended in to. It eliminates sanding blend-in areas with fine sandpaper. Sand Fix Paste is water thinnable.

Remarks:

- Wash area to be blended with soap and water followed by cleaning with 541-5 Silicone and Tar Remover.
- Apply Sand Fix Paste to a fine scuff pad (grey or white) that has been wet with water. Rub entire area with pad and paste until a uniform dull finish is achieved.
- Wash off residue with water. Be sure to remove all traces of Sand Fix Paste from moldings, etc. Check for any spots that may have been missed, and repeat if necessary.

	Application	Wax and silicone free sanding paste
	Paint System	D.S7, D.S8, D.S8.1, D.S8.2, D.S9, D.S9.1, D.S9.2
	VOC ready for use	26 gms/liter; 0.2 lbs/gal

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Technical Information

G M

700-1 Waterbased Cleaner

Application: To clean surfaces and blend-in areas prior to the application of Glasurit 176-72 1K Waterborne Primer Surfacer and Glasurit 90-Line metallic or solid color basecoat. The cleaner acts as an anti-static agent and reduces dust settling during topcoat application on plastic parts. Can be used to clean spray guns and rinse clean spraying equipment.

Properties: Good cleaning properties. Anti-static effect (for plastics refinishing).

Remarks:
- Apply 700-1 to the panel that needs cleaning and wipe until clean, dry.
- Wipe dry immediately after use.

	Application	Cleaner for waterborne products
	Paint System	B1a, C1, D.S9, D.S9.1, D.S9.2
	VOC ready for use	200 gms/liter; 1.6 lbs/gal

NOTE: Glasurit 700-1 Waterbased Cleaner is supplied Ready For Use (RFU) for non-regulated areas and areas covered by the US EPA VOC regulation 63 FR 48806.

Glasurit 700-1 needs to be reduced with either Distilled or Deionized water to meet VOC regulations is some areas.

Refer to the Glasurit VOC wall chart for the specific AQMD of concern for the correct reduction ratio.

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700-7 Coagulating Powder

Application: When using waterborne products such as:

- Glasurit® 90 Line Basecoat, Metallics/Solids
- Glasurit® 176-72 1K Waterborne Primer Surfacer
- Glasurit® 1109-1240/4 Textured Stone Chip Protector, Black
- Glasurit® 1109-1240/6 Smooth Stone Chip Protector, Black

The water used to clean working tools should be collected in suitable containers.
These containers must not get in touch with solvents.

Use of 700-7 Coagulating Powder:

Add 2 or 3 scoops of 700-7 Coagulating Powder (approx. 75 g) per about 10 liters waste water (**scatter** the powder to distribute the particles evenly and to increase efficiency) and stir briefly.

After a short interval, the solids will start to coagulate and can then be separated from the liquid by filtering, for example through filter mats or appropriate sieves (with a mesh size of about 80-100 microns).

When the contaminant concentration in the waste water is very high (i.e., when the water has not become clear after about 15 minutes), add more 700-7 Coagulating Powder. There is **no** risk of overdosing with 700-7.

The coagulated substance must be disposed of according to hazardous waste regulations. The clear, aqueous phase may be used to clean spray equipment or disposed of according to water waste regulations. When you are not sure, consult the competent local authorities. **DO NOT DISCHARGE INTO PUBLIC SEWAGE SYSTEM.**

Properties:

- Glasurit® 700-7 Coagulating Powder is used to precipitate solids from the water used to clean working tools with which water-based products were processed.
- Once the coagulated substance has been separated, the clear, aqueous phase can be used again for pre-cleaning sprayguns, which are finally rinsed with fresh tap water.

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Technical Information

G M

700-10 Waterborne Degreaser

Application: To clean surfaces to be refinished. Removes silicone, grease and wax residues from surfaces as well as mold release agents from plastic surfaces. When cleaning plastic surfaces, the cleaner produces an anti-static effect and thus reduces dust settling.

Properties: Good cleaning properties. Anti-static effect (for plastics refinishing).

Remarks:

- Soak a lint-free cloth with 700-10 and wipe the surfaces to be refinished or spray 700-10 onto the surface to be refinished and wipe them with a lint-free cloth.
- Wipe dry immediately after use.

	Application	Degreaser for waterborne products
	**Paint System**	B1a, C1
	VOC ready for use	180 gms/liter; 1.5 lbs/gal

NOTE: Glasurit 700-10 Waterbased Cleaner is supplied Ready For Use (RFU) for non-regulated areas and areas covered by the US EPA VOC regulation 63 FR 48806.

Glasurit 700-10 needs to be reduced with either Distilled or Deionized water to meet VOC regulations is some areas.

Refer to the Glasurit VOC wall chart for the specific AQMD of concern for the correct reduction ratio.

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Technical Information

G M

1109-

Application: **1109-1240/4 Textured Stone Chip Protector, Black:**
Textured stone chip and underbody protector.

1109-1240/6 Smooth Stone Chip Protector, Black:
Smooth stone chip and underbody protector.

Remarks:

- Isolate body filler spots with Etching Primers 283-.
- Clean spray equipment immediately with water.
- Remove overspray within 30 min. with a damp sponge or 352-91 Reducer.
- 1109- is also suitable as an isolator for old paint bleed through, peroxide staining, and acrylic lacquer.
- 1109-1240/4 - Packaged in one liter screw top container, which requires special “Schutz” gun.
- 1109-1240/6 - Ready to spray one liter cans. Gravity gun is preferable.

	Application	Textured stone chip and underbody protector	Smooth stone chip and underbody protector
	VOC ready for use	44 gms/liter; 0.4 lbs/gal	44 gms/liter; 0.4 lbs/gal
	**Reducer**	Water as required	Water as required max. 5%
	**Spray viscosity DIN 4 at 68°F / 20°C**	20 s	20 s
	**Gravity cup / Spraying pressure**	—	HVLP: 1.5 mm / 45 - 75 psi at air cap Conventional: 1.5 mm / 45 - 75 psi
	**Schutz gun**	3 - 4 mm / 60 - 90 psi according to texture desired	—
	**Number of spray coats**	4 - 6	1 - 2
	Film thickness	20 - 40 mils	1.6 - 2.0 mils
	**Drying at 68°F / 20°C** **at 140°F / 60°C**	6 hrs. 45 - 60 mins.	2 hrs. 30 mins.
	**Infrared short wave** **medium wave**	10 - 15 mins. 15 - 20 mins.	7 - 10 mins. 15 - 20 mins.

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H Tech Tips

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Technical Service Bulletin

Applying DECALS over Fresh Topcoats

Number: GLABUL0091-E **Date: March 25, 2004**

The Technical Information Call Center has received numerous requests for information on the proper flash/cure time before applying decals and stripes to surfaces that are freshly painted with Glasurit materials.

As a rule of thumb, cure time before application of a DECAL will depend on both the width and thickness of the decal being applied. A thin, wide decal will trap solvents similarly to a narrow but thick decal, potentially resulting in blistering.

To avoid blistering, the lab recommends waiting the following times before applying DECALS on air-dried or baked finishes;

- Wait at least **48 hours** before applying stripes.
- Wait at least **1 week** before applying large or thick decals.

Remember: To eliminate potential problems, it is always better to be over-cautious!

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Technical Service Bulletin

Using Glasurit 522-322 Flattener

Number: GLABUL0097-E **Date: 7 June 2004**

Many of today's vehicles are refinished in multiple gloss levels, especially in bumper, cladding and trim areas. Glasurit has developed a unique product that allows users to develop flattened or lower - gloss finishes easily while maintaining a degree of flexibility in the product the flattener is being added to.

Mixing Ratios for Gloss Reduction:

100 parts 22-Line Color + 25 parts 522-322 = Semi - Gloss

100 parts 22-Line Color + 35 parts 522-322 = Satin

100 parts 22-Line Color + 45 parts 522-322 = Matte

100 parts 923-Clear + 25 parts = Semi - Gloss

100 parts 923-Clear + 50 parts = Satin

100 parts 923-Clear + 70 parts = Matte

Application Suggestions:

- Prepare only the quantity of paint or clearcoat that will be used the same day, as the gloss level may change when the mixture is stored.
- Flash until completely matte between coats of topcoat.
- Follow recommended topcoat mixing ratio instructions after the addition of the 522-322.
- Follow recommended topcoat drying times according to Technical Manual instructions.
- Note that adding 522-111 Elastifier will raise the topcoat's gloss level.
- Use 522-345 Texture Additive to develop low gloss, textured flexible topcoats.

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Technical Service Bulletin

Repairing Rail Dust Damage

Number: GLABUL0101-E **Date: August 26, 2004**

Over 70 percent of new vehicles are transported by way of a railway system. Many of these vehicles become damaged by hot iron particles that are produced by the friction between a train's wheels and the railroad tracks. Commonly referred to as rail dust, this type of environmental damage can be identified as small rust or orange-colored dots with black centers, or as white or silver-colored dots with a rainbow hue around the edges. In most cases, a damaged vehicle's surface will feel rough to the touch.

If the iron particles embedded into the vehicle's finish are left untreated, they can cause additional damage. The timely removal of rail dust contamination is the key to ensuring a long-lasting factory finish. The Glasurit Technical Services lab has developed the following guide to help you assess and repair various degrees of rail dust damage.

Rail Dust Repair Procedure

1. Begin by assessing the damage with a magnifying glass. Verify the presence of iron particles.
2. Wash the vehicle with soap and warm water. Dry the vehicle.
3. Clean the damaged area with Glasurit 541-5 Silicone and Tar Remover. Wipe off with a clean, dry rag.
4. Rinse the vehicle with cold water in a cool, shaded area.
5. Assess and repair the damage accordingly:

A. <u>Level One Damage (light surface damage)</u>

A.1. Remove the rail dust by soaking several cloth towels in a container of rail dust remover (oxalic acid). **Be sure to read the manufacturer's technical and safety recommendations first.**

A.2. Lay the soaked towels on damaged area for no more than 20 minutes. In order to prevent the cleaner from drying on the surface, keep the towels moist by spraying them with water.

A.3. Remove the towels and rinse the area with cool water. With a magnifying glass, inspect the area to ensure the fallout has been removed.

A.4. If the area is still damaged, repeat steps A.1 to A.3 up to a total of four (4) times.

A.5. If the iron particles are still embedded in the finish, select a test area to wet sand by hand with P1500 grit paper. Use plenty of water to flush loosened dust off the vehicle.

A.6. Remove water and sanding residue. Inspect the sanded area with a magnifying glass. If sanding corrected the problem, perform steps A.5 and A.6 over the entire damaged area. **NOTE:** If sanding did not correct the problem, the damage may be more severe. Refer to Levels Two and Three for proper repair procedures.

A.7. If sanding did correct the problem, polish the damaged area.

B. <u>Level Two Damage (damage penetrates the clear but not the color)</u>

B.1. Wet sand with P600 grit paper down into, but not through, the clearcoat. Finish with P1000-1200 grit paper.

B.2. Remove water and sanding residue. Inspect the sanded area with a magnifying glass. If sanding did not correct the problem, the damage may be more severe. Refer to Level Three for proper repair procedures.

B.3. If sanding did correct the problem, apply any Glasurit 923- clear according to recommended procedures.

C. <u>Level Three Damage (damage penetrates through the clear and into the color)</u>

C.1. Wet sand with P500 grit sand paper through the clearcoat and into the basecoat.

C.2. Apply one coat of Glasurit 285-0 2K Transparent Filler mixed 2:1:10%.

C.3. Apply Glasurit 55-Line Basecoat or Glasurit 90-Line Waterborne Basecoat to hiding, blending as necessary.

C.4. Apply any Glasurit 923- clear according to recommended procedures.

Refer to the Glasurit Technical Manual for more detailed technical information on the products mentioned in this bulletin.

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Technical Service Bulletin

22-Line Blending Procedure Using 923-450

Number: GLABUL0106-E **Date: January 7, 2005**

When doing a spot or panel repair job in Glasurit 22-Line Acrylic Topcoat and blending with clear over the color, it is essential that the proper procedure be followed. Failure to follow the recommended steps can result in dieback, poor gloss retention and solvent popping.

The recommended procedure for the 5.0 VOC version (using 522-M0 Mixing Clear) is:

1. Mix the 22-Line Color per normal procedure using 929-91, -93, -94 hardener at a 2:1:10% ratio with either 352-50, -91 or -216 reducer.
2. Apply 2 or 3 **light** coats of 22-Line color, allowing 5-8 minutes flash time before the application of clearcoat. Do not allow it to flash longer than 10 minutes prior to application of the clearcoat.
3. Apply 1 full wet coat of Glasurit 923-450 Multi-Temp Baking Clear mixed 2:1:10% with the same hardener and reducer combination or a slower combination to achieve the desired final smoothness and gloss.

NOTE: For the best results, the application of 22-Line should **not** be wet….be sure to apply the 22-Line in light coats only.

Refer to the Glasurit technical manual for more detailed technical information on the products mentioned in this bulletin.

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Technical Service Bulletin

Quicker, Simpler Blends with Glasurit 55-B500 Blending Clear

Number: GLABUL0108-E **Date: February 23, 2005**

When color variations are expected and there are no logical cut-off points on the panel being repaired, it is often easier to overcome the differences by blending the basecoat into surrounding areas or adjacent panels. When blending, an orientation coat is required to help orientate metallic flakes and prevent dramatic shifts in color.

Before the launch of 55-B500 Blending Clear, the official recommendation for using an orientation coat under 55-Line blends was to use an over-reduced clearcoat. While that procedure is still a great way to blend, using 55-B500 offers the following additional benefits:

- 55-B500 is ready-to-spray and can be used without cleaning the gun before basecoat application.
- Since it does not require any hardener, any unused portion of 55-B500 can be returned to the can, saving time and material.
- 55-B500 can be sprayed **under and/or over** the basecoat in the fade-out zone to help orientate metallics and eliminate overspray or dark shading at the edges.
- For hard-to-match colors, a light coat of 55-B500 sprayed over the blend produces a wet, glossy finish, making it easier to check the color match and adjust it as needed.
- 55-B500 levels out at any temperature, filling and hiding sand scratches better than over-reduced clearcoat.

Note: Use 55-B500 in the same manner as you would use an over-reduced clearcoat. You may use 10% 355-55 basecoat hardener to catalyze 55-B500.

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Technical Service Bulletin

Multicolor Painting with 90-Line

Number: GLABUL0109-E **Date: March 24, 2005**

As environmental regulations become ever more stringent, the Glasurit Technical Laboratory continues to provide innovative solutions for the challenges that face the market. With the 90-Line Waterborne System, Glasurit provides users a fast-drying, durable finish that dramatically reduces solvent emissions. Just like 55-Line, 90-Line can be used to achieve a multicolor finish. Simply follow the steps outlined below. For more precise technical information, please refer to the Glasurit Technical Manual.

Pretreatment
- Sand old paintwork or primed areas with a DA sander (P400 dry or P800 wet).
- Clean surface with 700-1.

First Color
- Apply first color, starting with the lightest color first.
- Dry 10 min. at 140° F, or with a shortwave IR lamp for 3 minutes.

Masking
- Let vehicle cool down to approximately 86° F before masking.
- Mask first color using a flexible tape and plastic film. To prevent the bleeding of wet paint, do not use masking paper. Normal tape may be used to fix plastic film.

Second Color
- Apply second color.

Intermediate Drying
- Remove all masking material.
- Allow second coat to dry 10 min. at 140° F, or 3 minutes with a shortwave IR lamp.

Additional Colors
- If spraying additional colors, repeat masking, color application, and intermediate drying steps.
- Flash off the final color coat completely before applying a clearcoat.

Clearcoat Application
- Apply any approved 923- clearcoat according to technical specifications. Please check local wall charts to ensure VOC compliancy.

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Technical Service Bulletin

Blending 22-Line Using 352-400

Number: GLABUL0115-E **Date: July 21, 2005**

Glasurit 22-Line offers the following procedure for “blending-in” solid colors. Blending-in can be a more economical approach to panel repairs, and is another way to save labor time and materials. Upon completing the necessary steps to prepare the new or repaired part for its top-coating step, spray the surrounding area of the panel repair where there are no body seams or trim strips on the undamaged portion of the vehicle. Using the 352-400 along with the 923- clearcoat allows for proper melt-in and leveling of the clearcoat blend edge.

Step One: Clean the undamaged area using 541-5, sand the area with 563-808 along with a grey sanding pad, and re-clean with 541-5.

Step Two: Spray the damaged/repaired area with 22-Line at reduced pressure (45 psi).

Step Three: Blend out the edge onto the surrounding areas using a thin mist coat of 22-Line at reduced pressure (30 psi).

Step Four: After a five-minute flash, the entire area/panel is sprayed with one wet coat of 923-clearcoat, mixed with 50% 352-400. Do not allow more than a ten-minute flash prior to applying the clearcoat. Additionally, use either the same or slower hardener and reducer combination when mixing the clearcoat.

Always check local VOC restrictions before applying Glasurit products to ensure VOC compliance.

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Technical Service Bulletin

Glasurit Body Filler Options

Number: GLABUL0124-E **Date: 1 March 2006**

Throughout the collision repair process, circumstances may arise when the use of body filler is required to fill light dents and gouges. Using Glasurit's high quality body fillers will provide you with the peace of mind and the flexibility that you expect from a world-class refinishing system.

839-20 Glasurit Double Plus Body Filler
839-20 is a two-component, high-solid, fine/coarse body filler for use directly over a variety of automotive substrates, including aluminum, sheet metal, and zinc-plated panels. The filler should be applied over bare substrates (without primer). The 839-20 offers fast ambient cure times of 20-30 minutes at 68°F/20°C. It may also be cured in 3 minutes using an infrared short-wave lamp. You must prime or seal 839-20 prior to topcoat application.

1006-23 Glasurit Polyester Spray Filler
1006-23 is a two-component, fine putty/body filler for spray application on sheet metal and well-cured existing finishes. This product is suitable for the repair of fiberglass-reinforced plastic parts without gelcoat, making it a great addition for shops repairing fiberglass parts. Application of thick coats is possible due to its high filling capabilities. A minimum film thickness of 8 mils is suggested when using 1006-23. The 1006-23 Spray Filler can be air-died, baked, or force-dried with an infrared short- or medium-wave lamp. You must prime or seal 1006-23 prior to topcoat application. Please note that 1006-23 has an eight-month shelf life.

839-90 Glasurit Plastic Body Filler
839-90 is a flexible, two-component, fine body filler for plastic materials that allows shops to repair damaged plastic parts by leveling off scratches. This body filler can be used universally on all paintable plastics (except Polypropylene [PP] and Polyethylene [PE] in their pure forms) after application of Glasurit 934-0 1K Plastics Adhesion Primer. The maximum film thickness of this product should not exceed 4 mils; exceeding this thickness will decrease the flexibility of the paint film. 839-90 can be cured using a medium- or short-wave infrared lamp, or in ambient conditions.

Please refer to the Glasurit Technical Manual for additional information on these products. As always, check your local VOC laws to ensure these products are compliant in your area.

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Technical Service Bulletin

90-Line Underhood Application Process

90-Line Underhood (285-0 - National Rule)

90-Line Underhood (285-02 - Low VOC)

Number: GLABUL0126-E **Date: 12 April 2006**

The Glasurit 90-Line Waterborne Basecoat has become the system of choice for many shops that value quality and innovation. For an easy and durable underhood coating, 90-Line customers may now use the following process*. The process can be used on e-coat or well-cured paintwork that has been properly scuffed and cleaned. It can also be used on bare metal parts that have been properly cleaned, sanded and pretreated with 285-16 2K Primer Filler. As always, please check local VOC wall charts to ensure that these products are compliant in your area.

Substrates

- Parts primed with e-coat.
- Well-cured paintwork.
- Parts that have been treated with 285-16 2K Primer Filler.

Pretreatment

- Clean e-coat and old paintwork with 541-5 Silicone and Tar Remover. Scuff with a grey pad. Clean again with 700-1 Waterborne Cleaner.
- For bare metal substrates, mix 285-16 4:1:1 with 929-51 hardener and 352-50 reducer. Flash off for 10 minutes at a temperature of at least 20°C/68°F.

Topcoat

- Mix by volume:
  90 parts 285-0 2K Transparent Filler
  10 parts 90-Line tint or intermix color (do not add M4 or E3 to the mix)
  50 parts 929-51 hardener
  10 parts 352-50 reducer
- Spray two medium wet coats, allowing 5-10 minutes flash between coats.
- Bake for 30 minutes at 60°C/140°F or allow to air dry at room temperature overnight.

***Note: This process should not be used with 55-Line systems.**

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Technical Service Bulletin

Using 285-38 & 285-49 Non-Sanding Sealers

Number: GLABUL0145-E **Date: March, 2007**

As a reminder, wet-on-wet sealers are ideal for quick applications of an undercoat. Undercoats help to fill surface imperfections, as well as give the topcoat a clean surface on which to be applied. Sealers are applied wet-on-wet and therefore, provide speed for your repair. As with all wet-on-wet applications, dieback could be a concern. To keep dieback to a minimum, the proper film build and flash time must be followed. In general terms, one coat of sealer over the repair area and a second coat over the entire panel is sufficient. If the repair requires more than this to hide, consider using a primer/surfacer instead; however, unlike many competitive basecoats Glasurit 90L and 55L are not reliant on the use of sealers to improve hiding. The main use of the Glasurit sealers is to ensure a smooth transition in the blending area.

The new Glasurit sealers 285-38 White and the 285-49 Black are excellent sealers and can be used individually as a black or white sealer or in combination to create a variety of grey colors. The shading recommendations that will help you choose the proper mix for the color that you will be topcoating with can be found on the **"Save time with White and Black no sanding fillers 285-38 and 285-49."** poster **AD2902G**. This poster gives examples of the various grey colors that can be achieved, giving the painter a glimpse of what to expect before he mixes the primers together. For less transparency of the primer, intermixing of the two primers is recommended. Tinting of the primer with toners is not permitted, only the intermixing of 285-38 White and 285-49 Black.

The correct application when using wet-on-wet sealers is important for a quality repair. Refer to your Glasurit manual for specific information for the products being used.

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Technical Service Bulletin

Cutting-In Parts with Glasurit 90-Line

Number: GLABUL0150-E **Date: 8 November 2012**

The BASF Technical Customer Service Laboratory has developed the following procedure for cutting-in parts with Glasurit 90-Line Waterborne Basecoat. This system utilizes either Glasurit 923-200 Ultra Low VOC Clear, 923-222 Fast Repair Low VOC Clear or 923-240 Low VOC Rapid Repair Clear mixed with 90-Line tinting bases.

Mixing Instructions

Step 1 - 3:1
3 volume parts Glasurit 923-200, 923-222 or 923-240
1 volume part 90-Line Tinting Bases (Do not add 90-M4 or 93-E3)

Step 2 - 2:1:10%
100 volume parts Clear / 90-Line Mixture
50 volume parts Glasurit 929-110 or 929-120 hardener
10 volume parts Glasurit 352-25 or 923-45 reducer

Application

Apply 2 medium wet coats with 10 minutes between coats.

Curing (when using 929-110)

Drying at Room Temperature:	6 hours at 68°F / 20°C for 923-200
	5 hours at 68°F / 20°C for 923-222 or 923-240
Drying at Forced Conditions:	30 minutes at 140°F / 60°C for 923-200
	15 minutes at 140°F / 60°C for 923-222 or 923-240

This procedure provides a durable finish that can be used **for cutting-in parts only**; in application areas such as doorjambs, under-hood areas, and inner panel areas.

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Technical Service Bulletin

Using 90-M5 as a Uniform Finish Blender

Number: GLABUL0164-E **Date: November 2007**

When blending for color match, it is recommended that a uniform finish blender be utilized in order to minimize sand scratches, allow for proper orientation of metallic and pearl colors, and promote adhesion of the clearcoat to the existing OEM clearcoat finishes.

Customers using Glasurit 90-Line Waterborne Basecoat along with Glasurit 923-200 or 923-222 clearcoat should utilize the following simple procedure to ensure proper adhesion of basecoat and clearcoat when blending.

Mix Ratio

2 parts 90-M5
1 part 93-E3

1. Apply one (1) wet spray coat to the entire panel prior to applying color.

2. Apply 90-Line color over area being blended.

3. After proper flash time has been observed, apply 923-200 or 923-222 clearcoat over the entire panel area that has been treated with the 90-M5 blending clear.

Use of this procedure will help ensure an accurate color match and proper inter-coat adhesion between the existing OEM finish and the Glasurit clearcoat, all while giving you superior performance.

As with all Glasurit products, please refer to the Technical data sheets for proper usage.

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Technical Service Bulletin

90-Line Cut-In Procedure Using 923-109 and 923-255

Number: GLABUL0182-E **Date: 9 July 2008**

The BASF Technical Customer Service Laboratory has developed the following procedure for cutting-in parts with Glasurit 90-Line Waterborne Basecoat. This system utilizes either Glasurit 923-109 HS UV Klarlack, or Glasurit 923-255 HS Multi-Clear mixed with 90-Line tinting bases.

MIXING INSTRUCTIONS

STEP 1:

- Replace the 90-M4 in the color formula with either 923-109, or 923-255 clear.
- Refer to the 90-Line color formula as the amount of 90-M4 will vary.

STEP 2: 2:1:10%

- 100 volume parts of the clear/ 90-Line mixture from Step 1
- 50 volume parts Glasurit 929-91 hardener
- 10 volume parts Glasurit reducer 352-91 reducer

APPLICATION

- Apply 2 medium wet coats with 5 – 10 minutes flash between coats.

CURING (when using 929-91)

Drying at room Temperature:	923-109	4 hours @ 68°F/20°C
	923-255	6 hours @ 68°F/ 20°C
Drying at forced conditions:	30 minutes @ 140°F/ 60°C	

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Technical Service Bulletin

Priming Under Glasurit 839-20 Body Filler

Number: GLABUL0183-E **Date: 8 August 2008**

Glasurit recently introduced two new Low VOC DTM (Direct-to-Metal) primer fillers, Glasurit 285-10 Low VOC DTM Primer, Black and 285-20 Low VOC DTM Primer, White. These primers are designed to meet the productivity needs of body shops in VOC regulated markets by eliminating the need for an etch primer step and providing fast drying times.

To add to the versatility of these primers, the BASF Technical Customer Service Laboratory is pleased to announce that the primers have now been approved for use under the **Glasurit 839-20 Double-Plus Body Filler**. Using the 285-10 and 285-20 as an anti-corrosion primer under the Glasurit 839-20 provides additional corrosion protection and adhesion between the polyester body filler layer and the bare metal surface, giving a higher quality and more durable repair.

To ensure proper application and adhesion, apply **ONE** light coat of the 285-10/285-20 to the properly sanded and cleaned bare metal surface area. The dry film build of the 285-10/285-20 should be around 20 microns (0.8 mils). Allow the 285-10/285-20 anti-corrosion primer to dry 30 minutes at room temperature 68°F/20°C before applying the Glasurit 839-20 body filler.

Mix Ratio

4 parts 285-10/285-20
1 part 929-23 Low VOC Hardener, Normal
1 part 352-45 Exempt Reducer, Slow

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Technical Service Bulletin

Adjusting 90-Line for Hot Condition Applications with SATA 3000 Sprayguns

Number: GLABUL0184-E **Date: 4 September 2008**

Recently, a study conducted by **BASF** and **SATA** was performed using Glasurit's 90-Line waterborne basecoat in hot conditions. The results have yielded the following recommendations.

HC = Hot Condition Tips 1.4HC or 1.5HC

60°F – 75°F

Mix and apply 90-Line basecoat per Technical Data Sheet Specifications (2:1 with 93-E3).

Recommended spray guns: SATAjet 3000 HVLP 1.3 tip.

75°F – 85°F

Option 1: Mix and apply 90-Line basecoat per Technical Data Sheet Specifications (2:1 with 93-E3).

Option 2: Mix 90-Line basecoat per color formula using 90M4S (slow) in place of 90M4, then reduce with 93-E3S (slow). If metal temp is above 85°F reduce 2:1 up to 1:125% with 93-E3S.

Recommended spray guns: SATAjet 3000 RP 1.3* or SATAjet 3000 HVLP 1.4 **HC**

*Recommended spray pressure is 22 PSI for first two coats, then 15 PSI for effect coat.

85°F – 100°F

Mix 90-Line basecoat per color formula using 90M4S (slow) in place of 90M4, then reduce with 93-E3S (slow). If metal temp is above 85°F reduce 2:1 up to 1:125% with 93-E3S.

Recommended spray guns: SATAjet 3000 RP 1.4* or SATAjet 3000 HVLP 1.5 **HC**

*Recommended spray pressure is 22 PSI for first two coats, then 15 PSI for effect coat.

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Technical Service Bulletin

90-Line Cut-In Procedure Using 923-550

Number: GLABUL0192-E **Date: 5 November 2008**

The BASF Technical Customer Service Laboratory has developed the following procedure for cutting-in parts with Glasurit 90-Line Waterborne Basecoat. This system utilizes Glasurit 923-550 High Performance Clear mixed with 90-Line tinting bases.

MIXING INSTRUCTIONS

STEP #1

3 volume parts Glasurit 923-550 High Performance Clear

1 volume part Glasurit 90-Line color (without 90-M4 or 93-E3)

STEP #2

2 volume parts 923-550/90-Line color mixture

1 volume part 929-91 hardener

10% 352-50, or 352-91 reducer

APPLICATION

Apply 2 medium wet coats with 5 – 10 minutes flash between coats.

CURING (when using 929-91)

Drying at room Temperature: 923-550 6 hours @ 68°F/ 20°C

Drying at forced conditions: 30 minutes @ 140°F/ 60°C

As with all vehicle refinishing procedures, one should verify that the coating conforms to local VOC regulations.

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Technical Service Bulletin

Using Glasurit 285-38 or 285-49 Sealers Over Unsanded E-Coat

Number: GLABUL0202-E **Date: 19 January 2009**

The BASF Glasurit Technical Service Laboratory has received requests for a recommendation using Glasurit 285-38 HS Non-Sanding Sealer, White, and Glasurit 285-49 HS Non-Sanding Sealer, Black, over unsanded e-coat on new OE parts. After extensive testing, the Laboratory has developed the following procedure:

APPLICATION PROCEDURE:

1. Perform a solvent sensitivity test over the e-coat using Glasurit 352-91 to ensure the primer is not solvent sensitive. If the factory applied primer swells, becomes sticky or is softened, it will need to be removed. Refer to the Glasurit Technical Manual for further information. If primer does not soften, continue to step 2.
2. Thoroughly clean part with Glasurit 360-4 Metal Cleaner.
3. Mix the sealer as follows:

   100 volume parts Glasurit 285-38 and/or 285-49

   50 volume parts Glasurit 929-51 or 929-53

   30 volume parts Glasurit 352-91 or 352-216.
4. **Within 15 minutes of cleaning** apply 1-2 coats of sealer with a 5 minute flash between coats.
5. Flash off for 30 minutes.
6. Apply Glasurit 55-Line Basecoat mixed according to the Glasurit Technical Manual.
7. Flash until matte.
8. Apply Glasurit Clearcoat 923- (refer to Glasurit Tech Manual for mix ratios).
9. Air dry or bake finish per technical specifications.

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Technical Service Bulletin

Glasurit 90-Line Two-Toning Procedure Using 923-200 and 923-550

Number: GLABUL0203-E **Date: 24 February 2009**

The Glasurit Technical Service Laboratory has developed a new procedure for two - toning when using Glasurit 90-Line Waterborne Basecoat. This new procedure has been thoroughly tested and will yield excellent results if you follow these simple steps:

Step 1:

Mix 90-Line color according to the formula.
Apply color to hiding (usually 2 - 3 coats).
Flash 90-Line until matte.

Step 2:

Mix 1 part 923-200 RFU with 3 parts 352-25 (or 1 part 923-550 RFU with 2 parts 352-25).
Apply 2 even coats with 5 minutes flash between coats.
Bake 20 minutes @ 140°F/60°C. Let panel cool to room temperature.
Note: The clearcoat can be air dried for at least 24 hours at 68°F (20°C) if there are no baking facilities.

STEP 3:

Dry sand with 800 – 1000 grit, then clean with a damp cloth.
Tack panel, then add masking materials.

STEP 4:

Mix and apply second color (refer to Step 1).
Flash 90-Line basecoat until matte.
Apply any VOC compliant Glasurit clearcoat.
Refer to the Glasurit Technical Manual for mix ratios and application specifications.

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Technical Service Bulletin

Mixing Glasurit 90-Line Intermix Colors

Number: GLABUL0204-E **Date: 25 February 2009**

As an update to the previous Technical Service Bulletins issued on this topic, we have added the slow mixing clears (90-M4S (90-M4EDT on California) & 93-E3S) to this bulletin. When using Glasurit 90-Line to mix intermix colors, it is important to follow a few simple tips to ensure a quality finish.

1. Be sure to rotate all stock. Any new base should be mixed on a mechanical paint shaker for 15 minutes before placing on the intermix machine. Old material can cause problems with both color matching and general appearance.
2. Check the 90-M4, 90-M4S, 90-M4EDT, 93-E3 and 93-E3S to ensure that the materials being used are within the manufacture's shelf life.
3. Be sure to add the 90-M4 (90-M4S, 90-M4EDT) first to the container, followed by the tinting bases. If there is 93-E3 (93-E3S) in the intermix color formula, it must always be the last ingredient added to the intermix.
4. Prior to adding any 93-E3 (93-E3S), the mixture must be thoroughly mixed manually (for 2-5 minutes) after addition of the final toner. Use of a paint shaker is also acceptable.
5. If there is 93-E3 (93-E3S) in the color formula and the color is not going to be reduced for immediate use, thoroughly mix the 93-E3 (93-E3S) into the color (for 2-5 minutes) within 10 minutes of addition of the last toner.
6. While the 93-E3 (93-E3S) does not have to be added at the time of the initial weigh-up (**unless** it is part of the intermix formula), when it is added prior to application it **must** be mixed thoroughly into the color (for 2-5 minutes) within 10 minutes of addition.
7. Mixed colors, with or without 93-E3 (93-E3S), may be stored for up to 6 months if these procedures are followed, and the colors are stored in a plastic or lined (coated) can.

Failing to use a mechanical paint shaker to mix the tinting bases prior to installation on the mixing machine, or to fully mix in the 90-M4 (90-M4S, 90-M4EDT) and the 93-E3 (93-E3S) into the color formula greatly increases the chance of seed formation in the 90-Line, as does waiting more than 15 minutes before mixing the paint.

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Technical Service Bulletin

Procedure to De-nib Glasurit 90-Line

Number: GLABUL0205-E **Date: 5 March 2009**

The Glasurit Technical Service Laboratory has recently revised the previously published method (bulletin GLABUL0189) for taking dirt out of Glasurit 90-Line Waterborne Basecoat. The following procedure was developed and tested for properly de-nibbing Glasurit 90-Line Waterborne Basecoat. This system can be utilized with both catalyzed and non-catalyzed Glasurit 90-Line waterborne paint mixtures.

1. Ensure basecoat has proper dry time; drying the basecoat may be enhanced when using dry jets (venturi driers) or force drying the basecoat. Paint may be force dried at 140°F for 15 minutes, or by the use of dry-jets (time will vary) prior to de-nibbing. Coating surface must be completely matte before sanding. Failure to allow all of the water to evaporate can result in reduced adhesion in addition to poor sanding results.
2. Do not use water when de-nibbing the basecoat, dry sand only. Solvent based liquids and sanding products (i.e., compounds, polishes) must also be avoided when sanding the basecoat.
3. Use extreme caution when sanding. Use a **light pressure** only. Applying too much pressure will tear the basecoat. De-nib the Glasurit 90-Line Waterborne basecoat with the following products for best results:
    a. 3M Trizact 800 grit,
    b. Mirka 1000 grit,
    c. Norton Rotolo 800 grit, or
    d. fine sanding pads including the 3M 02600 and Norton 03077.
4. Re-coat as necessary, allowing for sufficient flash time prior to applying clear.

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Technical Service Bulletin

Approved Disposable Cup Systems Updated

Number: GENBUL4088-E **Date: July 25, 2008**

In the past year, many manufacturers have introduced disposable cup systems. As a service to our customers, the BASF Technical Service group would like to offer this summary of tested and approved disposable cup systems for BASF Automotive Refinishing products. If a manufacturer is not listed, their product has not been evaluated by the BASF Applications group.

After extensive testing by application specialists in the Whitehouse, Ohio laboratory, we are able to make the following recommendations;

Manufacturer	Cup System	Approved for Basecoat	Approved for Clearcoat
3M	PPS	200 micron flat filter	125 micron flat filter
DeVilbiss	DeKups	200 micron flat filter	125 micron flat filter
Iwata	Mix & Spray	60 mesh 'barrel' filter	60 mesh 'barrel' filter
SATA	RPS	200 micron 'barrel' and flat filter	125 micron flat filter

NOTE: The above table is a listing of the finest filter approved for the use indicated. It is acceptable to utilize a coarser filter for clearcoat (or basecoat) than the one listed.

As with all BASF products, please refer to the Technical data sheets for proper usage.

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Technical Service Bulletin

Techniques to Reduce Dirt and Dust

Number: GENBUL4108-E **Date: July, 2009**

A frequent concern reported to the Technical Customer Service Hotline is related to dirty paint films. The following suggestions will help you to minimize those issues and keep your job spotless.

1) After cleaning the paint cup, let it dry upside down instead of wiping it with a cloth. This will prevent lint from the cloth from contaminating the cup and the paint that goes into it next.
2) Keep the surface of your mixing bench clean. An ideal table to mix on would have a stainless top that could be cleaned regularly. A paper cover can cause paper fibers to stick to the gun cup and end up in your paint job.
3) Use metal paint sticks. Wooden sticks may leave wood resin and fibers in paint as solvents break them down. Take care when using metal sticks , that they don't damage the sides of the vessel.
4) Be sure that all lines and filters are changed at suggested intervals.
5) Do not keep any unnecessary parts in the paint area. They are a source of dust collection; if the painter should rub up against it unknowingly the dust will hitch a ride with him into the booth.
6) Never use the spray booth hose outside the spray booth to do other work. Loose dust and dirt may be returned to the booth when it is next used.
7) Never do any sanding inside of the booth.
8) Try to keep the first six feet of the air hose off of the booth's floor to avoid the floor dust from being transferred to the hose.
9) Keep the hose off of the floor when moving the vehicle in and out of the booth. A hose on the floor can get run over causing the inside to break down and release particles from the inner lining. (A good reason to use in line filters on the gun.)
10) A final tack off should be done without blowing to prevent dirt from being moved to an area that was already tacked off. While tacking large areas keep rotating the tack cloth. Expose as much new surface area of tack cloth as possible. Change tack cloths frequently. They are cheap when compared to redoing a paint job. Always tack your hand, the hose, and the spray gun before starting a paint job to remove dust.
11) Take care that there is no loose dirt or dried paint when using masking paper, spray suits, and disposable wheel covers to ensure that dust is not brought to the job from their surface.

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Technical Service Bulletin

Recognizing and Avoiding Solvent Popping Conditions

Number: GENBUL4168-E **Date: March 30, 2011**

Solvent popping is caused when solvents become trapped below the surface of the top coating and then volatilize, or turn into a gas, before they can escape the surface of the film. The solvent may become trapped because of one of the following situations:

1) When using a sealer, the sealer was applied too heavily or not given enough flash time. If the sealer was top coated while it was still too "wet", it will continue to exude solvents which are then released into the top coatings. If the panel that is being repaired is in need of a thick film of undercoat in order to smooth out the imperfections in the area where it is being applied, consider the use of a primer rather than a sealer. A cured and sanded primer will provide more filling properties without the danger of trapping solvents.

2) Incorrect airflow in the booth. If it is too high it may cause the top coating to skin over and trap solvents below its surface. If the airflow is too low it will not move the solvent as it evaporates from the film quickly enough and the cure of the film will progress to the point where the film will skin over and the solvent can no longer evaporate.

3) Incorrect baking temperature. If the bake temperature is too low, just like airflow being too low, the film with skin over before the solvent is completely driven out and it will become trapped. If the bake temperature is too high it will flash cure the surface and trap solvent below the surface. The very dark colors, especially black, will attract radiated heat more quickly than lighter colors. If the paint film is warmed too quickly it could skin over during the bake cycle and trap solvent. By utilizing a slower reducer when using dark colors you will be able to keep the surface open longer and allow the solvent to escape the film.

4) Putting a freshly baked vehicle into direct sunlight may result in solvent popping. Even if the vehicle was baked at the proper temperature for the recommended length of time there may still be some solvent in the film. When the radiant energy of direct sunlight comes in contact with a freshly painted surface, especially in summer weather and with dark colors, the residual solvent may volatilize or out-gas, creating solvent pop.

By applying the materials at their recommended film builds, following the flash time that each product requires to remove the solvent from the film, ensuring the proper airflow over the surface of the film, and by matching the proper speed hardener and reducer for the shop conditions, solvent popping will become a problem of the past.

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Technical Service Bulletin

Test to Determine if Glasurit 90-Line Mixing Clear has been Frozen

Number: GLABUL0262-E **Date: 12 October 2011**

A possibility for having “seeds” in a waterborne paint film during the winter months could be related to the use of waterborne mixing clear (Glasurit 90-M4, 90-M4S, 90-M4EDT) or blender (Glasurit 90-M5, 90-M50) that has been frozen and thawed. It must be mentioned that material needs to freeze only **once** for this to be the result. It is very possible that someone using a mixing clear that had been frozen would not be able to tell that the material is bad prior to their use. This makes for a dangerous situation, as the discovery of seeds in the applied film would be the only way to know if it is good material or not.

If you suspect that your material may have been frozen in transit, there is a simple test that can be done to determine if the product is good. This test will require a clean container to pour a sample of the material from and a piece of clear glass that is approximately twelve inches long and four inches wide. You will also want to have a receptacle that is wide enough to hold your glass panel. If your glass is 4x12 inches, an empty gallon container will work.

Step 1) Transfer some of the material to be tested into a clean container that is capable of holding at least 50ml of liquid.

Step 2) Lean your glass slide at an angle from one side of the receptacle at the bottom to the opposite side at the top.

Step 3) Slowly pour the test material from the 50ml container onto the glass panel at the top and allow the liquid to flow to the bottom of the slide covering the entire glass with the sample.

Step 4) Allow the material to completely dry and then examine the resulting film for seeds.

If there are no imperfections, the material it is safe to use by following the instructions that are found in the Technical manual. If seeds are observed over the face of the glass, do not use the material. Set the material aside and inform your BASF sales representative of the situation.

Following this simple test method will allow you to quickly determine if your Glasurit 90-Line Mixing Clear or Blender has incurred damage due to freezing.

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Technical Service Bulletin

How to Determine When 90-Line Waterborne Basecoat is Flashed-Off

Number: GLABUL0265-E **Date: 7 November 2011**

With the growing popularity and use of Glasurit 90-Line Waterborne Basecoat, the question has been raised on how to determine when the basecoat has flashed long enough before proceeding with the next step. Changes in the climate in the spray booth, which may include day-to-day changes in both temperature and humidity, can have an effect on the flash-off time of the basecoat.

High humidity days and/or cooler weather will adversely affect the evaporation rate of the water while warmer and lower humidity days will evaporate water much quicker. It should also be noted that in any condition, the movement of air in the spray booth is very important to removal of water from the film. By using the following method a painter will be able to accurately determine when the basecoat has become dry enough to coat with either another coat of basecoat or to clearcoat.

Note: The purchase of an inexpensive, non-contact infrared thermometer is necessary for this method.

As the water (or any solvent) evaporates from the film it will have a cooling effect on the painted portion of the job. This cooling can be measured and noted.

1) Using your infrared thermometer take a temperature reading of an unpainted panel and make note of it.

2) Measure and record the temperature of the recently painted panel every five minutes until the painted panel temperature increases to match the temperature of the unpainted panel. Once that temperature has been achieved, the evaporation of water from the film has progressed to the state where it is appropriate to coat over this film with either more basecoat or with the clearcoat.

- **You can expect a 5-7°F (2.5 – 4°C) initial drop in temperature during the drying period.**

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Technical Service Bulletin

Using 285-02 Low VOC Sealer over Unsanded E-Coat

Number: GLABUL0274-E **Date: March 2012**

The BASF Glasurit Technical Hotline has received many requests for a procedure using Glasurit 285-02 Low VOC Transparent Sealer over unsanded electrodeposition primer (e-coat). After extensive testing, the BASF Technical Customer Service Laboratory has developed the following approved procedure:

APPLICATION PROCEDURE:

1. Perform a solvent test over the e-coat to ensure the primer is **not** solvent sensitive. If the primer is softened, it will need to be removed. Refer to the Glasurit Technical Reference Manual (Section B 8) for further information. If primer does not soften, continue to step 2.
2. Thoroughly clean part with Glasurit 360-4 Metal Cleaner.
3. Mix the sealer;
   4 vol parts 285-02
   1 vol part 929-100, -110, -120 or -130
   1 vol part 352-25 or 352-45.
4. Apply 1-2 coats with 5 flash between coats.
   Note: It is important to apply within 15 minutes of cleaning for best performance.
5. Flash off for 30 minutes.
6. Apply basecoat mixed as per TDS recommendations. Flash until matte.
7. Apply 2 coats of Glasurit 923-Clear (refer to the Glasurit Technical Reference Manual for mix ratios).
8. Air dry or bake finish per technical specifications.

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Technical Service Bulletin

Using Tinted 285-02 Low VOC Sealer over Unsanded E-Coat

Number: GLABUL0279-E **Date: May 2012**

The BASF Glasurit Technical Hotline has received many requests for a procedure using Glasurit 285-02 Low VOC Transparent Sealer tinted with 90-Line over unsanded electrodeposition primer (e-coat). After extensive testing, the BASF Technical Customer Service Laboratory has developed the following approved procedure:

APPLICATION PROCEDURE:

1. Perform a solvent test over the e-coat to ensure the primer is **not** solvent sensitive. If the primer is softened, it will need to be removed. Refer to the Glasurit Technical Reference Manual (Section B 8) for further information. If primer does not soften, continue to step 2.
2. Thoroughly clean part with Glasurit 360-4 Metal Cleaner.
3. Mix the 285-02 Low VOC Sealer with 90-Line tinting bases.
   10 vol parts of 285-02 Low VOC Sealer
   3 vol parts of 90-Line tinting bases
4. Mix the sealer;
   4 vol parts 285-02
   1 vol part 929-100, -110, -120 or -130
   1 vol part 352-25 or 352-45.
5. Apply 1-2 coats with 5 flash between coats.
   Note: It is important to apply within 15 minutes of cleaning for best performance.
6. Flash off for 30 minutes.
7. Apply basecoat mixed as per TDS recommendations. Flash until matte.
8. Apply 2 coats of Glasurit 923-Clear (refer to the Glasurit Technical Reference Manual for mix ratios).
9. Air dry or bake finish per technical specifications.

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Technical Service Bulletin

Tips when using 923-240 Low VOC Rapid Repair Clear

Number: GLABUL0281-E **Date: June 2012**

Glasurit 923-240 Low VOC Rapid Repair Clear is unlike any clearcoat that you have ever used before. Glasurit 923-240 is designed to be able to be buffed within 30 minutes after application when cured under ambient (75°F / 25°C) conditions or within 15 minutes when baked at 120°F/ 50°C. Because of the fast cure of this product, it is very important to follow certain rules when you are using it.

1) Be sure to use only the 929-120 or 929-130 hardeners. The use of faster hardeners will only lead to poor appearance and trapped solvents which may lead to delamination.

2) If the base coat is not completely dry before you apply the clearcoat over it, this clear will cure quickly enough to trap solvents from the basecoat. This could lead to die back, wrinkling or delamination.

3) Make sure that the basecoat looks good prior to the clear coat application. No clear in the world can make a poor base coat application look good.

4) If you are not achieving 1.8 to 2.0 mils (45 – 50 microns) in two coats try eliminating the reducer and mixing the clear at a 2:1 ratio with the hardener only.

5) The preferred spray gun set up is a 1.4 or 1.5 mm nozzle set to ensure enough material is applied, and that the coats are wet enough. Reduce the air pressure when using an RP gun.

6) When applying basecoat to a sealer and then applying clearcoat over it, remember that you are essentially going wet-on-wet-on-wet. Be very sure that all layers have received the proper flash time to avoid pinching and die back.

Following these simple rules will go a long way to assure your success when using Glasurit 923-240 Low VOC Rapid Repair Clear from BASF.

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Technical Service Bulletin

Glasurit 90-Line Cut-In Procedure with 923-240 Clear

Number: GLABUL0284-E **Date: September, 2012**

The BASF Technical Service Laboratory has developed the following procedure for cutting-in parts with Glasurit 90-Line Waterborne Basecoat and Glasurit 923-240 Low VOC Rapid Repair Clear.

Mixing Instructions

Step 1 - 3:1
3 volume parts Glasurit 923-240
1 volume part 90-Line Tinting Bases (Do not add 90-M4 or 93-E3)

Step 2 - 2:1:10%
100 volume parts 923-240 Clear / 90-Line Mixture
50 volume parts Glasurit 929-110 or 929-120 hardener
10 volume parts Glasurit 352-25 or 923-45 reducer

Application

Apply 2 medium wet coats with 10 minutes between coats.

Curing (when using 929-110)

Drying at Room Temperature:	5 hours at 68°F / 20°C
Drying at Forced Conditions:	15 minutes at 140°F / 60°C

This procedure provides a durable finish that can be used **for cutting-in parts only**; in application areas such as doorjambs, under-hood areas, and inner panel areas.

Review VOC regulations for local compliance.

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