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## APPLICATION:

**Metal substrates**

Full refinish and partial respray

### Substrates:

- Bare metal, sanded
- Galvanized metal, sanded
- Aluminium, sanded
- Through-hardened sanded paintwork

### Cleaning/Pretreatment:

See substrate preparation information

### Putty:

- Raderal IR Premium Putty 2035
- Raderal Fine Putty 0911
- Raderal Spray Polyester 3508

### Primer:

For priming of metal substrates and through-sanded areas: Do not overcoat with Permasolid EP Primer Surfacer 4500, if Priomat Wash Primer 4075 is used.

- Priomat Wash Primer 4075 transparent

### Filler:

- Permasolid EP Primer Surfacer 4500 or Permasolid HS Premium Surfacer 5310/5320 with 10% Permasolid Elastic Additive 9050

### Base Coat:

- Permacron Base Coat Series 293/295

### Clear Coat:

In case of scratching resistant clear coats

- Permasolid HS Clear Coat 8030
- Permasolid HS Clear Coat 8035
- Permasolid HS Clear Coat 8055
- Permasolid HS Optimum Plus Clear Coat 8650
- Permacron MS Varioplus Clear Coat 8050
- Permasolid HS Diamond Clear Coat 8450
Refinish System for Mercedes-Benz Cars with a Matt Finish.

This system information describes the refinish system for Mercedes-Benz cars with a matt finish (Magno colours). It applies to the following substrates: metal (galvanized steel, aluminium) and plastic.

For professional use only!
System Data Sheet No. EN / 910.0 / 00
### Use.
Metal substrates, plastic substrates
Partial respray / full refinish
Cars with a matt finish (Magno-colours)

### Substrate.

#### Suitable substrates:
1. Steel
2. Electroplated / roller galvanised steel panels or soft aluminium, cleaned and sanded
3. Lightly sanded factory primer
4. Well sanded original or old paintwork (except thermoplastic paintwork)
5. Surfaces treated with Raderal® 2K polyester products and then finely sanded

#### Pretreatment / cleaning:
- Clean all substrates carefully with Permaloid Silicone Remover 7010 or Permaloid Silicone Remover 7799.
- Sand lightly.
- Before further treatment carefully clean substrate with a suitable cleaning agent to remove dust and residues.

### Approved products.

#### Putty:
- Raderal® Fine Putty 0911
- Raderal® IR Premium Putty 2035
- Raderal® Spray Polyester 3508

#### Primer / primer surfacer:
- Priomat® 1:1 Elastic Primer Surfacer 3300
- Priomat® Elastic Primer 3304 transparent
- Priomat® Wash Primer 4075
- Priomat® 1K Wash Primer 4085
- Permafleet® EP Primer Surfacer 4017 (Spray Max)
- Permasolid® EP Primer Surfacer 4500

#### Surfercer:
- Permasolid® HS Premium Surfacer 5310
- Permasolid® HS Vario Surfacer 8590

#### Elastification:
- Permasolid® Elastic Additive 9050
  (for all Permasolid® 2K acrylic surfacers on plastic parts)

#### Top coat:
- Permahyd® Base Coat Series 280/285
- Permasolid® HS Clear Coat 8030

#### Matting:
- Permasolid® Matting Component MA 110

#### Note:
For application of the individual products, please refer to the Technical Data Sheet of the respective product.
Mixing / matting of the clear coat.

Component A + Component B

Mixing ratio:

Permasolid® Matting Component MA 110 and Permasolid® HS Clear Coat 8030 are mixed at a ratio of 75/25% or 70/30% by weight, depending on the required degree of gloss.

See special notes.

Shake or stir Permasolid® Matting Component MA 110 well in the can. Mix component A and B thoroughly. Add the hardener and the reducer only directly before application. The ready-to-spray mixture should be applied immediately. If the mixture is left to stand in the mixing cup or spray gun cup for a longer period of time (15 min.), it must be stirred again before it may be applied (sedimentation behaviour).

Hardener for component A + B

Reducer:

Pot life:

Method of application:

Application viscosity
4 mm, +20°C, DIN 53211:
Reducer at +20°C material temperature:
Spray nozzle*:
Spray pressure*:
Atomising pressure*:
Number of coats:
Recommended film thickness: 70 - 90 µm dry film thickness:

<table>
<thead>
<tr>
<th>Compliant</th>
<th>HVLP</th>
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<tbody>
<tr>
<td>DIN 4 mm = 16 - 20 seconds</td>
<td>10%</td>
</tr>
<tr>
<td>1.3 - 1.4 mm</td>
<td>1.3 - 1.4 mm</td>
</tr>
<tr>
<td>2 - 2.5 bar</td>
<td>-</td>
</tr>
<tr>
<td>-</td>
<td>0.7 bar</td>
</tr>
<tr>
<td>2 coats with 10 - 15 min. intermediate flash-off (observe the notes on application on page 4)</td>
<td></td>
</tr>
</tbody>
</table>

* See manufacturer’s instructions!
Application:

To achieve the best possible and homogeneous matting effect, the following notes are to be observed:

When spraying, the distance to the object should be a little bigger than with standard application, to benefit from the full atomization of the spray jet.

(to avoid the formation of stripes)

In addition to that and if possible, it is helpful to apply the two coats in a cross-coat on horizontal single parts, e.g. engine hood.

When applied to large objects, e.g. engine hoods, roof, etc., the overlap of the second coat should not cover exactly the overlap of the first coat, but it should be shifted a little.

It is important to see to it that the individual "spray moves" form a uniform overlap and that the film is sufficiently wet. If the applied paint film is too dry, there is a risk of mottling owing to uneven flash-off or unabsorbed overspray.

If possible, a full refinish should be separated into different sections, i.e. the car body should be painted separately from add-on parts, e.g., hood, door etc. to avoid overlaps and overspray.

Drying.

Force drying:

Final flash-off time: 15 - 20 minutes

Drying time at
+60 - 65°C metal temperature: 45 minutes

Air drying is not recommended

Special notes.

The actual degree of gloss achieved is influenced by several factors, e.g. different hardeners, reducers, method of application, drying conditions and film thickness.

For this reason, please keep to the recommended mixing process.
It is absolutely necessary to spray a sample for the 75/25% and the 70/30% mixture to achieve the degree of gloss that matches the car. Measuring the degree of gloss (at an angle of 60°) on adjacent parts may also be helpful.

Blending or refinishing the matt clear coat within a part, e.g. a side part, or speed repair is not possible.

Large areas (full refinishes, roof, engine hood, side panel etc.) should not be refinished at high temperatures (max. 20°C).

It is not possible to polish dust inclusions, therefore cleanliness during the entire refinishing process is very important.

Do not wash the car with a high-pressure or steam-jet cleaner.

You can wash the car in an automatic car washing installation. Careful systems without brushes should be preferred. Car wash installations with brushes do not necessarily always have a negative impact on the paint surface or on the susceptibility to scratching.

Pre-clean the car if it is very dirty before using a car washing installation.

Do not select a hot-wax programme.
Paintwork care:

- Do not use any paint cleaning compounds, sanding or polishing compounds, or gloss preservers (wax) for paintwork care. They may damage the paint surface.

  If, by accident, wax gets on the paint surface, remove it immediately with a commercial silicone remover. Take care not to exert high pressure on the paint surface.

  Do not allow any resinous, greasy or oily substances to get on the paint surface, as these may leave traces. Any contamination must be removed immediately with a cloth soaked in benzine. Do not exert pressure or rub too strongly.

  If possible, remove any insects or bird droppings immediately by soaking with water and spraying with insect remover before washing the car. Any remaining traces may not be removed by intensive rubbing.

  Tar stains on the paint surface may be removed with a commercial tar remover.

  Do not attach any stickers, foils, magnetic labels or similar to the painted surface. They may damage the paint.
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www.spieshecker.com

Spies Hecker.
A member of DuPont
Performance Coatings.
<table>
<thead>
<tr>
<th>WORKING PROCESS:</th>
<th>Hard plastic substrates 2-Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUBSTRATE:</td>
<td>Exterior hard plastic parts:</td>
</tr>
<tr>
<td></td>
<td>e.g. PP/EPDM, ABS, SAN, PC, PA, PUR, R-TPU, PPO, PBTP, UP-GF, PVC</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>PRETREATMENT / CLEANING:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remove all traces of release agent.</td>
</tr>
<tr>
<td>• Bake for 60 min/60°C</td>
</tr>
<tr>
<td>• Clean several times with plenty of fresh Permaloid Silicone Remover 7010 and ultra fine pad. Reclean with Permaloid Silicone Remover 7010.</td>
</tr>
<tr>
<td>• Dry and prime.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>APPLICATION:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Important remark:</td>
</tr>
<tr>
<td>Do not steam clean the finish within 6 weeks of application and drying. Then keep a minimum distance of 30 cm between the jet nozzle and the surface.</td>
</tr>
<tr>
<td>• Permacron 1:1 Elastic Primer Surfacer 3300</td>
</tr>
<tr>
<td>• For filling small scratches and imperfections, after pre-priming with Permacron 1:1 Elastic Primer Surfacer 3300 and drying according to instructions, apply Raderal Fine Putty 0911. After denibbing the body filler spot should be isolated with Permacron 1:1 Elastic Primer Surfacer 3300.</td>
</tr>
<tr>
<td>• Permacron Base Coat Series 293/295 with elastified Permasolid HS Clear Coat or Permacron MS Varioplus Clear Coat 8050</td>
</tr>
</tbody>
</table>
### Working Process

<table>
<thead>
<tr>
<th>Substrate:</th>
<th>Hard plastic substrates 3-Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Exterior hard plastic parts: e.g. PP/EPDM, ABS, PC, PA, PUR, R-TPU, PPO, PBT, UP-GF, PVC</td>
<td></td>
</tr>
</tbody>
</table>

### Pretreatment / Cleaning:
- Bake for 60 min/60°C
- Clean several times with plenty of fresh Priomat Plastic Reducer 8581 and an ultra fine pad. Reclean with Priomat Plastic Reducer 8581.
- Dry and prime.

### Application:
- Important remark:
  - Do not steam clean the finish within 6 weeks of application and drying. Then keep a minimum distance of 30 cm between the jet nozzle and the surface.
- Priomat Elastic Primer 3304 transparent
- If necessary apply Raderal Fine Putty 0911
- With 15% Permasolid Elastic Additive 9050 elasticized Permasolid HS Premium Surfacer 5310/5320 or Permasolid HS Vario Surfacer 8590
- Permacron Base Coat Series 293/295 with elastified Permasolid HS Clear Coat or Permacron MS Varioplus Clear Coat 8050
Warranty Refinishing System Non-VOC
Mercedes-Benz A Class (W 168/169) and B Class (W 245) until year 2012

Substrate: Slurry powder coating on metal and PPE/PA plastic.

Cleaning: Permahyd Silicone Remover 7080 and Permaloid Silicone Remover 7799.

Stopper: Only on bare sheet or plastic substrate with Raderal Fine Putty 0911.


Important: Permasolid EP Primer Surfacer 4500 is used on both metal and plastics. Do not use plastic primers/fillers. To avoid swelling, any defective sanding or through-sanding of the OEM clear must be isolated using Permasolid EP Primer Surfacer 4500.

Drying possibilities:

a) 30-50 min./60 °C
b) 16 h/20 °C
c) Short-wave IR drying in 2 steps:
   1. step: 5 min. at 50 % power.
   2. step: 12-15 min. at 100 % power.

Important: The radiator distance should be exactly 80 cm but must by no means be smaller.

Sanding: Dry sanding with P400 – P500
Wet sanding with P800 – P1000

Basecoat: Permacron Base Coat Series 293/295 with Permacron Supercryl Reducer 3054/3055/3056
Clear Coat: Permasolid HS Clear Coat 8030/8035/8055/8650 with 15 %
Permasolid Elastic Additive 9050 (Permasolid Elastic Additive 9050 can be used only for plastics and metal/plastics refinishing), 2:1 with all Permasolid HS Hardeners or 3:1 with Permasolid VHS Hardeners.

Drying of the clearcoat:

a) overnight /20 °C
b) 60 min. /60 °C
(This differs from the information given in the Technical Data Sheet of the Clear Coats).

Fading is possible by using Permacron Speed Blender 1036.

Polishing:
The elastified clearcoat may be polished only after forced drying plus 24 h/20 °C.
## Model SLR Paint System

### 1. Refinishing damaged paintwork and painting parts

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<tr>
<th>APPLICATION</th>
<th>Model SLR Paint System</th>
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</thead>
<tbody>
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<td><strong>Substrate</strong></td>
<td>Existing OEM paintwork and carbon fibre substrate</td>
</tr>
<tr>
<td>Sanding</td>
<td>P120 – P400, dry</td>
</tr>
<tr>
<td>Cleaning</td>
<td>Permaloid Silicone Remover 7010</td>
</tr>
<tr>
<td><strong>Cleaning before painting</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Permahyd Silicone Remover 7080 or</td>
</tr>
<tr>
<td></td>
<td>Permaloid Silicone Remover 7010</td>
</tr>
<tr>
<td><strong>1st surfacer application</strong></td>
<td>Permasolid HS Premium Surfacer 5310/5320</td>
</tr>
<tr>
<td>Sanding</td>
<td>P280 – P400, dry</td>
</tr>
<tr>
<td>Cleaning</td>
<td>Permaloid Silicone Remover 7010</td>
</tr>
<tr>
<td><strong>2nd surfacer application</strong></td>
<td>Permasolid HS Premium Surfacer 5310/5320</td>
</tr>
<tr>
<td>Sanding</td>
<td>P400, dry</td>
</tr>
<tr>
<td></td>
<td>P800, wet</td>
</tr>
<tr>
<td>Cleaning</td>
<td>Permaloid Silicone Remover 7010 or</td>
</tr>
<tr>
<td></td>
<td>Permahyd Silicone Remover 7080</td>
</tr>
<tr>
<td><strong>Base coat</strong></td>
<td>Permacron Base Coat Series 293/295</td>
</tr>
<tr>
<td><strong>Clear coat</strong></td>
<td>Permasolid HS Clear Coat 8030 or</td>
</tr>
<tr>
<td></td>
<td>Permasolid HS Clear Coat 8035 or</td>
</tr>
<tr>
<td></td>
<td>Permasolid HS Optimum plus Clear Coat 8650</td>
</tr>
<tr>
<td></td>
<td>Permasolid HS Diamond Clear Coat 8450</td>
</tr>
<tr>
<td></td>
<td>Permacron MS Varioplus Clear Coat 8050</td>
</tr>
<tr>
<td>APPLICATION</td>
<td>Model SLR Paint System</td>
</tr>
<tr>
<td>-------------</td>
<td>------------------------</td>
</tr>
<tr>
<td><strong>2. Repair of damage down to substrate, superficial</strong></td>
<td><strong>for Mercedes-Benz (Non-VOC)</strong></td>
</tr>
<tr>
<td><strong>Substrate</strong></td>
<td>Scratched carbon fibre substrate</td>
</tr>
<tr>
<td><strong>Sanding</strong></td>
<td>P120 – P400, dry</td>
</tr>
<tr>
<td><strong>Cleaning</strong></td>
<td>• Permaloid Silicone Remover 7010</td>
</tr>
<tr>
<td><strong>Putty</strong></td>
<td>• Raderal IR Premium Putty 2035</td>
</tr>
<tr>
<td><strong>Sanding</strong></td>
<td>P120 – P400, dry</td>
</tr>
<tr>
<td><strong>Cleaning before painting</strong></td>
<td>• Permaloid Silicone Remover 7010</td>
</tr>
<tr>
<td><strong>1st surfacer application</strong></td>
<td>• Permasolid HS Premium Surfacer 5310/5320</td>
</tr>
<tr>
<td><strong>Sanding</strong></td>
<td>P280 – P400, dry</td>
</tr>
<tr>
<td><strong>Cleaning</strong></td>
<td>• Permaloid Silicone Remover 7010</td>
</tr>
<tr>
<td><strong>2nd surfacer application</strong></td>
<td>• Permasolid HS Premium Surfacer 5310/5320</td>
</tr>
</tbody>
</table>
| **Sanding** | P400, dry  
P800, wet |
| **Cleaning** | • Permaloid Silicone Remover 7010 or  
• Permahyd Silicone Remover 7080 |
| **Base coat** | • Permacron Base Coat Series 293/295 |
| **Clear coat** | • Permasolid HS Clear Coat 8030 or  
• Permasolid HS Clear Coat 8035 or  
• Permasolid HS Optimum plus Clear Coat 8650 or  
• Permasolid HS Diamond Clear Coat 8450 or  
• Permacron MS Varioplus Clear Coat 8050 |
SPIES HECKER Warranty Refinishing System for Mercedes-Benz (Non-VOC)

### APPLICATION

<table>
<thead>
<tr>
<th>SLR Paint System</th>
<th>3. Repair of damaged parts, e.g. cracks, holes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Substrate</strong></td>
<td>Damaged carbon fibre substrate McLaren component repair following Teroson Kunststoffspachtel (synthetic putty)</td>
</tr>
<tr>
<td><strong>Sanding</strong></td>
<td>P120 – P400, dry</td>
</tr>
<tr>
<td><strong>Cleaning</strong></td>
<td>Permaloid Silicone Remover 7010</td>
</tr>
<tr>
<td><strong>Putty</strong></td>
<td>Raderal IR Premium Putty 2035</td>
</tr>
<tr>
<td><strong>Sanding</strong></td>
<td>P120 – P400, dry</td>
</tr>
<tr>
<td><strong>Cleaning before painting</strong></td>
<td>Permaloid Silicone Remover 7010</td>
</tr>
<tr>
<td><strong>1st surfacer application</strong></td>
<td>Permasolid HS Premium Surfacer 5310/5320</td>
</tr>
<tr>
<td><strong>Sanding</strong></td>
<td>P280 – P400, dry</td>
</tr>
<tr>
<td><strong>Cleaning</strong></td>
<td>Permaloid Silicone Remover 7010</td>
</tr>
<tr>
<td><strong>2nd surfacer application</strong></td>
<td>Permasolid HS Premium Surfacer 5310</td>
</tr>
<tr>
<td><strong>Sanding</strong></td>
<td>P400, dry P800, wet</td>
</tr>
<tr>
<td><strong>Cleaning</strong></td>
<td>Permaloid Silicone Remover 7010 or Permahyd Silicone Remover 7080</td>
</tr>
<tr>
<td><strong>Base coat</strong></td>
<td>Permacron Base Coat Series 293/295</td>
</tr>
<tr>
<td><strong>Clear coat</strong></td>
<td>Permasolid HS Clear Coat 8030 or Permasolid HS Clear Coat 8035 or Permasolid HS Optimum plus Clear Coat 8600 or Permasolid HS Diamond Clear Coat 8450 or Permacron MS Varioplus Clear Coat 8050</td>
</tr>
</tbody>
</table>
### Substrate
- Aluminum, cataphoretically dip-primed
- Pre-cleaning with Permanent Silicone Remover 7010
- Dry sand with P280 – P400
- Post-cleaning with Permanent Silicone Remover 7010

### Special remarks
- Apply a complete layer of Permasolid EP Primer Surfacer 4500 to bare metal body parts

### Putty
- After drying, apply Permasolid EP Primer Surfacer 4500
- Apply Raderal IR Premium Putty 2035
- Dry sand with P80 – P180
- Clean with Permaloid Silicone Remover 7010 or Raderal Spray Polyester 3508 grey beige
- Dry sand with P120 – P240
- Clean with Permaloid Silicone Remover 7010

### Surfacer
- Prime with Priomat Wash Primer 4075
- Surface with Permasolid HS Premium Surfacer 5310 or with Permasolid EP Primer Surfacer 4500
  - (no Priomat Wash Primer 4075 under Permasolid EP Primer Surfacer 4500)
- Dry sand with P400 – P500
- Clean with Permaloid Silicone Remover 7010

### Base coat
- Apply 1st color with Permacron Base Coat Series 293/295

### Clear coat
- Permasolid HS Clear Coat 8030 or Permasolid HS Diamond Clear Coat 8450
- Dry clear coat

### Sand clear coat
- After drying, fully sand clear coat
- Initial wet sanding with P1500 and final wet sanding with P2000

### Masking
- Unmask vehicle to remove runs of sanding particles
- Mask vehicle again for 2nd color
<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base coat</td>
<td>Apply 2st color with Permacron Base Coat Series 293/295</td>
</tr>
<tr>
<td>Clear coat</td>
<td>Permasolid HS Clear Coat 8030 or Permasolid HS Diamond Clear Coat 8450</td>
</tr>
<tr>
<td></td>
<td>Dry clear coat</td>
</tr>
<tr>
<td>Sand clear coat</td>
<td>After drying, fully sand clear coat</td>
</tr>
<tr>
<td></td>
<td>Initial wet sanding with P1500 and final wet sanding with P2000</td>
</tr>
<tr>
<td>Masking</td>
<td>Unmask vehicle to remove runs of sanding particles</td>
</tr>
<tr>
<td></td>
<td>Mask vehicle again</td>
</tr>
<tr>
<td>Clear coat</td>
<td>Clear Coat with Permasolid HS Diamond Clear Coat 8450 using Permasolid VHS Hardener 3240. Dry clear coat</td>
</tr>
<tr>
<td>Sand clear coat</td>
<td>After drying, fully sand clear coat</td>
</tr>
<tr>
<td></td>
<td>Initial wet sanding with P1500 and final wet sanding with P2000</td>
</tr>
<tr>
<td>Masking</td>
<td>Unmask vehicle to remove runs of sanding particles</td>
</tr>
<tr>
<td></td>
<td>Mask vehicle again for second application of clear coat</td>
</tr>
<tr>
<td>Special remarks</td>
<td>After clear coat application, recoat entire vehicle with Permasolid HS Diamond Clear Coat 8450 using Permasolid VHS Hardener 3240 to match the scratch resistance of the OEM paintwork</td>
</tr>
<tr>
<td>Final tasks</td>
<td>Polish with Sonax products MB 000 986 8474, Mequias M-8032, 3M, Olmo, Politop, at a low rotation speed (&lt; 2000 rpm). Then buff with a high-gloss sanding pad at medium to high speed (approx. 3000 rpm).</td>
</tr>
<tr>
<td>APPLICATION:</td>
<td>smart Tridion cell</td>
</tr>
<tr>
<td>-------------</td>
<td>--------------------</td>
</tr>
<tr>
<td>SUBSTRATE:</td>
<td>- Powder clear</td>
</tr>
<tr>
<td></td>
<td>- 1-stage powder paint (silver or black)</td>
</tr>
<tr>
<td></td>
<td>- OEM paintwork with through-sanded areas to metal</td>
</tr>
<tr>
<td></td>
<td>For car parts refer to painting systems of metal or plastic.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PRETREATMENT / CLEANING:</th>
<th>See substrate preparation information.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Putty:</td>
<td>- Raderal IR Premium Putty 2035</td>
</tr>
<tr>
<td>Primer (on bare metal only):</td>
<td>- Priomat Wash Primer 4075</td>
</tr>
<tr>
<td>Filler:</td>
<td>- Permasolid HS Vario Surfacer 8590</td>
</tr>
<tr>
<td></td>
<td>- Air dry overnight / 18-22 °C or 30 min / 60-65 °C panel temperature</td>
</tr>
<tr>
<td></td>
<td>- Dry sand P320 - P400</td>
</tr>
<tr>
<td></td>
<td>- Wet sand P600 - P800</td>
</tr>
<tr>
<td>Basecoat:</td>
<td>- Permacron Base Coat Series 293/295</td>
</tr>
</tbody>
</table>

**Important remark on blending-in:**
- Metal frames with 1-stage powder paint anthracite-metallic cannot be blended-in. After blending-in with Permacron Base Coat Series 293/295 the whole frame side has to be covered with 2K clear.
- For mixing of clear coat refer to Spies Hecker TDS “Adjusting of Gloss Level”.
Overview Magno Colour range

<table>
<thead>
<tr>
<th>Colour</th>
<th>MB – No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magno Allanite grey</td>
<td>0 044</td>
</tr>
<tr>
<td>Magno Sabbia</td>
<td>0 045</td>
</tr>
<tr>
<td>Magno Cashmere white</td>
<td>0 049</td>
</tr>
<tr>
<td>Magno Platinum</td>
<td>0 051</td>
</tr>
<tr>
<td>Magno Manganite grey</td>
<td>7 795</td>
</tr>
<tr>
<td>Magno Sylvanite grey</td>
<td>0 054</td>
</tr>
<tr>
<td>Magno Monza grey</td>
<td>0 054</td>
</tr>
<tr>
<td></td>
<td>( only AMG )</td>
</tr>
<tr>
<td>Magno Glacier grey</td>
<td>0 055</td>
</tr>
<tr>
<td>Magno Cerussite grey</td>
<td>7 281</td>
</tr>
<tr>
<td>Magno Night black</td>
<td>0 056</td>
</tr>
</tbody>
</table>
Permahyd® Base Coat
Mercedes-Benz 047
AMG Alubeam silver-met.

System information for the application of Permahyd®
Base Coat Mercedes Benz 047 AMG Alubeam silver-met.

- special effect colour
- good vertical stability
- good hiding power
- recoatable with Permasolid® HS Diamond Clear Coat 8450

For professional use only!
VR Technical Data Sheet No. EN / SYS_047 / 00
Preparation of the substrate.

Suitable substrates:
Permasolid® 2K HS acrylic surfacers
Original or old finishes (except thermoplastic finishes)

Substrate pretreatment:
Thoroughly clean original or old finish and Permasolid® surfacer with Permahyd® Silicone Remover 7080 or, if heavily soiled, first with Permaloid® Silicone Remover 7010.

Sand dry with random orbital sander and dust extraction, P400 – 500 grade or wet with P 800 - 1000 grade.

Before further treatment, carefully clean sanded areas once more with Permahyd® Silicone Remover 7080 to remove all dust, paint residue from sanding and other impurities. If heavily soiled, first clean with Permaloid® Silicone Remover 7010.

Wipe away any surplus silicone remover with a lint-free cloth, taking care to avoid streaks.
(see Technical Data Sheet 7080)

Special note:
Areas which have been sanded down to bare metal must be coated with Priomat® Wash Primer 4075 or Priomat® 1K Wash Primer 4085 before Permasolid® 2K surfacer can be applied.

Step 1.

Clear coat on surfercer.
Apply Permasolid® HS clear coat to the sanded and cleaned surfacer.**

1 full coat

Force drying.
20 - 25 min. at 60°C

Sanding of clear coat.
Sand with orbital sander and P1000 - P1200. If necessary, sand edges and corners by hand with P3000.

Cleaning
Before further treatment, carefully clean sanded areas once more with Permahyd® Silicone Remover 7080 to remove all dust, paint residue from sanding and other impurities.

** See TDS of the respective clear coat
Step 2.

Base coat application

Reducer:

Method of application:

Application viscosity
4 mm, +20°C, DIN 53211:

Reducer at +20°C
material temperature:

Spray nozzle*:

Spray pressure*:

Atomising pressure*:

No. of coats (without intermediate flash-off):

Flash-off
(before clear coat application):

Note:

Ways to reduce flash-off times:

1. Small areas:

2. Larger areas:

Permahyd® Special Additive 9016

<table>
<thead>
<tr>
<th>Compliant</th>
<th>HVLP</th>
</tr>
</thead>
<tbody>
<tr>
<td>mixing viscosity</td>
<td></td>
</tr>
<tr>
<td>50% Permahyd® Special Additive 9016</td>
<td></td>
</tr>
<tr>
<td>1.2 - 1.3 mm</td>
<td>1.2 - 1.3 mm</td>
</tr>
<tr>
<td>2.0 bar</td>
<td>-</td>
</tr>
<tr>
<td>-</td>
<td>0.7 bar</td>
</tr>
<tr>
<td>1 spray operation = 1.5 coats (1 normal full coat followed by a light coat sprayed with increased distance to the object)</td>
<td></td>
</tr>
<tr>
<td>20 - 30 minutes at +20°C ambient temperature until matt</td>
<td></td>
</tr>
</tbody>
</table>

A 1.3 mm spray nozzle should be used for the general application process.

Surface matting can be accelerated by blowing off with an air diffuser (hand-held or stationary device). It is also possible to blow off with the spray gun after waiting at least 5 minutes.

Drying time: at least 5 minutes

Surface matting can be accelerated by using stationary air diffusing units (e.g. ceiling system), infrared drying or low baking.

Ceiling system: 10 - 15 minutes
Infrared drying: 3 - 5 minutes
Cooling time: at least 5 minutes

* See manufacturer’s instructions!
<table>
<thead>
<tr>
<th><strong>Recoating</strong></th>
<th><strong>Important note.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Recoat with:</td>
<td>Permasolid® HS Diamond Clear Coat 8450 (see Technical Data Sheet)</td>
</tr>
</tbody>
</table>

**Preparation for regular application, panel repair & blending:**

- **Low baking at +60°C**
  - Combi booth: at least 10 minutes incl. heating-up time
  - Low-bake oven: at least 5 minutes
  - Cooling time: at least 5 minutes

The flash-off and drying times depend on the temperature, humidity and air settling rate in the booth, and on the number of coats applied. The surface must, however, first appear completely matt.

- **Permahyd® Base Coat Series 280 Mercedes-Benz 047 AMG Alubeam silver-met. mixed with 50% Permahyd® Special Additive 9016 to the whole side.**

- **Best practice (preferred):**
  - e.g. repair of a door: apply Permahyd® Base Coat Series 280 Mercedes-Benz 047 AMG Alubeam silver-met. mixed with 50% Permahyd® Special Additive 9016 to the whole side.
  - Sand surfacer dry with orbital sander P400 - 500 and then fine with P1000 - 1200 (or wet with waterproof P800 -1000).
  - Sand adjacent areas on which surfacer was applied lightly with orbital sander and P1000 - 1200. If necessary, sand (e.g. edges and corners) by hand with P3000.
  - Apply one full coat of Permasolid® HS clear coat on the sanded surfacer and adjacent part.

  - **20 - 25 min. at 60°C metal temperature**

- **Further preparation.**

- **Force drying.**

- **Clear coat on surfacer & adjacent part.**

- **Further preparation.**

- **a) Preparation:**
  - Sand surfacer dry with orbital sander P400 - 500 and then fine with P1000 - 1200 (or wet with waterproof P800 -1000).

  - Sand with orbital sander and P1000 - 1200. If necessary, sand (e.g. edges and corners) by hand with P3000.

  - Thoroughly clean the whole surface with Permahyd® Silicone Remover 7080 to remove any dust, paint residue from sanding or any other impurities.

  - Wipe away any surplus silicone remover with a lint-free cloth, taking care to avoid streaks.

  - Allow the moisture on substrates which have been wet sanded or cleaned to evaporate completely.

- **b) Preparation:**
  - Sand with orbital sander and P1000 - 1200. If necessary, sand (e.g. edges and corners) by hand with P3000.

  - Wipe away any surplus silicone remover with a lint-free cloth, taking care to avoid streaks.

  - Allow the moisture on substrates which have been wet sanded or cleaned to evaporate completely.
Blending & panel repair process.

- c) Apply 1 - 2 full coats of Permahyd® Blend-in Additive 9017 to the fade out area.

Blending and panel repair process into the adjoining area.

- Apply ready-for-use base coat to the edge of the Permahyd® Blend-in Additive 9017.
- Full coat followed by effect coat in one operation (1.5 coats) onto the repair area extending into the wet Blend-in Additive 9017 with increased distance.

- After the respective final flash-off time, a clear coat can be applied.
- See above.

Special notes.

Product application:

Spraying equipment must be suitable for applying waterborne products; manufacturers’ instructions must be followed. See manufacturer’s instructions!
For further details, see System Data Sheet No. 905.1.

Cleaning of tools:

Rinse with Permahyd® Demineralised Water 6000 before and after use. Then wash out with Permaloid® Washing Thinner 7020/7989.
For detailed information, see System Data Sheet No. 905.0.

Waste disposal:

Collect liquid waterborne waste separately from conventional liquid waste. If the two are mixed, it may be impossible to dispose of the mixture, or at best difficult, and therefore expensive.
For detailed information, see System Data Sheet No. 905.2.

Health and safety:

A face mask must be worn when applying waterborne products.

Data.

Flash point:

above +23°C

VOC content:

The EU limit value for this product (product category IIB.d) in ready to use form is max. 420 g/litre of VOC.

The VOC content of this product in ready to use form is max. 420 g/litre.
Storage.

Storage conditions:

Frost-free!
Storage temperature +5°C to +35°C
Storing the product at temperatures below or above this impairs the quality of the product.

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Fax ++49 (0)2234 - 6019-4100
www.spieshecker.com

Spies Hecker.
A member of DuPont Performance Coatings.
## Overview Bright Colours

<table>
<thead>
<tr>
<th>Colour</th>
<th>MB – No.</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saphire Red</td>
<td>3 434</td>
<td>SL B63 AMG</td>
</tr>
<tr>
<td>Le Mans Red</td>
<td>3 434</td>
<td>SLS AMG</td>
</tr>
<tr>
<td>Cashmere White</td>
<td>0 049</td>
<td>Magno</td>
</tr>
<tr>
<td>Mystic White</td>
<td>9 799</td>
<td></td>
</tr>
<tr>
<td>Diamant White</td>
<td>9 799</td>
<td></td>
</tr>
<tr>
<td>Mystic White 2</td>
<td>0 048</td>
<td></td>
</tr>
</tbody>
</table>
Efficient Surface Repairs on Light Metal Wheels

Feb. 2013
Light metal wheels.

Efficient surface repairs

1. Preface
2. Guidelines
3. Examples of damage with pictures
4. Repair process
Light metal wheels.

Efficient surface repairs

1. Preface
2. Guidelines
3. Examples of damage with pictures
4. Repair process
1. Preface.

Wheels are highly stressed vehicle components of high safety relevance. For safety reasons, leading car makers have until now not approved any refinish processes for wheels. And this principle has also applied so far to light metal wheels.

Modern metal putty and paint materials and the latest repair processes now make it possible to repair the surface of light metal wheels, albeit within bounds.

This guide describes what is currently technically possible. To what extent a repair makes economic sense depends on many factors, however.

This guide merely contains recommendations and cannot serve as a basis for warranty claims against Spies Hecker GmbH.
Light metal wheels.

Efficient surface repairs

1. Preface
2. Guidelines
3. Examples of damage with pictures
4. Repair process
2. Guidelines.

ISO 14400, point 5:
After removal, wheels, wheels, studs and nuts shall be checked closely to ensure that they are in good condition: namely that any fracture, crack, deformation, corrosion, heavy wear or other kind of non-conformity are not present. Moreover, no technical modification on the wheel shall be made. Repair by means of welding or by the addition of material on wheels or wheel centres having breakage, fissures, cracks or high wears, shall not be made, as they can introduce additional stresses in the critical areas.

EUWA (Association of European Wheel Manufacturers):
Repair of a damaged wheel or disc by heating, welding or addition or removal of material is absolutely forbidden.
2. Guidelines.

**ETRTO**
(The European Tyre and Rim Technical Organisation): Damaged or deformed wheels or wheels with cracked or deformed bolt holes must not be repaired or put into service.

**What does “cosmetic repair” mean?**

The term “cosmetic repair” always refers to the expert technical restoration of the wheel in terms of visible defects by polishing, local sanding, smoothing of nicks/notches, and possibly by applying surfacer, primer and paint. Such repairs relate to superficial, visible blemishes that, in the event of further use of the untreated wheels, would result in neither technical nor legal restrictions (e.g. during an MOT inspection under Art. 29 StVZO (German vehicle roadworthiness regulations)).
2. Guidelines.

Source: Final position paper on cosmetic wheel repairs of the Vehicle Engineering Committee, special committee on Wheels and Tyres at the German Federal Ministry of Transport, Building and Urban Development (BMVBS)

The restrictions on repair and preparation issued by the wheel manufacturer remain unaffected by these guidelines.

A repair may only be carried out with the tested and prescribed paint materials.

The approval of a repair must ultimately be granted by the skilled refinisher and cannot be forcibly obtained from an expert under third-party liability claims.
The following may be repaired and refinished without reservation:

- Wheels whose damage has a maximum depth in the metal substrate not exceeding 1 mm
- Wheels on which the maximum depth of damage of 1 mm is only within a radial range of 25 mm from the rim flange
- In the range exceeding 25 mm from the rim flange, only paint application is permitted.
The following must **never** be repaired and refinished:

- Light metal wheels whose paint has been removed in a thermal process or which have been blasted or mechanically straightened
- Light metal wheels treated with the application of heat or by the addition or removal of material
- Cracked light metal wheels
- Wheel bolt holes, wheel centre hole and wheel mounting surface, valve stem hole, rim well and inside of rim flange (bead seats)
- Light metal wheels whose axial and lateral run-out characteristics (DIN 70050, Part 5) already exceed the production tolerance of 0.5 mm
- Wheels that have already been repaired
- Burnished wheels with a coating of pure clear coat.
2. Guidelines.

Further limitations:

• Putty may only be applied to cast light metal wheels with the designations **AlSi 7 Mg** and **AlSi 7 Wa** – within certain limits.

• Forged light metal wheels must not be treated with putty. They may only be painted.
2. Guidelines.

Avoid exposing the wheel to high or unevenly distributed heat loads.

- Light metal wheels may only be heated to **max. 90°C** for **max. 40 min**.

- Light metal wheels must **not** be strongly heated locally with IR, a hot air dryer or the like.
2. Guidelines.

Repairs without putty

- **Only** visible damage to the visible side of the wheel (face) may be treated.
- Use approved materials only!
- Paint and surfacer must **not** be applied to the wheel mounting surface and hub hole, inside of spokes, rim well or inside of rim flange (bead seats) nor to the wheel's drum side (inside of wheel).
2. Guidelines.

Repairs with putty

- Putty may only be applied to the wheel face, up to max. 50 mm measured from the rim flange.

- Material addition must not exceed 1 mm thickness!
  
  In the metal substrate, the max. depth of damage must not exceed 1 mm!

- Use approved putty materials only!
Light metal wheels.

Efficient surface repairs

1. Preface
2. Guidelines
3. Examples of damage with pictures
4. Repair process
3. Examples of damage with pictures.

Damaged paint on wheel face
= repair possible

Tip
Speed Repair is also suitable for straightforward paint repairs on the rim flange and edge.
3. Examples of damage with pictures.

Damage deeper than 1 mm
= repair not permitted
3. Examples of damage with pictures.

Damaged paint on wheel face
= repair possible

Tip
Speed Repair is also suitable for straightforward paint repairs on spokes and rim edge.
3. Examples of damage with pictures.

Rim flange is deformed, axial and lateral run-out are not OK = repair not permitted!
3. Examples of damage with pictures.

Paint damage on wheel face
= repair possible

Tip
Speed Repair is also suitable for straightforward paint repairs on spokes and rim edge.
3. Examples of damage with pictures.

2-part aluminium wheel: external ring is burnished.

Damaged clear coat on exterior ring = repair not possible
3. Examples of damage with pictures.

Paint damage on wheel face
= repair possible
3. Examples of damage with pictures.

Damage deeper than 1 mm = repair **not** permitted
3. Examples of damage with pictures.

Paint damage on wheel face
= repair possible
3. Examples of damage with pictures.

Damage to metal outside the 25 mm range
= repair **not** permitted!
3. Examples of damage with pictures.

Caution:
First glances can be deceptive. Here we can mainly see damaged paint and minor substrate damage (less than 1 mm) close to the rim flange.

Substrate damaged at the rim flange (deeper than 1 mm and too close to bead seat)
Repair not possible
Light metal wheels.

Efficient surface repairs

1. Preface
2. Guidelines
3. Examples of damage with pictures
4. Repair process
4. Repair process.

Wheel bolt holes
Wheel mounting surface
Rim well and inner rim flange

For reasons of safety and roadworthiness, the marked areas must never be additionally coated. The manufacturer’s designations and type approval marks must be retained in their original form!

Always cover (e.g. with masking tape, soft edge tape or wheel nuts)
4. Repair process.

Avoid exposing the wheel to high or unevenly distributed heat loads.

- Light metal wheels may only be heated to **max. 90°C** for **max. 40 min**.

- Light metal wheels must **not** be strongly heated locally with IR, a hot air dryer or the like.
4. Repair process.

Remove tyre, valve and weights. Depending on the type of damage, it may be sufficient to merely deflate the tyre in order to shift the tyre away the rim flange into the well and cover it.

- **Pre-cleaning inside and outside**
  with soapy water, preferably with high-pressure cleaner

- **Post-cleaning inside and outside**
  with cleaning agent,
  depending on degree of soiling, with Permaloid® Washing Thinner 7020, Permahyd® Wax and Grease Remover 7070 and/or Permaloid® Silicone Remover 7010
4. Repair process.

Color identification with the Color Index, CRplus or refinisher’s own color standards.
4. Repair process.

Wheel colors in CRplus
4. Repair process.

Tip
Light, fine silver metallic
A large number of light metal wheels are originally coated with an extremely light, fine silver metallic. Permahyd® Silver Star is often the matching product for this.

Permahyd® Silver Star Base Coat:
- Ready-mix color in 0.5 L can
- Use together with Permahyd® Special Additive 9016.
- Refer to System Data Sheet No. SYS_101.7.
4. Repair process.

Deep, sharp-edged damage should be carefully deburred and rounded to reduce notching.

The maximum permitted damage depth of 1 mm in the metal substrate must not be exceeded here.

Prevent contact corrosion with iron chips by using separate tool, sand afterwards and clean.
4. Repair process.

Sand area of damage (P120)
Remove old paint in putty zone.
Sand the edges well for a smooth boundary.

Clean with Permaloid®
Silicone Remover 7010.
4. Repair process.

DIAMANT Plasticmetal (1425)

1 part hardener for aluminium putty
2 parts aluminium metal powder

Pot-life approx. 7 min / +20°C

See datasheet
4. Repair process.

Well mixed. Material should have a consistency making it easy to apply.

Too runny. Not sufficiently stiff for application. Add more metal powder.

Too thick and dry. Putty has uneven consistency and may not adhere after drying. Add more hardener liquid.
4. Repair process.

Apply putty
First apply an adhesion layer with pressure and then smooth uneven areas with the remaining material.

Air drying at approx. 20-30 min / 20°C metal temperature
IR drying
15-20 min / 80°C metal temperature

The maximum approved layer thickness (1 mm) for wheel repairs will also harden without IR. Additional post-hardening with IR is better, however, if subsequent films of surfacer and paint are also to be dried with IR.
4. Repair process.

- **Initial sanding** (P80-P240)
- **Subsequent sanding** (P120-P240)
- Fine-sand boundary with existing paint surface (P320-P500).
- Lightly sand existing paint surface (P500-P600)
  Alternatively, wet-sand (P800-P1000).
4. Repair process.

Clean with Permaloid® Silicone Remover 7010.

Mask and avoid getting primer/surfacer on rim well, inside of rim or in wheel bolt holes.
Soft edge tape or soft edge masking on contours are helpful for smooth fadeout.
4. Repair process.

System 1

Permasolid®
EP Primer Surfacer 4500
2-3 coats, max. 90 µm

Oven drying
30-40 min / 60-65°C
or IR drying
5 min at 50% power +
12-15 min at 100% power

See data sheet
4. Repair process.

System 2

Permasolid®
EP Primer Surfacer 4017
2-3 coats, max. 70 µm

Oven drying
45-50 min / 60-65°C
or IR drying
3 min at 50% power +
12-17 min at 100% power

See data sheet
4. Repair process.

System 3

- **Priomat® Wash Primer 4075**
  - 1.5-2 coats, 8-12 µm
  - Apply only to bare metal.

- **Permasolid® HS Performance Surfacer 5320**
  - 2 coats, max. 100 µm
  - Surfacer must cover wash primer sufficiently.

- **Flash-off 30 min at +20°C**

- **Oven drying**
  - 15-20 min at 60-65°C or IR drying for 10 min

- **See data sheet**
4. Repair process.

Sand (P500-P600)
(Alternatively, wet-sand with P800-P1000)

Clean carefully with Permaloid® Silicone Remover 7010 and Permahyd® Silicone Remover 7080.

Mask:
Prevent paint getting onto rim well and into wheel nut holes.
## 4. Repair process.

### Recommended step **only** before using Permahyd® Silver Star

**Variant A**

To achieve an extremely smooth, metal-like effect with Permahyd® Silver Star

- **Permasolid®**
  - HS Optimum Plus Clear Coat 8650
  - 1 coat, approx. 20-25 µm

- **See data sheet**

- **Sand mechanically with P1000 or by hand with P3000.**

- **Clean with**
  - Permaloid® Silicone Remover 7010
  - Permahyd® Silicone Remover 7080

- **Permahyd® Silver Star**
4. Repair process.

Recommended step only before using Permahyd® Silver Star

Variant B

To achieve a slightly grainy effect with Permahyd® Silver Star

- Permasolid® HS Transparent Surfacer 5185
  1 full coat, approx. 15-20 µm
- Oven drying
  10-20 min at 60-65 °C
- After cooling, recoat directly, without sanding, with Permahyd® Silver Star.
4. Repair process.

Tip
To achieve sufficient final hardness for tyre mounting, allow more time in the drying oven or follow up with extra IR drying.

Permahyd® Base Coat 280/285/286 or Permahyd® Hi-TEC Base Coat 480
Permasolid® HS Clear Coats
Drying in accordance with relevant technical data sheet
Light metal wheels.

Efficient surface repairs.

- Preface
- Guidelines
- Examples of damage with pictures
- Repair process
Spies Hecker – simply closer.

Efficient Surface Repairs on Light Metal Wheels
A new dimension in Speed Repair.
The UV product line.

Spies Hecker – simply closer.
Time saving technology.

**Putty – Surfacер – Clear Coat.**
The new UV product range from Spies Hecker makes it possible to carry out Speed Repairs in accordance with customer demands.

This perfectly integrated UV system together with the UV lamp gives you great advantages when doing Speed Repairs:
- **Very time efficient**
- **Higher productivity with low material consumption**
- **Using less energy compared with other systems**

In the ongoing development of UV technology, high priority has been accorded not only to high productivity, but also to safe handling for the refinisher. The protective equipment has thus been augmented with a new, innovative protective helmet which automatically darkens when the lamp flashes.

The advantage of this is that it is easier to control lamp use on the surfaces being dried.

**Permasolid® UV Starlight Putty 9100.**
- 1K product, hence no time limitations during application.
- Compatible with all conventional substrates.
- Putty specially designed for Speed Repair.
- Easy handling thanks to tube package scaled to Speed Repair.
- Film thicknesses possible up to 1,000 μm.
- Several coats possible with drying between films.
- Recoatable with all Spies Hecker primers/surfacers.
- Directly sandable.

All the products presented in this folder comply with the strict VOC guidelines.
Permasolid® UV Starlight Primer Surfacer 9000.

- 1K product.
- High solids content (98.6%).
- Excellent paint flow.
- Compatible with all conventional substrates.
- 1.5 coats without flash-off for 90 μm film thickness.

Permasolid® UV Starlight Clear Coat 9200.

- 2K product.
- Mixed 4:1 with Permasolid® UV Hardener 9201.
- Pot life 60 minutes.
- Application in a single spray operation.
- Quick and easy polishing as soon as the surface has cooled.
- Suitable for blending jobs in combination with Permacron® Speed Blender 1036.

“Speed Repair in absolute record time – incredible!
The new helmet is a great idea as well!”

Accessories.

“Speedglass” safety helmet.
- The new safety helmet automatically darkens when the lamp flashes.
- Maximum visual comfort thanks to graduated lightening time control.
  The dark/light switchover time can be adapted to the refinisher’s needs.

Mini Jet spraygun.
- Comes with a light-impermeable spray cup.

UV trolley.
- All the required materials and equipment in a single place.
- Special holder for spraygun and safety helmet.
- Automatic cooling with an integrated fan.

Flash lamp.
- Automatic series of 10 flashes.
- Uniform light distribution via the reflector.

Work poster.

UV Speed Repair Poster.
- Step by step to quick results.
  The whole process is presented in detail.

Technical data is available on all the presented products at www.spieshecker.com
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Fax: +44 (0) 1438 734730
enquiries@spieshecker.co.uk
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New address as from 1.7.2007:
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Horbeller Straße 17
D-50858 Köln
Tel. +49 (0) 2234 60 19 1470
Fax: +49 (0) 2234 60 19 4100
Speed Repair. Do it.

The perfect solution for minor damage.
Whether caused during parking or by stone chipping – dents and scratches happen all the time. Some 30% of all damage to vehicles consists of minor damage, usually in the lower car areas. Getting them partially resprayed simply seems too expensive to many customers. And that’s a major reason why this kind of damage is either widely ignored or repaired by cheap operators. Speed Repair from Spies Hecker is a low-cost method of professionally and quickly repairing minor paintwork damage. It gives you these advantages: You create a whole new customer potential, you can offer your key accounts special cost benefits and you fully utilise your bodyshop capacity.

Speed Repair is:

- ideal for small repairs in the lower area of the vehicle,
- quick and easy to use,
- inexpensive for you and your customers,
- the ultimate in quality that you expect from Spies Hecker,
- designed for immediate use without any major additional investments.

This is where Speed Repair really gets the job done.

It’s especially advisable to use Speed Repair for minor damage:

- below the decorative strip,
- in the door threshold areas,
- in corner or edge areas,
- on small areas that are optically broken up, e.g. by rear lights or number plates.

Even more, the moment you take in the car, you can correctly assess the areas of damage with the enclosed Speed Repair template.

Where can you use Speed Repair best?

- Look at the vehicle silhouette to see at a glance where you can use Speed Repair for the best results.

Areas where Speed Repair is especially suitable.

- Areas where Speed Repair is not suitable.
Permacron® Speed-Blender 1036 is the key to a perfect Speed Repair result. Apply this additive with a mini-HVLP spray-gun, just as you would apply a base coat. These special spray-guns are ideal for small areas. Adjusting the clear coat with the Speed-Blender 1036 guarantees a smooth transition from the repaired area to the original finish.

Here’s how easily you work with Speed Repair.

The method step-by-step.

1. Paintwork damage on the rear fender.
2. Clean the whole area with silicone remover and thoroughly wipe over with a Sontara® SPS™ grease-removing cloth.
3a. Sand the damaged area with a P240-320 eccentric sander.
3b. The sanded area.
4. Clean with silicone remover and thoroughly wipe over with a Sontara® SPS™ grease-removing cloth.
5. Mask.
6. Prime with a spray-gun Priomat® 1K Wash Primer 4085.
7. Infra-red drying for 5-7 minutes.
9a. Matt the edge area with a sanding pad.
9b. Matted area.
10a. Clean with silicone remover and thoroughly wipe over with a Sontara® SPS™ grease removing cloth.
10b. Remove dust with a Sontara® SPS™ dust binding cloth.
11. Apply base coat.
12. Apply clear coat.
13a. Adjust clear coat with Permacron® Speed-Blender 1036.
13b. Refinishing: apply a mist coat of clear coat in the edge area, do not blend in outside the sanded area.
15a. Polish edge area after sufficient drying (and cooling).
15b. Polish edge area after sufficient drying (and cooling).

For the application of the individual products please follow the prevailing technical data sheets.
The right products for more efficiency.

Speed Repair tools and aids.

Using tried-and-trusted Spies Hecker products, you'll easily master the Speed Repair method. Most of the tools and products required are certainly available in your bodyshop, so there's no need to buy expensive new equipment.

Recommended equipment:

- **Sanding and polishing machine.**
  Smaller repairs are best sanded and finished off using an eccentric sander with a disk diameter of 75–80mm. This is easy to handle at whatever speed. Plus, you can convert it from a sanding machine to a polisher in no time by attaching the soft Abalon disk.

- **Spot sander.**
  Keep the repair area as small as possible. This is no problem at all with a spot sander. It makes even difficult-to-reach areas easy to tackle.

- **Mini sanding block.**
  The mini sanding block works with the same sanding means as the spot sander. Use this manual sanding block for spot finishing work.

- **Mini HVLP spray-gun.**
  These small spray-guns, available from all the major manufacturers, are ideal for refinishing small areas. You can use them to apply all Spies Hecker paint materials in the usual high quality.

- **Spies Hecker products.**
  Permahyd® Base Coat Series 280/285 always provides its accustomed high-quality finish. It is complemented by our top-quality Permasolid® clear coats. Our new Permacron® Speed-Blender 1036 makes blending in fast and easy. Our primer surfacer, Priomat® 1K Wash Primer 4085, plus Permacron® Elastic Primer 3410, complete the range of products for our speed repair method.

The better solution for key accounts.

More orders due to cost benefits.

Speed Repair is a low-cost method. That makes it ideal for your large-fleet customers.

Whatever your customers, whether large-fleet firms, leasing companies or hire car businesses – the cars they use are, as a rule, 1-3 years old. Small-scale paintwork damage not only spoils their image but also reduces the resale value of their cars. Yet you can also intensify your cooperation with car dealers by touching up new cars. And, last but not least, you attract drivers who in the past left minor damage unrepaired because of the cost.

Priced to please clever cost-cutters.

Speed Repair – professional and inexpensive.

Using Speed Repair on minor damage, you save almost half the normal material and labour costs, because you only have to work on a small area. This method is so fast, your staff can manage more jobs in the same time. That means you can work more efficiently and increase your earnings.

Here's what you'll gain:

- optimum bodyshop throughput.
- scope for attracting new customers.
- cost benefits that increase customer loyalty, especially among fleet owners.
- an additional profit centre with Speed Repair.

You can start with Speed Repair right away, because you continue to use the normal Spies Hecker products. This ensures you avoid the expense of switching to a new method.

The sample calculations you see here show a significant increase in earnings with Speed Repair due to less material consumption and labour costs compared to a normal partial respray.

European average in refinishing trade.

<table>
<thead>
<tr>
<th>Speed Repair</th>
<th>Partial respray</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy consumption</td>
<td>2.00 €</td>
</tr>
<tr>
<td>Wage costs (45.00 €/hour)</td>
<td>67 Min.</td>
</tr>
<tr>
<td>Material costs</td>
<td>13.00 €</td>
</tr>
<tr>
<td>Miscellaneous Consumption material</td>
<td>3.25 €</td>
</tr>
<tr>
<td>Cost</td>
<td>68.50 €</td>
</tr>
</tbody>
</table>

The sample calculations you see here show a significant increase in earnings with Speed Repair due to less material consumption and labour costs compared to a normal partial respray.

<table>
<thead>
<tr>
<th>Material consumption</th>
<th>Sample: Small fender Speed Repair</th>
<th>Partial respray</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear coat</td>
<td>50g/1.70 €</td>
<td>150g/5.10 €</td>
</tr>
<tr>
<td>Base coat</td>
<td>50g/5.10 €</td>
<td>100g/10.20 €</td>
</tr>
<tr>
<td>Surfacer</td>
<td>50g/1.90 €</td>
<td>75g/2.40 €</td>
</tr>
<tr>
<td>Putty</td>
<td>50g/0.60 €</td>
<td>50g/0.60 €</td>
</tr>
<tr>
<td>Material costs*</td>
<td>9.00 €</td>
<td>18.30 €</td>
</tr>
</tbody>
</table>

Material costs* 9.00 € 18.30 €

Savings: 50%

Material consumption.

Speed Repair tools and aids.

Using tried-and-trusted Spies Hecker products, you'll easily master the Speed Repair method. Most of the tools and products required are certainly available in your bodyshop, so there's no need to buy expensive new equipment.

Recommended equipment:

- **Infra-red dryer.**
  We strongly advise using an infra-red for the Speed Repair method. This enables you to dry small areas. And, because the drying time is much shorter than that for low baking, an infra-red is highly cost-effective.

- **Mini sanding block.**
  The mini sanding block works with the same sanding means as the spot sander. Use this manual sanding block for spot finishing work.

- **Mini HVLP spray-gun.**
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## SPIES HECKER PAINTING SYSTEMS

### WORKING PROCESS: Infrared drying

| Why choose Infrared drying? | ✓ Greater shop throughput with excellent through-drying  
|                            | ✓ Time savings  
|                            | ✓ Lower energy consumption  
|                            | ✓ Greater economy |

| How to use Infrared drying: | • The distance between the panel and Infrared emitter depends on the equipment used. Refer to manufacturer’s instructions.  
|                            | • Observe safety rules and regulations. |

| Important remarks: | • Drying times may vary due to different models and different heating elements.  
|                   | • If infrared drying is used, each film layer should be individually infrared-dried to prevent peeling and solvent popping. |
### SPIES HECKER PAINTING SYSTEMS

#### WORKING PROCESS: Infrared drying

<table>
<thead>
<tr>
<th>Spies Hecker Products</th>
<th>Medium wave radiator</th>
<th>Short wave radiator</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Flash off time</td>
<td>100% Power</td>
</tr>
<tr>
<td>Ground materials:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polyester Putty</td>
<td>5 min.</td>
<td>5 - 7 min.</td>
</tr>
<tr>
<td>Polyester Fillers</td>
<td>5 min.</td>
<td>15 min.</td>
</tr>
<tr>
<td>2K Fillers</td>
<td>10 - 12 min.</td>
<td>5 min.</td>
</tr>
<tr>
<td><strong>Permahyd Basecoat:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>dark colours</td>
<td>3 min.</td>
<td>2 min.</td>
</tr>
<tr>
<td>bright colours</td>
<td>4 - 6 min.</td>
<td>3 - 4 min.</td>
</tr>
<tr>
<td><strong>Permasolid / Permacron 2K Autolack:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>dark colours</td>
<td>5 min.</td>
<td>12 min.</td>
</tr>
<tr>
<td>bright colours</td>
<td>5 min.</td>
<td>14 min.</td>
</tr>
<tr>
<td><strong>Permasolid / Permacron 2K Clears:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>with dark Basecoat</td>
<td>5 min.</td>
<td>13 - 16 min.</td>
</tr>
<tr>
<td>with bright Basecoat</td>
<td>5 min.</td>
<td>15 - 18 min.</td>
</tr>
</tbody>
</table>

*1 = If too hot solvent boil

This guide for drying times is based on:

- **Medium wave** = Infrared Type: SH 4 (Manufacturer: Fa. Heraeus)
- **Short wave** = Infrared Type: IRT 202 (Manufacturer: Fa. IRT)

(Infrared distance 80 - 100 cm. Observe manufacturer's distance guidelines.)
1. Air Pressure

1 PSI (1 lb/sq.inch) = 0.0689 bar

- 1.0 bar = 14.2 PSI
- 2.0 bar = 28.4 PSI
- 3.0 bar = 42.7 PSI
- 4.0 bar = 56.9 PSI
- 5.0 bar = 71.2 PSI
- 6.0 bar = 87.0 PSI

2. Temperature

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<th>°F</th>
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### 3. Viscosity

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<th>DIN 4 mm/s</th>
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<th>ISO 3 mm/s</th>
<th>ISO 4 mm/s</th>
<th>ISO 5 mm/s</th>
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</table>
4. Liquid Measure

<table>
<thead>
<tr>
<th>Unit</th>
<th>Conversion to UK</th>
<th>Conversion to USA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 oz. (ounce)</td>
<td>29.57 ml</td>
<td>0.473 Ltr.</td>
</tr>
<tr>
<td></td>
<td>1.0 ml (Milliliter) = 0.0338 oz.</td>
<td>0.047 Ltr.</td>
</tr>
<tr>
<td>1 pt. (pint)</td>
<td>0.568 Ltr.</td>
<td>0.964 Ltr.</td>
</tr>
<tr>
<td>1 qt. (quart)</td>
<td>1.137 Ltr.</td>
<td>1.931 Ltr.</td>
</tr>
<tr>
<td></td>
<td>1.0 Ltr. (Liter) = 0.879 qt.</td>
<td>1.893 Ltr.</td>
</tr>
<tr>
<td>1 gal. (gallon)</td>
<td>4.546 Ltr.</td>
<td>8.376 Ltr.</td>
</tr>
</tbody>
</table>

5. Weight

<table>
<thead>
<tr>
<th>Unit</th>
<th>Conversion to</th>
<th>Conversion to</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 gr. (grain)</td>
<td>0.648 g</td>
<td>0.154 gr.</td>
</tr>
<tr>
<td>1 oz. (ounce)</td>
<td>28.35 g</td>
<td>1.614 lb.</td>
</tr>
<tr>
<td>1 lb. (pound)</td>
<td>453.59 g</td>
<td>0.454 kg</td>
</tr>
</tbody>
</table>
6. Linear Measure

- 1 in. (inch) = 2.54 cm
- 1 ft. (foot) = 30.48 cm
- 1 yd. (yard) = 91.44 cm
- 1.0 mm (Millimeter) = 0.0394 in.
- 1.0 cm (Centimeter) = 0.394 in.
- 1.0 m (Meter) = 39.4 in. (1.09 yds.)

7. Coverage

- 1.0 m² = 10.7639 ft²

8. Film Thickness

<table>
<thead>
<tr>
<th>micron (1 micron = 0.0394 mills)</th>
<th>mill (1 mill = 25.4 micron)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>0.4</td>
</tr>
<tr>
<td>20</td>
<td>0.8</td>
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<tr>
<td>30</td>
<td>1.2</td>
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<tr>
<td>40</td>
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<td>50</td>
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<td>75</td>
<td>3.0</td>
</tr>
<tr>
<td>100</td>
<td>4.0</td>
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</tbody>
</table>
Special advice for using the Product-Information:

Theoretical Coverage

The calculation of the theoretical coverage is made by calculating the addition of Hardener but without the addition of Thinner and with reference to the recommended dry film thickness. Unapplied (overspray) material should not be included in this calculation.

Formula: (Example 2:1)

\[
\frac{(2 \times SC \text{ (Vol-% Hardener)} + SC \text{ (Vol-% Base)})}{150} \times 1000
\]

Dry Film Thickness

VOC-Value

The VOC-Value mentioned in the Technical Data Sheets refers only to the material without addition of Hardener or Thinner.

Formulas for calculating the VOC-Value of ready for use material:

Example 1: Mixing ratio 2:1 with 10% Thinner

\[
\begin{align*}
2 \times VOC \text{ Basematerial} & = \text{Value 1} \\
1 \times VOC \text{ Hardener} & = \text{Value 2} \\
0.3 \times VOC \text{ Thinner} & = \text{Value 3} \\
\hline
3.3 & \text{Total} / 3.3 = \text{VOC-Value of ready for use material}
\end{align*}
\]

Example 2: Mixing ratio 4:1 with 15% Thinner

\[
\begin{align*}
4 \times VOC \text{ Basematerial} & = \text{Value 1} \\
1 \times VOC \text{ Hardener} & = \text{Value 2} \\
0.75 \times VOC \text{ Thinner} & = \text{Value 3} \\
\hline
5.75 & \text{Total} / 5.75 = \text{VOC-Value of ready for use material}
\end{align*}
\]
Example 3: Basecoat with 50% Thinner

2 x VOC Basecoat = Value 1
1 x VOC Thinner = Value 2
___
3 Total / 3 = VOC-Value of ready for use material

The required values for the calculation see attached list.
<table>
<thead>
<tr>
<th>1.1</th>
<th>2.1.1</th>
<th>3.1</th>
<th>4.1</th>
<th>4.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleaning</td>
<td>Mixing ratio 2 components</td>
<td>Application- viscosity</td>
<td>Gravity feed spray gun</td>
<td>Application of stopper</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2.1.2</th>
<th>4.2</th>
<th>4.6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mixing ratio 3 components</td>
<td>Suction feed spray gun</td>
<td>Application with brush</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2.1.3</th>
<th>4.3</th>
<th>4.7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mixing ratio 1:1 2 components</td>
<td>Underseal spray gun</td>
<td>Application with roller</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2.2</th>
<th>4.4</th>
<th>4.8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use Mixing stick</td>
<td>Spray passes Gravity feed</td>
<td>Aerosol</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2.3</th>
<th>4.1.1</th>
<th>4.4.1</th>
<th>4.9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Addition of Hardener</td>
<td>Spray passes HVLP</td>
<td>Spray passes Suction feed</td>
<td>Airless spray</td>
</tr>
<tr>
<td>Drying</td>
<td>Further steps</td>
<td>Storage</td>
<td>Miscellaneous</td>
</tr>
<tr>
<td>--------</td>
<td>---------------</td>
<td>---------</td>
<td>---------------</td>
</tr>
<tr>
<td>5.1</td>
<td>6.1</td>
<td>6.5</td>
<td>8.1</td>
</tr>
<tr>
<td><img src="image" alt="Flash off" /></td>
<td><img src="image" alt="Sanding by hand, wet" /></td>
<td><img src="image" alt="Flat bed sander, wet (compressed air)" /></td>
<td><img src="image" alt="Store free from frost" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Drying time</th>
<th>Sanding by hand, dry</th>
<th>Flat bed sander, dry</th>
<th>Store in a cool place</th>
<th>Stirring on the mixing machine</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.2</td>
<td>6.2</td>
<td>6.6</td>
<td>8.2</td>
<td>9.2</td>
</tr>
<tr>
<td><img src="image" alt="Drying time" /></td>
<td><img src="image" alt="Sanding by hand, dry" /></td>
<td><img src="image" alt="Flat bed sander, dry" /></td>
<td><img src="image" alt="Store in a cool place" /></td>
<td><img src="image" alt="Stirring on the mixing machine" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Infrared Drying time</th>
<th>Denibbing</th>
<th>Polishing</th>
<th>Protect from humidity</th>
<th>Check colour</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.3</td>
<td>6.2.1</td>
<td>6.7</td>
<td>8.3</td>
<td>9.3</td>
</tr>
<tr>
<td><img src="image" alt="Infrared Drying time" /></td>
<td><img src="image" alt="Denibbing" /></td>
<td><img src="image" alt="Polishing" /></td>
<td><img src="image" alt="Protect from humidity" /></td>
<td><img src="image" alt="Check colour" /></td>
</tr>
</tbody>
</table>

Technical Information

<table>
<thead>
<tr>
<th>Orbital sander, wet (compressed air)</th>
<th>See technical data sheet</th>
<th>Close tin</th>
<th>Poor opacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.3</td>
<td>7.1</td>
<td>8.4</td>
<td>9.4</td>
</tr>
<tr>
<td><img src="image" alt="Orbital sander, wet (compressed air)" /></td>
<td><img src="image" alt="See technical data sheet" /></td>
<td><img src="image" alt="Close tin" /></td>
<td><img src="image" alt="Poor opacity" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Orbital sander, dry</th>
<th>Use fresh air mask</th>
<th>Shelf life</th>
<th>Three coat process</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.4</td>
<td>7.2</td>
<td>8.5</td>
<td>9.5</td>
</tr>
<tr>
<td><img src="image" alt="Orbital sander, dry" /></td>
<td><img src="image" alt="Use fresh air mask" /></td>
<td><img src="image" alt="Shelf life" /></td>
<td><img src="image" alt="Three coat process" /></td>
</tr>
</tbody>
</table>
Overview with Mixing sticks for Spies Hecker products.

Passenger cars

1. Article no. D11152604
   Mixing stick for Permahyd® Base Coat 280/285 and Permasolid® HS Clear Coats resp. Permacron® Elastic Clear Coat 8070 (Mixing ratio 2:1)

2. Article no. D14054840
   Mixing stick for Permahyd® Hi-TEC Base Coat 480
   (Mixing with Additive 6050/6051 or Blend-in Additive 1050 for Speed Repair)

3. Article no. D14054851
   Mixing stick for Permahyd® Hi-TEC Base Coat 480
   (Mixing with Hardener 3080 for Interior Coating or 3 stage colours)

4. Article no. D11152561
   Mixing stick for Permacron® Base Coat 293/295 and Permasolid® HS Clear Coats resp. Permacron® Elastic Clear Coat 8070 (Mixing ratio 2:1)

5. Article no. D12693209
   Mixing stick for Plastic painting or Matt finishes with Permasolid® HS Automotive Top Coat 275

6. Article no. D11242857
   Mixing stick for Plastic painting with Permasolid® HS Surfacer or Permasolid® HS Clear Coats

7. Article no. D11242887
   Mixing stick for Permasolid® HS Clear Coats, Permasolid® HS Automotive Top Coat 275, Permasolid® HS Vario Surfacer 8590 and Permasolid® EP Primer Surfacer 4500
   (Mixing ratio 3:1)

8. Article no. D11152531
   Mixing stick for Permasolid® HS Clear Coats, Permasolid® HS Premium Surfacer 5310
   (Mixing ratio 2:1 and 4:1 with HS Hardener)

9. Article no. D12693217
   Mixing stick for Permasolid® HS Vario Surfacer 8590 and Permasolid® HS Premium Surfacer 5310
   (Mixing ratio 5:1 and 7:1 with VHS Hardener)
Adjusting the Degree of Gloss of Permasolid®
HS Clear Coats and Permasolid®
HS Automotive Top Coat 275

This Data Sheet describes how to adjust the degree of gloss of Permasolid® HS clear coats and Permasolid® HS Automotive Top Coat 275 by mixing them with Permasolid® Matting Component MA110 for use on plastic and metal substrates.

The information on factors which influence the degree of gloss will enable the painter to achieve the required degree of gloss under varying bodyshop conditions.

Field of application:
For small and add-on parts

For professional use only!
System Data Sheet No. EN / SYS 901.9 / 03
Adjusting the degree of gloss.

Products:

- Permasolid® Matting Component MA110
- Permasolid® HS Clear Coat 8030
- Permasolid® HS Clear Coat 8033
- Permasolid® HS Clear Coat 8034
- Permasolid® HS Clear Coat 8035
- Permasolid® HS Clear Coat 8055
- Permasolid® HS Optimum Clear Coat 8600
- Permasolid® HS Optimum Plus Clear Coat 8650
- Permasolid® HS Automotive Top Coat 275
- Permasolid® HS Hardener 3312 slow
- Permasolid® HS Hardener 3315 extra slow
- Permasolid® VHS Hardener 3230 slow
- Permasolid® VHS Hardener 3240 extra slow
- Permacron® Reducer 3364
- Permacron® Reducer 3380
- Permacron® Reducer 3365 slow
- Permacron® Reducer 3385 slow
- Permasolid® HS Additive 9034

See also System Data Sheet SYS 910.0 (Refinish System for Mercedes-Benz Cars with a Matt Finish) and Technical Data Sheet MA110.

The actual gloss level achieved is influenced by various factors aside from the colour.

It is possible to use other hardeners, reducers which are not mentioned in this Data Sheet. However, just like different methods of application, drying conditions and film thicknesses, the use of different hardeners and reducers may lead to different degrees of gloss (up to 20%).

<table>
<thead>
<tr>
<th>Higher gloss level</th>
<th>Lower gloss level</th>
</tr>
</thead>
<tbody>
<tr>
<td>faster hardener</td>
<td>slower hardener</td>
</tr>
<tr>
<td>faster reducer</td>
<td>slower reducer</td>
</tr>
<tr>
<td>higher application viscosity</td>
<td>lower application viscosity</td>
</tr>
<tr>
<td>higher dry film thickness</td>
<td>lower dry film thickness</td>
</tr>
<tr>
<td>shorter flash-off time</td>
<td>longer flash-off time</td>
</tr>
<tr>
<td>force drying</td>
<td>air drying</td>
</tr>
</tbody>
</table>
Mixing table.
HS clear coats

**Degree of gloss**

| Permasolid® Matting Component | Matt* < 20% | Satin gloss* < 40% | Semi gloss* < 60% | Glossy* < 80% |
| MA110 8030 | 73 g | 65 g | 59 g | 56 g |
| Permasolid® HS Clear Coat 8030 | 27 g | 35 g | 41 g | 44 g |

**Mixed with HS hardener**

- After mixing the clear coat with MA110, mix this mixture 2:1 by volume with Permasolid® HS hardener.
- Ready to spray without reducer.

**Degree of gloss**

| Permasolid® Matting Component | Matt* < 20% | Satin gloss* < 40% | Semi gloss* < 60% | Glossy* < 80% |
| MA110 8030 | 68 g | 59 g | 54 g | 52 g |
| Permasolid® HS Clear Coat 8030 | 32 g | 41 g | 46 g | 48 g |

**Mixed with VHS hardener**

- After mixing the clear coat with MA110, mix this mixture 4:1 by volume with Permasolid® VHS hardener.
- Ready to spray after addition of 15% reducer.

*As these terms are not subject to any standards, the gloss grade values are not binding and should only be understood as a rough indication or with reference to what is customary in the market.*

It is absolutely necessary to spray a sample to achieve the degree of gloss that matches the car. Measuring the degree of gloss (at an angle of 60°) on adjacent parts may also be helpful.
### Degree of gloss

<table>
<thead>
<tr>
<th>Permasolid® Matting Component</th>
<th>Matt* &lt; 20%</th>
<th>Satin gloss* &lt; 40%</th>
<th>Semi gloss* &lt; 60%</th>
<th>Glossy* &lt; 80%</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA110 8033</td>
<td>65 g</td>
<td>57 g</td>
<td>54 g</td>
<td>52 g</td>
</tr>
<tr>
<td></td>
<td>35 g</td>
<td>43 g</td>
<td>46 g</td>
<td>48 g</td>
</tr>
<tr>
<td>Permasolid® HS Clear Coat 8033</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

After mixing the clear coat with MA110, mix this mixture 4:1 by volume with Permasolid® VHS hardener. Ready to spray after addition of 10% reducer.

### Degree of gloss

<table>
<thead>
<tr>
<th>Permasolid® Matting Component</th>
<th>Matt* &lt; 20%</th>
<th>Satin gloss* &lt; 40%</th>
<th>Semi gloss* &lt; 60%</th>
<th>Glossy* &lt; 80%</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA110 8034</td>
<td>72 g</td>
<td>66 g</td>
<td>59 g</td>
<td>53 g</td>
</tr>
<tr>
<td></td>
<td>28 g</td>
<td>34 g</td>
<td>41 g</td>
<td>47 g</td>
</tr>
<tr>
<td>Permasolid® HS Clear Coat 8034</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

After mixing the clear coat with MA110, mix this mixture 4:1 by volume with Permasolid® VHS hardener. Ready to spray after addition of 5% Additive 9034.

### Degree of gloss

<table>
<thead>
<tr>
<th>Permasolid® Matting Component</th>
<th>Matt* &lt; 20%</th>
<th>Satin gloss* &lt; 40%</th>
<th>Semi gloss* &lt; 60%</th>
<th>Glossy* &lt; 80%</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA110 8035</td>
<td>70 g</td>
<td>61 g</td>
<td>56 g</td>
<td>51 g</td>
</tr>
<tr>
<td></td>
<td>30 g</td>
<td>39 g</td>
<td>44 g</td>
<td>49 g</td>
</tr>
<tr>
<td>Permasolid® HS Clear Coat 8035</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

After mixing the clear coat with MA110, mix this mixture 2:1 by volume with Permasolid® HS hardener. Ready to spray without reducer.

* As these terms are not subject to any standards, the gloss grade values are not binding and should only be understood as a rough indication or with reference to what is customary in the market.
### Permasolid® Matting Component

<table>
<thead>
<tr>
<th>Degree of gloss</th>
<th>Matt* &lt; 20%</th>
<th>Satin gloss* &lt; 40%</th>
<th>Semi gloss* &lt; 60%</th>
<th>Glossy* &lt; 80%</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA110 8035</td>
<td>68 g</td>
<td>60 g</td>
<td>55 g</td>
<td>51 g</td>
</tr>
<tr>
<td>MA110 8055</td>
<td>71 g</td>
<td>64 g</td>
<td>52 g</td>
<td>44 g</td>
</tr>
<tr>
<td>MA110 8600</td>
<td>71 g</td>
<td>60 g</td>
<td>55 g</td>
<td>49 g</td>
</tr>
</tbody>
</table>

*As these terms are not subject to any standards, the gloss grade values are not binding and should only be understood as a rough indication or with reference to what is customary in the market.*
### Mixing table.

#### HS automotive top coat

**Degree of gloss**

<table>
<thead>
<tr>
<th>Permasolid® Matting Component MA110</th>
<th>Matt*</th>
<th>Satin gloss*</th>
<th>Semi gloss*</th>
<th>Glossy*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permasolid® HS Automotive Top Coat 275 white</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mixed with VHS hardener</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| After mixing MA110 with Permasolid® HS Automotive Top Coat 275, mix this mixture 4:1 by volume with Permasolid® VHS hardener. Ready to spray after addition of 15% reducer. |

<table>
<thead>
<tr>
<th>MA110 8650</th>
<th>Matt*</th>
<th>Satin gloss*</th>
<th>Semi gloss*</th>
<th>Glossy*</th>
</tr>
</thead>
<tbody>
<tr>
<td>71 g</td>
<td>65 g</td>
<td>58 g</td>
<td>41 g</td>
<td></td>
</tr>
<tr>
<td>29 g</td>
<td>35 g</td>
<td>42 g</td>
<td>59 g</td>
<td></td>
</tr>
</tbody>
</table>

* As these terms are not subject to any standards, the gloss grade values are not binding and should only be understood as a rough indication or with reference to what is customary in the market.

---

| After mixing the clear coat with MA110, mix this mixture 4:1 by volume with Permasolid® VHS hardener. Ready to spray after addition of 10% reducer. |

<table>
<thead>
<tr>
<th>MA110 275</th>
<th>Matt*</th>
<th>Satin gloss*</th>
<th>Semi gloss*</th>
<th>Glossy*</th>
</tr>
</thead>
<tbody>
<tr>
<td>65 g</td>
<td>57 g</td>
<td>50 g</td>
<td>44 g</td>
<td></td>
</tr>
<tr>
<td>35 g</td>
<td>43 g</td>
<td>50 g</td>
<td>56 g</td>
<td></td>
</tr>
</tbody>
</table>

---

| After mixing MA110 with Permasolid® HS Automotive Top Coat 275, mix this mixture 4:1 by volume with Permasolid® VHS hardener. Ready to spray after addition of 15% reducer. |

<table>
<thead>
<tr>
<th>MA110 275</th>
<th>Matt*</th>
<th>Satin gloss*</th>
<th>Semi gloss*</th>
<th>Glossy*</th>
</tr>
</thead>
<tbody>
<tr>
<td>71 g</td>
<td>58 g</td>
<td>51 g</td>
<td>31 g</td>
<td></td>
</tr>
<tr>
<td>29 g</td>
<td>42 g</td>
<td>49 g</td>
<td>69 g</td>
<td></td>
</tr>
</tbody>
</table>
Application.

Method of application:

Application viscosity
4 mm, +20°C, DIN 53211:
Reducer at +20°C material temperature:

Spray nozzle**:

Spray pressure**:

Atomising pressure**:

Number of coats:

Recommended film thickness:

Notes on application.

To achieve the best possible and homogeneous matting effect, the following notes are to be observed:

When spraying, the distance to the object should be a little bigger than with standard application, to benefit from the full atomisation of the spray jet (to avoid the formation of stripes).

It is important to see to it that the individual "spray moves" form a uniform overlap and that the film is sufficiently wet. If the applied paint film is too dry, there is a risk of mottling owing to uneven flash-off or unabsorbed overspray.

With low-opacity colours it may be necessary to apply one more coat after the appropriate flash-off time.

Blending or refinishing the matt clear coat within a part, e.g. a side part, or speed repair is not possible.

** See manufacturer’s instructions!
Drying.

Force drying:

![Clock icon]

Final flash-off time: 15 - 20 minutes

Drying time at +60 - 65°C metal temperature: 45 minutes

Special notes.

It is not necessary to add Permasolid® Elastic Additive 9050.

Shake or stir Permasolid® Matting Component MA110 well in the can.

Mix Permasolid® Matting Component MA110 and Permasolid® HS Clear Coat or Permasolid® HS Automotive Top Coat 275 according to specification and only mix this mixture shortly before application with hardener and reducer. The ready-to-spray mixture should be applied immediately. If the mixture is left in the mixing cup or spray gun for a longer period of time (15 min), it has to be stirred once more before it can be used. (settling behaviour)

Permasolid® Matting Component MA 110 may influence the hiding power.

It is not possible to polish dust inclusions, therefore cleanliness during the entire refinishing process is very important.

Care.

Paintwork care:

Do not use any paint cleaning compounds, sanding or polishing compounds, or gloss preservers (wax) for paintwork care. They may damage the painted surface.

If, by accident, wax gets on the paint surface, remove it immediately with a commercial silicone remover. Take care not to exert high pressure on the paint surface.

Do not allow any resinous, greasy or oily substances to get on the paint surface, as these may leave traces. Any contamination must be removed immediately with a cloth soaked in benzine. Do not exert pressure or rub too strongly.
If possible, remove any insects or bird droppings immediately by soaking with water and spraying with insect remover before washing the car. Any remaining traces may not be removed by intensive rubbing.

Tar stains on the paint surface may be removed with a commercial tar remover.

Do not attach any stickers, foils, magnetic labels or similar to the painted surface. They may damage the paint.
Choose the right Spies Hecker Permasolid® Hardener.

<table>
<thead>
<tr>
<th>Repaired part.</th>
<th>Temperature range.</th>
<th>Hardeners.</th>
</tr>
</thead>
</table>
|               | 15 – 20°C         | VHS 3220 fast  
|               |                   | HS 3307 extra fast  
|               |                   | HS 3309 fast |
|               | 20 – 30°C         | VHS 3225  
|               |                   | HS 3309 fast  
|               |                   | HS 3310 |
|               | 30 – 35°C         | VHS 3230 slow  
|               |                   | HS 3312 slow |
|               | 20 – 25°C         | VHS 3225  
|               |                   | VHS 3230 slow  
|               |                   | HS 3310  
|               |                   | HS 3312 slow |
|               | 25 – 30°C         | VHS 3225  
|               |                   | VHS 3230 slow  
|               |                   | VHS 3240 extra slow  
|               |                   | HS 3310  
|               |                   | HS 3312 slow |
|               | 30 – 35°C         | VHS 3240 extra slow  
|               |                   | HS 3315 extra slow |
|               | 20 – 35°C         | VHS 3240 extra slow  
|               |                   | HS 3315 extra slow |

This information is based on our current state of knowledge. You can find precise information on the processing of our products in the respective Technical Data Sheets for Permasolid® VHS Hardener 3220–3240 and Permasolid® HS Hardener 3307–3315.

Spies Hecker – simply closer.

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### Overview of the Spies Hecker Products used in the Refinishing Guidelines for Mercedes-Benz

**Passenger Cars (Non-VOC)**

<table>
<thead>
<tr>
<th>Putties</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2K-Polyester-System</strong></td>
<td>Raderal Fine Putty 0911</td>
</tr>
<tr>
<td></td>
<td>Raderal IR Premium Putty 2035</td>
</tr>
<tr>
<td></td>
<td>Raderal Spray Polyester 3508</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Primers / Primer Surfacers / Surfacers</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PVB-System</strong></td>
<td>Priomat Wash Primer 4075</td>
</tr>
<tr>
<td></td>
<td>Priomat 1K Wash Primer 4085 (only for small through-sanded areas)</td>
</tr>
<tr>
<td><strong>UV-System</strong></td>
<td>Permasolid 2K UV Starlight Primer Surfacer 9000</td>
</tr>
<tr>
<td><strong>Paint System for Plastic Parts</strong></td>
<td>Priomat Elastic Primer 3304 transparent</td>
</tr>
<tr>
<td></td>
<td>Permacron 1:1 Elastic Primer Surfacer 3300 (with Hardener 3301)</td>
</tr>
<tr>
<td></td>
<td>Priomat Pore Filler 3311</td>
</tr>
<tr>
<td><strong>2K-High-Solid-System</strong></td>
<td>Permasolid HS Performance Surfacer 5320</td>
</tr>
<tr>
<td></td>
<td>Permasolid HS Premium Surfacer 5310</td>
</tr>
<tr>
<td></td>
<td>Permasolid HS Vario Surfacer 8590</td>
</tr>
</tbody>
</table>

| **Base Coats / Clear Coats**               |                                         |
| **Base Coats**                             | Permacron Base Coat Series 293         |
|                                            | Permacron Pearl Base Coat Series 295   |
| **2K-HS-Clear Coats**                      | Permasolid HS Clear Coat 8030          |
|                                            | Permasolid HS Clear Coat 8035          |
|                                            | Permasolid HS Clear Coat 8055          |
|                                            | Permasolid HS Optimum Plus Clear Coat 8650 |
|                                            | Permasolid HS Diamond Clear Coat 8450  |
| **2K-MS Clear Coats**                      | Permacron MS Varioplus Clear Coat 8050 |
# Overview of the Spies Hecker Products used in the Refinishing Guidelines for Mercedes-Benz

## Passenger Cars (Non-VOC)

### Hardeners

<table>
<thead>
<tr>
<th>System</th>
<th>Hardeners</th>
</tr>
</thead>
</table>
| 2K-MS-System | Permacron MS Express Hardener 3333  
|           | Permacron MS Express Hardener 3344 fast  
|           | Permacron MS Express Hardener 3355 extra fast  
|           | Permacron MS Special Hardener 3368 |
| 2K-VHS-System | Permasolid VHS Hardener 3220 fast  
|           | Permasolid VHS Hardener 3225  
|           | Permasolid VHS Hardener 3230 slow  
|           | Permasolid VHS Hardener 3240 extra slow |
| 2K-HS-System | Permasolid HS Hardener 3307 extra fast  
|           | Permasolid HS Hardener 3309 fast  
|           | Permasolid HS Hardener 3310  
|           | Permasolid HS Hardener 3312 slow  
|           | Permasolid HS Hardener 3315 extra slow |

###Reducers

<table>
<thead>
<tr>
<th>System</th>
<th>Reducers</th>
</tr>
</thead>
</table>
| 2K-Acryl-System | Permacron Reducer 3380  
|           | Permacron Reducer 3385 slow  
|           | Permacron Reducer 3364  
|           | Permacron Reducer 3365 slow  
|           | Permacron Duraplus 8580 |
| Basis-System | Permacron Supercryl Reducer 3054  
|           | Permacron Supercryl Reducer 3055 express  
|           | Permacron Supercryl Reducer 3056 slow |

###Special Additives / Other Products

<table>
<thead>
<tr>
<th>Category</th>
<th>Products</th>
</tr>
</thead>
</table>
| Additives  | Permasolid Elastic Additive 9050  
|           | Permasolid Matting Component MA 110  
|           | Permahyd Blend-in-Additive 9005  
|           | Permacron Speed Blender 1036 |
| Silicone Remover | Permaloid Silicone Remover 7010 (pre-cleaning)  
|           | Permaloid Silicone Remover 7799 (pre-cleaning)  
|           | Permahyd Silicone Remover 7080 |
Raderal®
Fine Putty 0911.

Raderal® Fine Putty 0911 is a very fine, thixotropic polyester putty.

Usage: Suitable for repairing small defects.

- fine and free from pores
- easy to apply
- good sanding properties
- very elastic for repairing plastic substrates

For professional use only!
VR Technical Data Sheet No. EN / 0911 / 00
## Substrate.

### Suitable substrates:
- Steel
- Aluminium,
- Glass fibre reinforced plastic (UP-GF)
- Old or original finish
- Fully cured 2K surfacers/2K primers
- Plastic parts coated with Permacron® 1:1 Elastic Primer Surfacer 3300 or Priomat® Elastic Primer 3304 transparent.
- Surfaces prepared with Raderal® 2K polyester putty.

### Special notes:
- This putty may not be applied on PVB (acid curing) primers or 1K primers (e.g. synthetic resin).
- It is also unsuitable for thermoplastic or viscoelastic paintwork. In these cases the putty may be applied on bare metal only.

### Substrate pretreatment:
- Carefully degrease and sand lightly.
- UP-GF substrates: remove all traces of release agents and sand lightly
- Before further treatment carefully clean substrate with suitable cleaning agent to remove dust and residues.

## Application.

### Method of application:
- With a putty knife

### Mixing ratio:
- Add 2 - 3% by weight Raderal Hardener 0909 or Raderal Hardener 0940 slow (specially for high temperatures)

### Special note:
- Avoid adding too much hardener, as this can lead to bleeding through, especially with daylight fluorescent paints and light metallic colours.

### Pot life:
- At +20°C ambient temperature
  - 3 - 5 minutes

### Reaction temperature:
- at least +5 °C
Drying.

Air drying:

At +20°C ambient temperature:
20 - 30 minutes

Infrared drying:

medium wave: 5 minutes
short wave: 3 minutes
(at 50% power)

Sanding.

After the drying times given above

first sanding:
dry with P180 - 240 grade
wet* with P240 - 320 grade

second sanding:
dry with P240 - 320 grade
wet* with P600 - 800 grade

Heat resistance:
up to +80°C

Recoating.

Recommended products:

Priomat® Wash Primer 4075 or
Priomat® 1K Wash Primer 4085 and Permasolid® 2K surfacer.
Permacron® 1:1 Elastic Primer Surfacer 3300

Priomat® Elastic Primer 3304 transparent and elastified
Permasolid® 2K surfacer (for plastic parts)

followed by top coat

Data.

Flash point:
above +23°C

VOC content:
2004/42/IIB(b)(250)170

The EU limit value for this product (product category IIB.b) in ready to use form is max. 250 g/litre of VOC.

The VOC content of this product in ready to use form is max. 170 g/litre.

* After wet sanding, the surface must be wiped down and allowed to dry completely.
Storage.

Storage conditions:
(for putty and hardener)

Storage temperature approx. +20°C
(+30°C may not be exceeded)

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Horbeller Straße 17
D-50858 Köln
Phone ++49 (0)2234 - 6019-06
Fax ++49 (0)2234 - 6019-4100
www.spieshecker.com

Spies Hecker.
A member of DuPont
Performance Coatings.
Raderal®
IR Premium Putty 2035.

Raderal® IR Premium Putty 2035 is a high-grade polyester putty for passenger car refinishing.

- for all commonly found metallic substrates.
- very good adhesion to galvanised substrates
- easy to apply and pore-free
- good sanding properties
- especially suitable for IR drying

For professional use only!
VR Technical Data Sheet No. EN / 2035 / 00
### Substrate.

#### Suitable substrates:
- Bare steel panels
- Aluminium
- Galvanized steel panels
- UP-GF substrates, free of release agents, cleaned and sanded
- Well sanded old or original paintwork.
- Fully cured 2K surfacers/2K primers

#### Special notes:
This putty may not be applied on PVB (acid curing) primers or 1K primers (e.g. synthetic resin).

It is also unsuitable for thermoplastic or viscoelastic paintwork. In these cases the putty may be applied on bare metal only.

#### Substrate pretreatment:
- Carefully degrease and sand lightly.
- UP-GF substrates:
  - remove all traces of release agents and sand lightly
  - Before further treatment carefully clean substrate with suitable cleaning agent to remove dust and residues.

### Application.

#### Method of application:
With a putty knife

#### Mixing ratio:
Add 2 - 3% by weight Raderal Hardener 0909 or Raderal® Hardener 0940 slow
(specially for high temperatures)

#### Special note:
Avoid adding too much hardener, as this can lead to bleeding through, especially with daylight fluorescent paints and light metallic colours.

#### Pot life:
**At +20°C ambient temperature:**
- 2 - 4 minutes

#### Reaction temperature:
at least +5 °C
Drying.

Air drying:

At +20°C ambient temperature:
20 - 30 minutes

Infrared drying:

medium wave: 5 minutes
short wave: 3 minutes
(at 50% power)

Sanding.

After the drying times given above
first sanding: dry with P80 - 220 grade
second sanding: dry with P240 - 400 grade
up to +80°C

Heat resistance: up to +80°C

Recoating.

1. If a fine putty is required, apply this same product again.
2. Apply Raderal® Fine Putty / Permacron® Fine Putty or re-coat with Raderal® Spray Polyester 3508 (except galvanised panels).
3. Prime bare metal areas and putty spots with Priomat® 1K Wash Primer 4085 or Priomat® Wash Primer 4075.
4. Surfacer:
   Permacron®/Permasolid® 2K acrylic surfacers

Data.

Flash point: above +23°C

VOC content:
2004/42/IIIB(b)(250)150

Storage.

Storage conditions:
(for putty and hardener)

Storage temperature approx. +20°C
(+30°C may not be exceeded)

The EU limit value for this product (product category IIIB.b) in ready to use form is max. 250 g/litre of VOC.
The VOC content of this product in ready to use form is max. 150 g/litre.
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Fax ++49 (0)2234 - 6019-4100
www.spieshecker.com

Spies Hecker.
A member of DuPont
Performance Coatings.
Raderal® Spray Polyester 3508 is a two-pack spray putty for passenger car repairs.

Application method: For levelling large uneven areas.

- VOC content < 250 g/l
- particularly suitable for large areas
- very good spraying properties
- easy to apply and has good vertical stability
- good levelling

For professional use only!
VR Technical Data Sheet No. EN / 3508 / 00
**Substrate.**

**Suitable substrates:**

1. Steel, electroplated/roller galvanized steel or aluminium, cleaned, sanded and coated with Priomat® Wash Primer 4075 transparent or Priomat® 1K Wash Primer 4085 and then isolated with Permasolid® 2K acrylic surfer.

2. Fully cured, solvent resistant, well preserved and lightly sanded original or old paintwork.


4. UP-GF substrates, free of release agents, cleaned and sanded.

**Special notes:**

Raderal® Spray Polyester may not be applied on PVB (acid curing) primers or 1K primers (e.g. synthetic resin).

It is also unsuitable for thermoplastic or viscoelastic paintwork.

To guarantee optimum corrosion protection, we recommend coating any remaining rust spots on corners and edges, as well as on sanded through areas, with Priomat® Wash Primer 4075 transparent or Priomat® 1K Wash Primer 4085. Afterwards these parts should be isolated with Permasolid® 2K acrylic surfer.

**Substrate pretreatment:**

Carefully degrease and sand lightly.

**UP-GF**

Carefully remove all traces of release agents and sand lightly.

All substrates:

Before further treatment carefully clean substrate with a suitable cleaning agent to remove dust and residues.

**Application.**

**Mixing ratio:**

Add 5% by volume Raderal® Catalyser 9520

**Pot life:**

20 - 30 minutes at +20°C

**Reaction temperature:**

at least +15 °C
### Method of application:

<table>
<thead>
<tr>
<th>Compliant</th>
<th>Application with brush</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Compliant Symbol]</td>
<td>![Application with brush Symbol]</td>
</tr>
<tr>
<td>Mixing viscosity</td>
<td></td>
</tr>
<tr>
<td>Spray nozzle*: 2 – 2.5 mm</td>
<td>-</td>
</tr>
<tr>
<td>Spray pressure*: 2 - 3 bar</td>
<td>-</td>
</tr>
<tr>
<td>Number of coats: 5 coats = 500 - 600 µm (film thicknesses up to 1000 µm are possible)</td>
<td>apply in one operation</td>
</tr>
</tbody>
</table>

### Drying.

#### Air drying:

At +20°C ambient temperature:
- Dry for sanding: after 2 hours

#### Force drying:

Flash-off time: at least 10 minutes
- Drying time and temperature: 30 minutes at +60°C metal temperature

#### Infrared drying:

Flash-off time: at least 5 minutes
- Drying time:
  - medium wave: 15 - 20 minutes
  - short wave: 10 - 12 minutes (at 50% power)

#### Heat resistance:

up to +80°C

* See manufacturer's instructions!
Further steps:

Dry sanding:

- first sanding: dry with P120 - 220 grade
- second sanding: dry with P240 - 400 grade

After the drying times given above, dry sanding should be carried out with a suitable sander and dust extraction.

Recoating:

Recoat with:

- Priomat® 1K Wash Primer 4085 or Priomat® Wash Primer 4075 (only on sanded-through spots)
- Permasolid® 2K acrylic surfacer
- Permasolid® HS Automotive Top Coat 275
- Permahyd® Base Coat 280/285/286 or Permahyd® Hi-TEC Base Coat 480 and Permasolid® HS Clear Coat

Data:

- Flash point: above +23°C
- VOC content: 2004/42/IIB(b)(250)250

The EU limit value for this product (product category IIB.b) in ready to use form is max. 250 g/litre of VOC.

The VOC content of this product in ready to use form is max. 250 g/l.

Storage:

Storage conditions:

- Storage temperature +20°C
  (+30°C may not be exceeded)
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Priomat®
Wash Primer 4075.

Priomat® Wash Primer 4075 is a zinc chromate-free, phenol-free, acid-curing two-pack wash primer from our "PVB system".

- passivation qualities provide excellent corrosion protection.
- for all metal substrates, in particular for aluminium and galvanised steel panels.
- fulfils the specifications of many car manufacturers.
- easy to apply.
- colour: olive grey.

For professional use only!
VR Technical Data Sheet No. EN / 4075 / 00
Substrate.

Suitable substrates:
1. Bare steel panel, cleaned and sanded
2. Electroplated / roller galvanised steel panels or soft aluminium, cleaned and sanded.
3. Lightly sanded factory primer
4. Well sanded old or original paintwork. (except thermoplastic paintwork)
5. Surfaces treated with Raderal® 2K polyester products and then finely sanded

Substrate pretreatment:
- Clean all substrates carefully with Permaloid® Silicone Remover 7010 or Permaloid® Silicone Remover 7799.
- Original or old paintwork, sand lightly, remove all traces of rust and sand the areas around the former rust spots to create a smooth transition to the old paintwork.
- Before further treatment carefully clean substrate with suitable cleaning agent to remove dust and residues.

Application.

Mixing ratio:
1:1 by volume with Priomat® Activator 4076

Pot life:
Ready for use 8 – 10 hours at +20°C
Mixed material must be used the same day.

Method of application:

<table>
<thead>
<tr>
<th>Application viscosity 4 mm, +20°C, DIN 53211:</th>
<th>Compliant</th>
<th>HVLP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spray nozzle*: 1.2 - 1.4 mm</td>
<td>1.3 - 1.5 mm</td>
<td></td>
</tr>
<tr>
<td>Spray pressure*: 2 - 2.5 bar</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Atomising pressure*: -</td>
<td>0.7 bar</td>
<td></td>
</tr>
<tr>
<td>Number of coats: 2 coats (5 minutes flash-off time between coats)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prescribed film thickness: 8 – 12 µm dry film thickness</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*See manufacturer’s instructions!
Drying.

Air drying:

At +20°C ambient temperature:
Recoatable: 30 minutes

Recoating.

Recoatable:

After flash-off at +20°C with Permasolid® 2K acrylic surfacers

Further recoat with:

- Permasolid® HS Automotive Top Coat 275
- Permahyd® Base Coat 280/285/286, Permahyd® Hi-TEC Base Coat 480 and Permasolid® 2K clear coat

Special notes:

1. Do not recoat with polyester products, epoxy products or waterborne products.
2. Not suitable for application on thermoplastic paintwork.
3. Do not recoat directly with Permahyd® or Permasolid® top coats

Data.

Flash point:

above +23°C

VOC content:

2004/42/IIIB(c)(780)780

The EU limit value for this product (product category IIIB.c) in ready to use form is max. 780 g/litre of VOC.

The VOC content of this product in ready to use form is max. 780 g/litre.
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Phone ++49 (0)2234 - 6019-06
Fax ++49 (0)2234 - 6019-4100
www.spieshecker.com

Spies Hecker.
A member of DuPont
Performance Coatings.
Technical Data Sheet.

Priomat®
1K Wash Primer 4085.

Priomat® 1K Wash Primer 4085 is a zinc chromate-free one-pack product from our "PVB-System".

Field of application:
As a wash primer on all commonly found metallic substrates.

- VOC compliant
- Good corrosion protection
- Easy to use (one-pack product)
- Available in two different shades of grey
- Welding certificate available.

For professional use only!
VR Technical Data Sheet No. MB/4085/02/2009 - GB
Substrate.

Suitable substrates:

1. Steel
2. Electroplated / roller galvanised steel panels or soft aluminium, cleaned and sanded.
3. Lightly sanded factory primer
4. Well sanded old or original paintwork.
   (except thermoplastic paintwork)
5. Surfaces treated with Raderal® 2K polyester products and then finely sanded.

Important note:

Owing to the wide variety of metal alloys and manufacturing processes, it is essential to carry out a preliminary test on the respective substrate to ensure that the pretreatment is sufficient to guarantee perfect adhesion.

Substrate pretreatment:

Clean all substrates carefully with Permaloid® Silicone Remover 7010 or Permaloid® Silicone Remover 7799.

Original or old paintwork – clean and sand lightly, remove all traces of rust and sand the areas around the former rust spots to create a smooth transition to the old paintwork.

Before further treatment carefully clean substrate with a suitable cleaning agent to remove dust and residues.

Application.

Reducer:

- Permacron®Reducer 3364
- Permacron® Reducer 3365 slow
  (for large objects and high temperatures)
- Permacron®Reducer 3380
- Permacron® Reducer 3385 slow
  (for large objects and high temperatures)
- Permacron® MS Dura Plus 8580
**Method of application:**

<table>
<thead>
<tr>
<th></th>
<th>Compliant</th>
<th>HVLP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application viscosity</td>
<td>4 mm, +20°C, DIN 53211:</td>
<td>18 - 20 seconds</td>
</tr>
<tr>
<td>Reducer at +20°C material temperature:</td>
<td></td>
<td>50%</td>
</tr>
<tr>
<td>Spray nozzle*:</td>
<td>1.3 - 1.5 mm</td>
<td>1.3 - 1.5 mm</td>
</tr>
<tr>
<td>Spray pressure*:</td>
<td>2.0 - 2.5 bar</td>
<td>-</td>
</tr>
<tr>
<td>Atomising pressure*:</td>
<td>-</td>
<td>0.7 bar</td>
</tr>
<tr>
<td>Number of coats:</td>
<td>When used as a wash primer:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 coat = 10 - 15 µm dry film thickness</td>
<td></td>
</tr>
</tbody>
</table>

**Special note:**

* Isolating small sanded-through spots: Permahyd® base coat/Permasolid® top coat may only be applied wet-on-wet or with intermediate sanding on top of 1K Wash Primer 4085 if the sanded-through spot is not bigger than Ø 5.0 cm.

1 - 2 coats = 15 - 30 µm dry film thickness

**Drying.**

**Air drying:**

**Recoating.**

**Application as wash primer:**

**Application as wash primer with intermediate sanding:**

**Ready for sanding after:**

45 - 60 min. at +20°C

**Recoat with:**

Permasolid® 2K acrylic surfacers

wet with P800 – 1000

**Recoat with:**

- Permasolid® HS Automotive Top Coat Series 275 (for small sanded-through spots only!)
- Permahyd® Base Coat Series 280/285 and Permasolid® 2K clear coat (for small sanded-through spots only!)

* See manufacturer's instructions!
Special notes.

1. Do not recoat with polyester products.
2. Do not recoat with epoxy products.
3. Not suitable for application on thermoplastic paintwork.
4. Cannot be dry sanded.

Data.

Viscosity as supplied: at least 60 seconds

Flash point: above +23°C

Solids content:

<table>
<thead>
<tr>
<th>Wash Primer 4085</th>
<th>Wash Primer 4085</th>
</tr>
</thead>
<tbody>
<tr>
<td>light grey</td>
<td>dark grey</td>
</tr>
<tr>
<td>with Reducer 3364</td>
<td>with Reducer 3364</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>31.3 % by weight</th>
<th>29.3 % by weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>15.1 % by volume</td>
<td>14.6 % by volume</td>
<td></td>
</tr>
</tbody>
</table>

Specific weight:

<table>
<thead>
<tr>
<th></th>
<th>1.03 g/cm³</th>
<th>1.01 g/cm³</th>
</tr>
</thead>
</table>

Coverage:

<table>
<thead>
<tr>
<th></th>
<th>10.1 m²/l</th>
<th>9.8 m²/l</th>
</tr>
</thead>
<tbody>
<tr>
<td>at 15 µm dry film thickness:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>at 40 µm dry film thickness:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

VOC content:

<table>
<thead>
<tr>
<th></th>
<th>The EU limit value for this product (product category IIB.c) in ready to use form is max. 780 g/litre of VOC.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004/42/IIB(c)(780)760</td>
<td>The VOC content of this product in ready to use form is max. 760 g/l.</td>
</tr>
</tbody>
</table>

Storage.

Guaranteed shelf life:

6 months in sealed original containers

* The coverage was calculated on the basis of the recommended dry film thickness and the solids content by volume (without reducer). No allowance was made for wastage during application.
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Permasolid®
HS Premium Surfacer
5310.

Permasolid® HS Premium Surfacer 5310 is a very high-grade two-pack HS sanding surfacer based on acrylic resins.

- very long application time
- ideal, reliable application properties
- excellent sanding properties
- excellent vertical stability
- very high coverage
- excellent filling power
- outstanding top coat flow

For professional use only!
VR Technical Data Sheet No. EN / 5310 / 00
**Substrate.**

**Suitable substrates:**

1. Steel, electroplated/roller galvanized steel or soft aluminium, cleaned, sanded and coated with Priomat® Wash Primer 4075, Priomat® 1K Wash Primer 4085.
2. OEM primer, finely sanded or unsanded and thoroughly cleaned.
3. Lightly sanded old or original paintwork (except TPA).
4. Surfaces treated with Raderal® 2K polyester products and then finely sanded.
5. UP-GF substrates, free of release agents, cleaned and sanded.

**Substrate pretreatment:**

- Clean all substrates carefully with Permaloid Silicone Remover 7010 or Permaloid Silicone Remover 7799.
- Sand lightly.
- Before further treatment carefully clean substrate with a suitable cleaning agent to remove dust and residues.

**Application.**

**Mixing ratio:**

4:1 by volume with

- Permasolid® HS Hardener 3307 extra fast
- Permasolid® HS Hardener 3309 fast
- Permasolid® HS Hardener 3310
- Permasolid® HS Hardener 3312 slow
- Permasolid® HS Hardener 3315 extra slow
  (see VR Technical Data Sheet No. 3307_3315)

or

7:1 by volume with

- Permasolid® VHS Hardener 3220 fast
- Permasolid®VHS Hardener 3225
- Permasolid®VHS Hardener 3230 slow
- Permasolid® VHS Hardener 3240 extra slow
  (see VR Technical Data Sheet No. 3220_3240)

**Elastification:**

See "Special notes"!

**Pot life:**

Ready for use 90 - 120 minutes at +20°C.
(depending on hardener used)
Reducer:

- Permacron® MS Dura Plus 8580
- Permacron® Reducer 3364
- Permacron® Reducer 3365 slow
- Permacron® Reducer 3380
- Permacron® Reducer 3385 slow

Method of application:

<table>
<thead>
<tr>
<th>Compliant</th>
<th>HVLP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Application viscosity</strong></td>
<td>mixing viscosity</td>
</tr>
<tr>
<td>4 mm, +20°C, DIN 53211:</td>
<td></td>
</tr>
<tr>
<td><strong>Reducer at +20°C material temperature:</strong></td>
<td>VHS hardener - 10% HS hardener - not necessary, up to 10% can be added</td>
</tr>
<tr>
<td>Spray nozzle*:</td>
<td>1.6 - 1.8 mm</td>
</tr>
<tr>
<td>Spray pressure*:</td>
<td>1.5 - 3.0 bar</td>
</tr>
<tr>
<td>Atomising pressure*:</td>
<td>-</td>
</tr>
</tbody>
</table>

Drying:

**Air drying:**
- Sanding at +20°C ambient temperature
  - 80 - 150 µm: 3 - 4 hours
  - 150 - 300 µm: overnight

**Force drying:**
- Flash-off time: 5 - 15 minutes
- Drying time at +60°C metal temperature:
  - 80 - 150 µm: 25 - 30 minutes
  - 150 - 250 µm: 35 - 40 minutes

**Recommended film thickness:**
- 80 – 200 µm dry film thickness

* See manufacturer’s instructions!
Infrared drying:

- **Flash-off time:** 5-15 minutes

<table>
<thead>
<tr>
<th>Drying time</th>
<th>medium wave</th>
<th>short wave</th>
</tr>
</thead>
<tbody>
<tr>
<td>80 - 150 µm</td>
<td>15 minutes</td>
<td>10 minutes</td>
</tr>
<tr>
<td>150 - 200 µm</td>
<td>20 minutes</td>
<td>15 minutes</td>
</tr>
</tbody>
</table>

**Further steps.**

- **Dry sanding:**
  - With random orbital sander and dust extraction: P400 - 500

- **Wet sanding:**
  - With P800 - 1000

**Recoating.**

**Recoat with:**

- Permasolid® HS Automotive Top Coat Series 275
- Permahydr® Base Coat 280/285/286, Permahydr® Hi-TEC Base Coat 480 and Permasolid® 2K clear coat

**Special note:**

For countries outside the EU or usage other than vehicle refinishing:

As an alternative, Permacron Base Coat/2K MS top coat can be used if not banned by the VOC Directive 2004/42/EC and if available.

**Special notes.**

1. **Elastification of rigid and halfrigid types of plastic:**
   - First, add 15% of Permasolid® Elastic Additive 9050 to the surfacer.
   - mixed with HS hardener - 3:1 without reducer
   - mixed with VHS hardener - 4:1 with 5% reducer

2. To facilitate sanding, apply Permaloid® Control Paint black each time before sanding. Do not spray onto wet surfacer.

3. Any substrate defects can be treated with Raderal® putty. After drying and intermediate sanding, isolate putty spots with Permasolid® HS Premium Surfacer 5310.
4. When isolating certain spots - even on problem substrates - the best results are achieved with a medium film thickness of 80-120 µm in 2 coats, after either air drying overnight or force drying/IR drying. With problem substrates, careful pretreatment is imperative and the surfacer must be applied to the entire area.

5. For isolating thermoplastic paintwork we recommend Permasolid® HS Vario Surfacer 8590.

Data.

Flash point: above +23°C

VOC content: 2004/42/IIB(c)(780)780

The EU limit value for this product (product category IIB.c) in ready to use form is max. 540 g/litre of VOC.
The VOC content of this product in ready to use form is max. 540 g/l.

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www.spieshecker.com

Spies Hecker.
A member of DuPont Performance Coatings.
Permasolid®
HS Vario Surfacer
8590.

Permasolid® HS Vario Surfacer 8590 is a high-grade, versatile, VOC-compliant 2K HS surfacer based on acrylic resins.

- can be applied wet-on-wet or as sanding surfacer
- can be mixed with Permasolid® HS/VHS hardeners
- good isolating properties even on old thermoplastic paintwork
- very good paint flow

For professional use only!
VR Technical Data Sheet No. EN / 8590 / 00
Substrate.

Suitable substrates:

1. Steel, electroplated/roller galvanized steel or soft aluminium, cleaned, sanded and coated with Priomat® Wash Primer 4075, Priomat® 1K Wash Primer 4085.
2. OEM primer, finely sanded or unsanded and thoroughly cleaned.
3. Lightly sanded old or original paintwork (including thermoplastic paintwork).
4. Surfaces treated with Raderal® 2K polyester products and then finely sanded.
5. UP-GF substrates, free of release agents, cleaned and sanded.

Substrate pretreatment:

Clean all substrates carefully with Permaloid® Silicone Remover 7010 or Permaloid® Silicone Remover 7799.

Sand lightly.

Before further treatment carefully clean substrate with a suitable cleaning agent to remove dust and residues.

Application
with intermediate sanding.

Mixing ratio:

5:1 by volume with Permasolid® VHS Hardener 3225
Permasolid® VHS Hardener 3230 slow
Permasolid® VHS Hardener 3240 extra slow
(see VR Technical Data Sheet No. 3220_3240)

3:1 by volume with Permasolid® HS Hardener 3309 fast
Permasolid® HS Hardener 3310
Permasolid® HS Hardener 3312 slow
Permasolid® HS Hardener 3315 extra slow
(see VR Technical Data Sheet No. 3307_3315)

Elastification:

See "Special notes!"

Pot life:

Ready for use 30 - 60 minutes at +20°C. (depending on hardener used)

Reducer:

Permacron® MS Dura Plus 8580
Permacron® Reducer 3364
Permacron® Reducer 3380
Permacron® Reducer 3365 slow
Method of application: Compliant | HVLP

Application viscosity
4 mm, +20°C, DIN 53211: 20 - 25 seconds

Reducer at +20°C
material temperature: HS hardener: 10 -15 %
VHS hardener: 10 - 20 %

Spray nozzle*: 1.4 - 1.8 mm | 1.6 - 1.9 mm

Spray pressure*: 1.5 - 3.0 bar

Atomising pressure*: - | 0.7 bar

Number of coats: 2 coats = 50 - 80 µm dry film thickness
3 coats = 100 - 120 µm dry film thickness

Recommended film thickness: 50 - 120 µm dry film thickness

Drying
with intermediate sanding.

Air drying:

At +20°C ambient temperature:
dry for sanding: overnight

Force drying:

Flash-off time: 20 - 30 minutes
Drying at +60°C metal temperature:
up to 80 µm: 40 - 50 minutes
above 80 µm:

Infrared drying:

Flash-off time: 10 - 20 minutes
Drying time (depending on film thickness):
medium wave: 10 - 20 minutes
short wave: 10 minutes

Further steps.

Dry sanding:
With random orbital sander and dust extraction P400 - 500

Wet sanding:
With P800 - 1000

* See manufacturer's instructions!
Recoating with intermediate sanding.

Recoat with:

- Permasolid® HS Automotive Top Coat 275
- Permahyd® Base Coat 280/285 or Permahyd® Hi-TEC Base Coat 480 and Permasolid® 2K clear coat

Application as non-sanding surfacer.

Mixing ratio:

<table>
<thead>
<tr>
<th>Mixing ratio</th>
<th>Permasolid® VHS Hardener 3225</th>
<th>Permasolid® VHS Hardener 3230 slow</th>
<th>Permasolid® VHS Hardener 3240 extra slow (see VR Technical Data Sheet No. 3220_3240)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5:1 by volume with</td>
<td>Permasolid® HS Hardener 3309 fast</td>
<td>Permasolid® HS Hardener 3310</td>
<td>Permasolid® HS Hardener 3312 slow</td>
</tr>
<tr>
<td>3:1 by volume with</td>
<td>Permasolid® HS Hardener 3315 extra slow (see VR Technical Data Sheet No. 3307_3315)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Pot life: Ready for use 30 - 60 minutes at +20°C. (depending on hardener used)

Reducer:

- Permacron® Reducer 3364
- Permacron® Reducer 3380
- Permacron® Reducer 3365 slow

Method of application:

<table>
<thead>
<tr>
<th>Method of application</th>
<th>Compliant</th>
<th>HVLP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application viscosity</td>
<td>16 - 18 seconds</td>
<td>|</td>
</tr>
<tr>
<td>4 mm, +20°C, DIN 53211:</td>
<td>|</td>
<td></td>
</tr>
<tr>
<td>Reducer at +20°C</td>
<td>HS Hardener: 20 - 25 %</td>
<td>VHS Hardener: 30%</td>
</tr>
<tr>
<td>material temperature:</td>
<td>|</td>
<td></td>
</tr>
<tr>
<td>Spray nozzle*:</td>
<td>1.2 - 1.4 mm</td>
<td>1.3 - 1.5 mm</td>
</tr>
<tr>
<td>Spray pressure*:</td>
<td>2.0 - 2.5 bar</td>
<td>-</td>
</tr>
<tr>
<td>Atomising pressure*:</td>
<td>-</td>
<td>0.7 bar</td>
</tr>
<tr>
<td>Number of coats:</td>
<td>1 - 2 coats</td>
<td></td>
</tr>
<tr>
<td>Recommended film thickness:</td>
<td>25 - 30 µm dry film thickness</td>
<td></td>
</tr>
</tbody>
</table>

* See manufacturer’s instructions!
Recoating as non-sanding surfacer.

Recoat with:

**Wet-on-wet application.**

Flash-off time before top coat application at +20°C ambient temperature:

- 15 - 20 minutes to max. 90 minutes with Permasolid® HS Automotive Top Coat 275
- 25 - 30 minutes to max. 90 minutes with Permahyd® Base Coat 280/285
- 30 - 35 minutes to max. 90 minutes with Permahyd® Hi-TEC Base Coat 480

Special notes.

1. **Elastification of rigid and half-rigid types of plastic:**
   First, add 15% of Permasolid® Elastic Additive 9050 to the surfacer.

   - mixed with VHS hardener - 3:1 with 20% reducer
   - mixed with HS hardener - 2:1 with 20% reducer

   **Important note:**
   The elastified surfacer must be allowed to flash-off for 30 - 45 minutes before base coat / top coat application.

2. To facilitate sanding, apply Permaloid® Control Paint black each time before sanding. Do not spray onto wet surfacer.

3. Any substrate defects can be treated with Raderal® putty. After drying and intermediate sanding, isolate putty spots with Permasolid® HS Vario Surfacer 8590.

4. To achieve the perfect finish on passenger cars, we recommend sanding the surfacer after it has been left to dry overnight.

5. Do not apply wet-on-wet on top of thermoplastic factory finish, and if possible sand after overnight drying.

6. For air drying, we recommend a minimum temperature of +15°C.
Data

Flash point:

VOC content:
2004/42/IIB(c)(540)540

above +23°C

The EU limit value for this product
(product category IIB.c) in ready to use form
is max. 540 g/l of VOC.
The VOC content of this product in ready to use form
is max. 540 g/l.

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www.spieshecker.com

Spies Hecker.
A member of DuPont
Performance Coatings.
Permasolid®
EP Primer Surfacer
4500 light grey.

Permasolid® EP Primer Surfacer 4500 light grey is a zinc chromate-free two-pack primer surfacer from our epoxy range.

- easy to apply
- can be applied wet-on-wet or as sanding surfacer
- good drying properties
- IR drying possible
- considering that it is EP technology, it is easy to sand
- particularly suitable for sensitive OEM primers
- good corrosion protection

For professional use only!
VR Technical Data Sheet No. EN / 4500 / 00
**Substrate.**

**Suitable substrates:**

1. Electroplated / roller galvanised steel panels or soft aluminium, cleaned and sanded.
2. Bare steel, sanded.
3. OEM primer, finely sanded or unsanded and thoroughly cleaned.
4. Well sanded old or original paintwork.
5. Surfaces treated with Raderal® 2K polyester products and then finely sanded.
6. UP-GF substrates, free of release agents, cleaned and sanded.

**Substrate pretreatment:**

- Clean all substrates carefully with Permaloid® Silicone Remover 7010 or Permaloid® Silicone Remover 7799.
- Sand lightly.
- Before further treatment carefully clean substrate with a suitable cleaning agent to remove dust and residues.

**Special note:**

This primer surfacer may not be applied on PVB (acid curing) primers or 1K primers (e.g. synthetic resin).

**Application as sanding surfercer.**

**Mixing ratio:**

3:1 by volume with Permasolid® EP Hardener 4501

**Pot life:**

Ready for use 2 – 3 hours at +20°C

**Reducer:**

Permacron®Reducer 3364
Permacron® Reducer 3380
Permacron® Reducer 3385 slow

**Reaction temperature:**

at least +15 °C
### Drying

<table>
<thead>
<tr>
<th>Method of application:</th>
<th>Compliant</th>
<th>HVLP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air drying:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>60 - 110 µm overnight</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Force drying:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flash-off time:</td>
<td>5 - 10 minutes</td>
<td></td>
</tr>
<tr>
<td>Drying time at +60°C metal temperature:</td>
<td>30 - 50 minutes</td>
<td></td>
</tr>
<tr>
<td>Infrared drying:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flash-off time:</td>
<td>5 - 10 minutes</td>
<td></td>
</tr>
<tr>
<td>Drying time: short wave:</td>
<td>5 minutes at 50 % power and</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12 - 15 minutes at 100 % power</td>
<td></td>
</tr>
</tbody>
</table>

### Further steps.

<table>
<thead>
<tr>
<th>Dry sanding:</th>
<th>Wet sanding:</th>
</tr>
</thead>
<tbody>
<tr>
<td>with random orbital sander and dust extraction P400 - 500</td>
<td>with P800 - 1000</td>
</tr>
</tbody>
</table>

* See manufacturer's instructions!
Recoating.

Recoat with:
- Permasolid® HS Automotive Top Coat 275
- Permahyd® Base Coat Series 280/285 and 286
- Permasolid® HS clear coat

Special notes.

1. To facilitate sanding, apply Permaloid® Control Paint black each time before sanding.

   Do not spray onto wet surfacer.

2. Any substrate defects can be treated with Raderal® putty.

   After drying and intermediate sanding, isolate putty spots with:
   - Permasolid® EP Primer Surfacer 4500
   - Permasolid® 2K acrylic surfacer

Application as non-sanding surfacer.

Mixing ratio:
3:1 by volume with Permasolid® EP Hardener 4501

Pot life:
Ready for use 2 – 3 hours at +20°C

Reducer:
Permacron® Reducer 3380
Permacron® Reducer 3385 slow
Method of application:

Application viscosity
4 mm, +20°C, DIN 53211:

Reducer at +20°C material temperature:

Spray nozzle*:

Spray pressure*:

Atomising pressure*:

Number of coats:

Recommended film thickness:

Flash-off time before top coat application at +20°C ambient temperature

Recoating.

Recoat with:

Data.

Flash point:

VOC content:
2004/42/IIB(c)(540)540

<table>
<thead>
<tr>
<th>Compliant</th>
<th>HVLP</th>
</tr>
</thead>
<tbody>
<tr>
<td>16 - 19 seconds</td>
<td></td>
</tr>
<tr>
<td>30% Permacron® Reducer 3380 or 25% Permacron® Reducer 3385 slow</td>
<td></td>
</tr>
<tr>
<td>1.3 - 1.5 mm</td>
<td>1.3 - 1.5 mm</td>
</tr>
<tr>
<td>2.0 - 2.5 bar</td>
<td>-</td>
</tr>
<tr>
<td>-</td>
<td>0.7 bar</td>
</tr>
<tr>
<td>1 - 2 coats</td>
<td></td>
</tr>
<tr>
<td>25 - 40 µm dry film thickness</td>
<td></td>
</tr>
<tr>
<td>60 - 120 minutes</td>
<td></td>
</tr>
</tbody>
</table>

- Permasolid® HS Automotive Top Coat 275
- Permahyd® Base Coat Series 280/285 and 286
- Permasolid® HS clear coat

above +23°C

The EU limit value for this product (product category IIB.c) in ready to use form is max. 540 g/l of VOC.
The VOC content of this product in ready to use form is max. 540 g/l.

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Permasolid®
2K UV Starlight
Primer Surfacer 9000.

Permasolid® 2K UV Starlight Primer Surfacer 9000 is a primer surfacer for spot repairs.

It has been specially developed for drying by pulsed UV lamp. This product may only be used in combination with the "UV Flash Dry 15/700" pulsed UV lamp from VISIT.

- Dries extremely fast
- Very high solids content (98.6%)
- Very good paint flow

For professional use only!
VR Technical Data Sheet No. EN / 9000 / 01
### Substrate.

**Suitable substrates:**
- Bare steel panel
- Electroplated / roller galvanised steel panels or soft aluminium
- UP-GF substrates, free of release agents, cleaned and sanded
- Well sanded old or original paintwork.
- Surfaces treated with Raderal® 2K polyester products and then finely sanded.
- Fully cured 2K surfacers

**Suitable primer for plastic parts:**

<table>
<thead>
<tr>
<th>Mixing ratio:</th>
<th>9:1 by volume or 10:1 by weight with Permasolid® UV Starlight Component 9001</th>
</tr>
</thead>
</table>

**Important note:**
Owing to the wide variety of metal alloys and manufacturing processes, it is essential to carry out a preliminary test on the respective substrate to ensure that the pretreatment is sufficient to guarantee perfect adhesion.

We recommend that Permasolid® 2K UV Starlight Primer Surfacer 9000 is stirred in the mixing machine before use and that only the amount of material needed for the repair area is filled into the spray gun.

**Substrate pretreatment:**
- Clean all substrates carefully with Permaloid® Silicone Remover 7010 or Permaloid® Silicone Remover 7799.
- Remove original primer by sanding. Original or old paintwork, clean and sand lightly, remove all traces of rust and sand the areas around the former rust spots to create a smooth transition to the old paintwork.
- Before further treatment, clean once more with a suitable cleaner.

**Pot life:**
5 days provided the material is not exposed to light/UV radiation
## Application.

<table>
<thead>
<tr>
<th>Method of application:</th>
<th>HVLP design guns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application viscosity 4 mm, +20°C, DIN 53211:</td>
<td>mixing viscosity</td>
</tr>
<tr>
<td>Reducer at +20°C material temperature:</td>
<td>none</td>
</tr>
<tr>
<td>Spray nozzle*:</td>
<td>1.0 - 1.2 mm</td>
</tr>
<tr>
<td>Spray pressure*:</td>
<td>2.0 bar</td>
</tr>
<tr>
<td>Number of coats:</td>
<td>1.5 coats</td>
</tr>
<tr>
<td>Note:</td>
<td>Clean the surface with Permasolid® Silicone Remover 7010 before recoating (1.5 coats) with Permasolid® 2K UV Primer Surfacer 9000 after intermediate flash-off without intermediate sanding.</td>
</tr>
<tr>
<td>Prescribed film thickness:</td>
<td>60 - 90 µm dry film thickness</td>
</tr>
</tbody>
</table>

## Drying.

- **Drying by pulsed UV lamp:**
  - At +20°C ambient temperature:
  - Only with "Flash Dry 15/700" from VISIT Reflector 22 cm Ø - 20 pulses

## Further steps.

- **Dry sanding:**
  - With random orbital sander and dust extraction P400 - 500

- **Wet sanding:**
  - With P800 - 1000

- **When used as a primer:**
  - Recoat with Permasolid® 2K acrylic surferacer

* See manufacturer's instructions!
Recoating.

Recoat with:

- Permasolid® HS Automotive Top Coat 275
- Permahyd® Base Coat 280/285/286, Permahyd® Hi-TEC Base Coat 480 and Permasolid® 2K clear coat
- Permasolid® 2K clear coat
- Permasolid® UV Starlight Clear Coat 9200

Special notes.

1. We recommend an HVLP design gun for spot repair application.

2. Spray guns should be equipped with opaque gravity cups.

3. Permasolid® 2K UV Starlight Primer Surfacer 9000 is thixotropic. The material becomes liquid by stirring.

   If the material is left to stand for a longer time in the spray gun cup, it should be stirred once again before use.

4. On new parts with electrophoretic finish (cathodic / anodic electrodeposition paint), the electrophoretic finish has to be removed by sanding around the repair area.

Health and Safety.

- When applying this primer surfacer, the same protective and safety measures are to be taken as for standard paint materials.
- Handling UV radiation sources, however, requires particular care.
- Dangers can only be avoided if a licensed UV drying equipment is used in the proper way.
- Spies Hecker always endeavours to inform its customers comprehensively about all relevant safety aspects, in particular about environmental and health protection. To avoid as far as possible any dangers for environment and health which may result from the use of UV radiation sources in a bodyshop, the following notes are to be observed when using UV technology.
- Strictly follow the operating instructions of the manufacturer of the UV drying equipment.
<table>
<thead>
<tr>
<th>Skin and eye protection:</th>
<th>To protect the skin and eyes from blinding and UV radiation, the following measures are always to be taken.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wear:</td>
<td><strong>UV light absorbing/reflecting head mask:</strong></td>
</tr>
</tbody>
</table>
|                         | - Weldorado UV head mask  
|                         |   Article No. 49600554  
|                         | - 3M 401870 Speedglas Helmet 9002V  
|                         |   Article No. D12864785  |
|                         | **UV light absorbing/reflecting gloves:** |
|                         | - Reitz-Mappa rubber gloves  
|                         |   Article No. 49600145/146  |
|                         | **UV light absorbing/reflecting working clothes:** |
|                         | - Wibeco painter's overall silver  
|                         |   Article No. 49041916/924/932  |
|                         | No unprotected personnel within a 5 m distance to the lamp. |
|                         | To rule out possible misuse, we recommend setting up a separate well-ventilated working area. |

| Working area: | |
|               | Measurements performed in-house showed that when the "UV Flash Dry" device from VISIT is used in the proper way (lateral shield lying flat on the surface without gaps between the surface and the shield), UV radiation generally remains below the permissible daily dose of 30 J/m² stipulated by the ICNIRP, provided the output of 3000 pulses per 8 hour working day is not exceeded. |

| Maximum exposure level: | Please note that the reflector is equipped with a glare shield (see operating instructions for UV device 15/700 of January 2004) which must be intact at the time of usage of the reflector. |
|                        | Measurement of the UV radiation on-site is strictly required if the number of pulses exceeds 3000 pulses per 8 hour working day. Please contact the respective Institution for Statutory Accident Insurance and Prevention in this case. |
**Training of staff, operating instructions, information:**

UV drying equipment may only be operated by instructed and trained personnel.

In accordance with the legal requirements, operating instructions describing the handling and operating of the device should be displayed. They should relate to the workplace and the device itself and should describe any danger for human beings and the environment as well as the required protective measures and rules of conduct.

DIN EN 12198-1 must be applied for devices emitting radiation.

National rules and papers on this matter are to be observed.

**Vehicle areas where fuel vapour may occur, e.g. tank caps, may not be repaired.**

**Masking paper must be removed completely before drying by pulsed UV lamp.**

**Repair area:**

**Masking area:**

**Data.**

**Flash point:** above +23°C

**VOC content:** 2004/42/IIB(c)(540)50

The EU limit value for this product (product category IIB.c) in ready to use form is max. 540 g/litre of VOC.

The VOC content of this product in ready to use form is max. 50 g/litre.
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Horbeller Straße 17
D-50858 Köln
Phone ++49 (0)2234 - 6019-06
Fax ++49 (0)2234 - 6019-4100
www.spieshecker.com
Priomat® Elastic Primer 3304 transparent is a versatile one-pack adhesion promoter for all plastic parts commonly found on vehicle exteriors.

This primer is characterised by excellent adhesion, high elasticity and easy application.

For professional use only!
VR Technical Data Sheet No. EN / 3304 / 01
**Substrate.**

**Suitable substrates:**

All plastic parts commonly found on vehicle exteriors (PP, PP/EPDM, ABS, SAN, PC, PA, PUR-RIM, R-TPU, TPO, PBTP, PVC, PUR, PUR flexible foam, UP-GF).

**Substrate pretreatment:**

The substrate must be free of release agents.

Before cleaning plastic parts, heat them for 60 minutes at +60°C to let the release agents exude.

Clean with Priomat® Plastic Reducer 8581 or the milder Permaloid® Silicone Remover 7010.

The extent of cleaning required depends on the type and quantity of release agents present.

To facilitate the cleaning process, we recommend the use of a sanding pad (e.g. 3M 7448 or similar pad from different manufacturer).

Allow the reducer to evaporate completely (e.g. air dry overnight at ambient temperature or low bake for 30 - 40 minutes at +60°C).

Before applying the primer, clean lightly once more with Priomat® Plastic Reducer 8581 or Permaloid® Silicone Remover 7010 (antistatic effect).

**Application.**

**Reducer:**

Do not add reducer!
Further steps.

Surfacers:

- Permasolid® HS Automotive Top Coat 275
- Permahyd® Base Coat 280/285/286 or Permahyd® Hi-TEC Base Coat 480 and Permasolid® HS Clear Coat

For elastification of the products:
See System Data Sheet "The Paint System for Plastic Parts" (VR Data Sheet No. SYS 903.1).

Recoat with:

- Permasolid® HS Automotive Top Coat 275
- Permacron® Base Coat 293/295/297 or Permacron® MS Top Coat 730 / Top Coat 257 can be used if not banned by the VOC Directive 2004/42/EC and if available.

Special notes:

For countries outside the EU or usage other than vehicle refinishing:
- For alternative, Permacron® Base Coat 293/295/297 or Permacron® MS Top Coat 730 / Top Coat 257 can be used if not banned by the VOC Directive 2004/42/EC and if available.

Data.

Flash point:

- above +23°C

* See manufacturer's instructions!
Storage.

Storage conditions:

Storage temperature +20°C
(do not store at temperatures below +5°C)

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Phone ++49 (0)2234 - 6019-06
Fax ++49 (0)2234 - 6019-4100
www.spieshecker.com
Permacron®
1:1 Elastic Primer Surfacer

Permacron® 1:1 Elastic Primer 3300 is a high-grade 2K primer surfacer for plastic parts.

- Good adhesion on all plastics commonly used for passenger cars
- Can be applied wet-on-wet
- Efficient paint system
- Easy to use
- Very long application time

For professional use only!
VR Technical Data Sheet No. 3300/03/2007-GB
Substrate.

Suitable substrates:

All plastic parts commonly found on vehicle exteriors (PP, PP/EPDM, ABS, SAN, PC, PA, PUR-RIM, R-TPU, TPO, PBTP, PUR, PUR flexible foam, UP-GF).

Substrate pretreatment:

The substrate must be free of release agents.

Before cleaning plastic parts, heat them for 60 minutes at +60°C to let the release agents exude.

Clean with Priomat® Plastic Reducer 8581 or the milder Permaloid® Silicone Remover 7010.

The extent of cleaning required depends on the type and quantity of release agents present. To facilitate the cleaning process, we recommend the use of a sanding pad (3M 7448).

Allow the reducer to evaporate completely (e.g. air dry overnight at ambient temperature or low bake for 30-40 minutes at +60°C).

Before applying the primer surfacer, clean lightly once more with Priomat® Plastic Reducer 8581 or Permaloid® Silicone Remover 7010 (antistatic effect).
Application.

Mixing ratio: 1:1 by volume with Permacron® Elastic Hardener 3301

Pot life: Ready for use 7–9 hours at +20°C

Method of application:

<table>
<thead>
<tr>
<th>Compliant</th>
<th>HVLP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Application viscosity</strong></td>
<td></td>
</tr>
<tr>
<td>4 mm, +20°C, DIN 53211:</td>
<td>DIN 4 mm: 16-18 seconds</td>
</tr>
<tr>
<td></td>
<td>ISO 4 mm: 37-45 seconds</td>
</tr>
<tr>
<td><strong>Reducer at +20°C</strong></td>
<td>none (ready for use after hardener has been added)</td>
</tr>
<tr>
<td><strong>material temperature:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Spray nozzle</strong>:</td>
<td>1.3-1.4 mm</td>
</tr>
<tr>
<td></td>
<td>1.4 -1.5 mm</td>
</tr>
<tr>
<td><strong>Spray pressure</strong>:</td>
<td>2-2.5 bar</td>
</tr>
<tr>
<td></td>
<td>-</td>
</tr>
<tr>
<td><strong>Atomising pressure</strong>:</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>0.7 bar</td>
</tr>
<tr>
<td><strong>Number of coats</strong>:</td>
<td>1 spray operation = apply one tack coat, followed by a full coat</td>
</tr>
<tr>
<td><strong>Recommended film thickness</strong>:</td>
<td>25–30 µm dry film thickness</td>
</tr>
<tr>
<td><strong>Flash-off time</strong>:</td>
<td>15-20 minutes at +20°C ambient temperature</td>
</tr>
</tbody>
</table>

* See manufacturer's instructions!
## Drying.

**Air drying:**

At +20°C ambient temperature:

Can be recoated wet-on-wet after 15-20 minutes (max. 24 hours) with a suitable top coat.

**Special note:**

If required, Permacron® 1:1 Elastic Primer Surfacer 3300 can be sanded lightly with wet sanding paper P 800-1000 after low baking for 30 minutes at +60°C metal temperature or air drying for 2 hours at +20°C ambient temperature.

## Further steps.

**Special notes:**

Any defects in the substrate can be treated with Raderal® Fine Putty 0911 after 1:1 Elastic Primer Surfacer 3300 has dried.

Putty spots must be isolated with 1:1 Elastic Primer Surfacer 3300 before the top coat can be applied.

**Recoat with:**

- Permasolid® HS Automotive Top Coat Series 275
- Permahyd® Base Coat Series 280/285 and Permasolid® 2K clear coat

For elastification of Permasolid® HS Automotive Top Coat Series 275 and of the clear coats: See System Data Sheet "Paint System for Plastic Parts" (VR Data Sheet No. 903.1).

**Special notes:**

Coated plastic parts should not be washed with a high-pressure jet cleaner within the first 6 weeks. After this period, the nozzle must be held at a distance of no less than 30 cm from the object.

For countries outside the EU or usage other than vehicle refinishing:

As an alternative, Permacron Base Coat/2K MS top coat can be used if not banned by the VOC Directive 2004/42/EC and if available.
**Data.**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Viscosity as supplied:</td>
<td></td>
</tr>
<tr>
<td>Flash point:</td>
<td></td>
</tr>
<tr>
<td>Solids content:</td>
<td>54.0 % by weight</td>
</tr>
<tr>
<td>(without reducer)</td>
<td>37.0 % by volume</td>
</tr>
<tr>
<td>Specific weight:</td>
<td>1.20 g/cm³</td>
</tr>
<tr>
<td>Coverage*:</td>
<td>8.1 m²/l</td>
</tr>
<tr>
<td>at 30 μm dry film thickness:</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1:1 Elastic Primer Surfacer 3300</th>
<th>Surfacener and hardener mixed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:1 Elastic Primer Surfacer 3300</td>
<td>11 seconds</td>
</tr>
<tr>
<td>1:1 Elastic Primer Surfacer 3300</td>
<td>100 seconds</td>
</tr>
</tbody>
</table>

* The coverage was calculated on the basis of the recommended dry film thickness and the solids content by volume (without reducer). No allowance was made for wastage during application.
Storage.

Guaranteed shelf life: 6 months in sealed original containers

Storage conditions:

1:1 Elastic Primer Surfacer 3300
Storage temperature +20°C

Elastic Hardener 3301
Storage temperature +20°C
(do not store at temperatures below +5°C)
If it has been exposed to frost, the hardener must first be heated up to +20°C before it is ready for use.

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D-50858 Köln
Phone +49 (0)2234 - 6019-06
Fax +49 (0)2234 - 6019-4100
www.spieshecker.com

Spies Hecker.
A member of DuPont Performance Coatings.
Priomat® Pore Filler 3311.

Priomat® Pore Filler 3311 is a special one-pack filler for small pores in the surface of PUR plastic parts of a vehicle.

It closes pores, thereby ensuring a perfect finish.
**Substrate.**

<table>
<thead>
<tr>
<th>Suitable substrates:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polyurethane flexible foam plastic parts (PUR flexible) with pores in the surface.</td>
</tr>
<tr>
<td>The substrate must be free of release agents.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Substrate pretreatment:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before cleaning plastic parts, heat them for 60 minutes at +60°C to let the release agents exude.</td>
</tr>
<tr>
<td>Clean with Priomat® Plastic Reducer 8581 or the milder Permaloid® Silicone Remover 7010.</td>
</tr>
<tr>
<td>The extent of cleaning required depends on the type and quantity of release agents present. To facilitate the cleaning process, we recommend the use of a sanding pad (e.g. 3M 7448 or similar pad from different manufacturer).</td>
</tr>
<tr>
<td>Allow the cleaning fluid to evaporate completely (e.g. air dry overnight at +20°C or low bake for 30 - 40 minutes at +60°C).</td>
</tr>
<tr>
<td>Before further treatment carefully clean substrate with a suitable cleaning agent to remove dust and residues.</td>
</tr>
</tbody>
</table>

**Application.**

<table>
<thead>
<tr>
<th>Method of application:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apply with a lint-free cloth and press into the pores.</td>
</tr>
<tr>
<td>5 minutes at +20°C ambient temperature</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Air drying:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wipe off any surplus pore filler with a dry, lint-free cloth (do not clean or wipe with a damp cloth afterwards).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Further steps:</th>
</tr>
</thead>
</table>

**Recoating.**

<table>
<thead>
<tr>
<th>Primer:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recoat the entire PUR flexible foam part with Permacron® 1:1 Elastic Primer Surfacer 3300.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Recoat with:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Permasolid® HS Automotive Top Coat Series 275</td>
</tr>
<tr>
<td>- Permahyd® Base Coat Series 280/285 and Permasolid® 2K clear coat</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Special notes:</th>
</tr>
</thead>
<tbody>
<tr>
<td>For countries outside the EU or usage other than vehicle refinishing:</td>
</tr>
<tr>
<td>As an alternative, Permacron Base Coat/2K MS top coat can be used if not banned by the VOC Directive 2004/42/EC and if available.</td>
</tr>
</tbody>
</table>
For elastification of the products - see System Information:
- "The Paint System for Plastic Parts"
  (VR Data Sheet No. 903.1)

**Data.**

- Viscosity as supplied: paste-like
- Flash point: above +23°C
- VOC content: 2004/42/IIB(c)(540)480

The EU limit value for this product (product category IIB.c) in ready to use form is max. 540 g/litre of VOC. The VOC content of this product in ready to use form is max. 480 g/l.

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Fax ++49 (0)2234 - 6019-4100
www.spieshecker.com

Spies Hecker.
A member of DuPont Performance Coatings.
Permasolid®
HS Performance Surfacer
5320.

Permasolid® HS Performance Surfacer 5320 is a very high-grade two-pack HS sanding surfacer based on acrylic resins.

- very good overspray absorption
- excellent vertical stability
- fast drying
- very good sanding properties
- high solids content = high coverage
- approved by several car manufacturers

For professional use only!
VR Technical Data Sheet No. EN / 5320 / 02
Substrate.

Suitable substrates:

1. Steel, electroplated/roller galvanized steel or soft aluminium, cleaned, sanded and coated with Priomat® Wash Primer 4075, Priomat® 1K Wash Primer 4085 or Permasolid® EP Primer Surfacer 4500.

2. OEM primer, finely sanded or unsanded and thoroughly cleaned.

3. Lightly sanded old or original paintwork (except TPA).

4. Surfaces treated with Raderal® 2K polyester products and then finely sanded.

5. UP-GF substrates, free of release agents, cleaned and sanded.

Substrate pretreatment:

Clean all substrates carefully with Permaloid Silicone Remover 7010 or Permaloid Silicone Remover 7799.

Sand lightly.

Before further treatment carefully clean substrate with a suitable cleaning agent to remove dust and residues.

Special note:

We recommend to stir Permasolid® HS Performance Surfacer 5320 in the mixing system.

Application.

Mixing ratio:

5:1 by volume with
Permasolid® VHS Hardener 3220 fast
Permasolid® VHS Hardener 3225
Permasolid® VHS Hardener 3230 slow
Permasolid® VHS Hardener 3240 extra slow (see VR Technical Data Sheet No. 3220_3240)

Permasolid® VHS Performance Hardener 3425
Permasolid® VHS Performance Hardener 3440 slow (suited for high industrial / technological requirements)

By weight:
Mixing by weight is possible with the help of CRplus.

Please observe the national Explosion Protection Directive!
Reducer: Permacron® MS Dura Plus 8580
Permacron®Reducer 3364
Permacron® Reducer 3365 slow
Permacron®Reducer 3380

Pot life: Ready for use 45 - 75 minutes at +20°C.
(depending on hardener and reducer used)

Method of application:

Application viscosity
4 mm, +20°C, DIN 53211:

Reducer at +20°C
material temperature:

Spray nozzle*:

Spray pressure*:

Atomising pressure*:

Number of coats:

Recommended film thickness:

Drying.

Air drying:

<table>
<thead>
<tr>
<th>Compliant</th>
<th>HVLP</th>
</tr>
</thead>
<tbody>
<tr>
<td>mixing viscosity</td>
<td></td>
</tr>
<tr>
<td>Permasolid® VHS Hardener: 5 - 10 %</td>
<td></td>
</tr>
<tr>
<td>Permasolid® VHS Performance Hardener: 10 - 15 %</td>
<td></td>
</tr>
<tr>
<td>1.4 - 1.8 mm</td>
<td>1.7 - 1.9 mm</td>
</tr>
<tr>
<td>1.5 - 2.0 bar</td>
<td>-</td>
</tr>
<tr>
<td>-</td>
<td>0.7 bar</td>
</tr>
</tbody>
</table>

1 - 3 coats
60 - 300 µm depending on spray nozzle

with air drying over night
300 µm max. dry film thickness

with force drying / infrared drying
250 µm max. dry film thickness

60 - 250 µm

Sanding at +20°C ambient temperature:
60 - 150 µm: 2 - 3 hours
150 - 300 µm: overnight

* See manufacturer's instructions!
<table>
<thead>
<tr>
<th>Process</th>
<th>Flash-off time:</th>
<th>Drying time at +60°C metal temperature:</th>
<th>Drying time:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Force drying:</td>
<td>5 - 15 minutes</td>
<td>60 - 150 µm: 15 - 20 minutes</td>
<td>short wave: 2 minutes at half power and 8 minutes at full power</td>
</tr>
<tr>
<td>Infrared drying:</td>
<td>5 - 10 minutes</td>
<td>60 - 250 µm: 20 - 25 minutes</td>
<td></td>
</tr>
</tbody>
</table>

**Further steps.**

- **Dry sanding:** with random orbital sander and dust extraction P500 - 600
- **Wet sanding:** With P800 - 1000

**Recoating.**

- **Recoat with:**
  - Permasolid® HS Automotive Top Coat 275
  - Permahyd® Base Coat 280/285/286
  - Permahyd® Hi-TEC Base Coat 480 and Permasolid® 2K clear coat

**Special note:**

For countries outside the EU or usage other than vehicle refinishing:

As an alternative, Permacron® Base Coat 293/295/297 or Permacron® MS Top Coat 730 / Top Coat 257 can be used if not banned by the VOC Directive 2004/42/EC and if available.

**Special notes.**

1. **Elastification of rigid and halfrigid types of plastic:**
   - First, add 15% of Permasolid® Elastic Additive 9050 to the surfacer.
   - mixed with VHS hardener - 3:1 with 10% reducer
2. To facilitate sanding, apply Permaloid® Control Paint black each time before sanding. Do not spray onto wet surfacer.
3. Any substrate defects can be treated with Raderal® putty. After drying and intermediate sanding, isolate putty spots with Permasolid® HS Performance Surfacer 5320.

4. When isolating certain spots - even on problem substrates - the best results are achieved with a medium film thickness of 80 - 120 µm in 2 coats, after either air drying overnight or force drying/IR drying.

With problem substrates, careful pretreatment is imperative and the surfacer must be applied to the entire area.

5. For isolating thermoplastic paintwork we recommend Permasolid® HS Vario Surfacer 8590.

For air drying, we recommend a minimum temperature of +15°C.

Data.

Flash point: +23 °C

VOC content:
2004/42/IIB(c)(540)540

The EU limit value for this product (product category IIB.c) in ready to use form is max. 540 g/l of VOC.
The VOC content of this product in ready to use form is max. 540 g/l.
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www.spieshecker.com

Spies Hecker.
A member of DuPont
Performance Coatings.
Permacron®
Base Coat Series 293

Permacron® Base Coat Series 293 is a high-grade base coat for all two-stage finishes.

It has universal application qualities and may be used for all passenger cars, buses and commercial vehicles.

Base Coat Series 293 can be quickly and easily applied.

When recoated with Permacron®/Permasolid® 2K clear coat, it produces a high-gloss, weather-resistant top coat.
Using the mixing system, all solid and metallic colours can be mixed quickly and exactly.

For professional use only!
VR Technical Data Sheet No. 293/04/2010 - GB
**Substrate.**

**Suitable substrates:**

1. Fully cured, solvent resistant, well preserved and lightly sanded original or old paintwork
2. Surfaces coated with a primer or a surfercer

**Suitable priming materials:**

Depends on the object and the substrate, in accordance with our system recommendation.

**Substrate pretreatment:**

- Thoroughly clean original or old finish and surfercer.
- Sand dry with random orbital sander and dust extraction, P 400 – 500 grade
- or
- wet with P 800 - 1000 grade.
- Before further treatment, clean all substrates once more with Permaloid® Silicone Remover 7010 or Permaloid® Silicone Remover 7799.

**Application.**

**Special notes:**

The mixing colours in Series 293 can be used only as part of a colour formula. If any of the mixing colours is applied on its own, the mixing colour may react differently to that which is described/specified in this Technical Data Sheet.

**Reducer:**

Permacron® Supercryl Reducer 3054
Permacron® Supercryl Reducer 3055 express
Permacron® Supercryl Reducer 3056 slow
## Special Notes

1. To reduce the flash-off times for partial resprays, use Supercryl Reducer 3055 express in place of Supercryl Reducer 3054.

2. Only two coats of base coat may be applied when spraying wet-on-wet on top of a non-sanding surfacer.
3. **Blend-in system**
   (to achieve a perfect colour transition from repair to adjacent areas)

   **a) Preparation:**
   Sand surfacer (dry with P 400 – 500 or wet with waterproof P 800 – 1000).
   Sand adjacent areas on which surfacer was not applied lightly but thoroughly.
   Thoroughly wipe the whole surface with Permaloid Silicone Remover 7010 or Permaloid® Silicone Remover 7799.
   Wipe away any surplus silicone remover with a lint-free cloth, taking care to avoid streaks.

   **b) Blend-in system for metallics and solid colours:**
   Spray the area on which the surfacer was applied with Base Coat Series 293 (at spray viscosity) so that it forms an opaque film.
   Extend the area of application of each subsequent coat through a process of overlapping so that only a fade out area is left. Extend this fade out area (base coat should have the same viscosity as before) and blend-in, spraying with a reduced pressure.
   After a flash-off time of approx. 15 minutes, the substrate is ready to be recoated.

---

**Recoating.**

Recoat with:

**Data.**

<table>
<thead>
<tr>
<th>Viscosity as supplied: 4 mm, +20°C, DIN 53211:</th>
<th>approx. 90 seconds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flash point: above +23°C</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Solids content:</th>
<th>white</th>
<th>black</th>
<th>silver</th>
</tr>
</thead>
<tbody>
<tr>
<td>35.0 % by weight</td>
<td>23.8 % by weight</td>
<td>22.9 % by weight</td>
<td></td>
</tr>
<tr>
<td>19.8 % by volume</td>
<td>17.6 % by volume</td>
<td>16.6 % by volume</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Specific weight:</th>
<th>white</th>
<th>black</th>
<th>silver</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.07 g/cm³</td>
<td>0.94 g/cm³</td>
<td>0.94 g/cm³</td>
<td></td>
</tr>
<tr>
<td>Solids content:</td>
<td>Base coat mixed with 65% Reducer 3054</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------</td>
<td>----------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>white</td>
<td>black</td>
<td>silver</td>
</tr>
<tr>
<td></td>
<td>23.0 % by weight</td>
<td>14.9 % by weight</td>
<td>14.4 % by weight</td>
</tr>
<tr>
<td></td>
<td>11.9 % by volume</td>
<td>10.6 % by volume</td>
<td>9.5 % by volume</td>
</tr>
<tr>
<td>Specific weight:</td>
<td>0.98 g/cm³</td>
<td>0.90 g/cm³</td>
<td>0.90 g/cm³</td>
</tr>
<tr>
<td>Coverage*: at 15 µm dry film thickness:</td>
<td>7.9 m²/l</td>
<td>7.06 m²/l</td>
<td>6.3 m²/l</td>
</tr>
</tbody>
</table>

* The coverage was calculated on the basis of the recommended dry film thickness and the solids content by volume. No allowance was made for wastage during application.

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Permacron®
Pearl Base Coat
Series 295

Permacron® Pearl Base Coat Series 295 is a high-grade base coat for two- or three-stage pearl finishes.

It has universal application qualities and may be used for all passenger cars, buses and commercial vehicles.

When recoated with Permacron® /Permasolid® 2K clear coat, it produces a high-gloss, weather-resistant top coat.
Using the mixing system, all pearl colours can be mixed quickly and exactly.

For professional use only!
VR Technical Data Sheet No. 0295/04/2010 - GB
## Substrate.

**Suitable substrates:**

1. Fully cured, solvent resistant, well preserved and lightly sanded original or old paintwork
2. Surfaces coated with a primer or a surfacer

**Suitable priming materials:**

Depends on the object and on the substrate, in accordance with our system recommendation

**Substrate pretreatment:**

- Thoroughly clean original or old finish and surfacer.
- Sand dry with random orbital sander and dust extraction, P 400 – 500 grade
- or
- wet with P 800 - 1000 grade.
- Before further treatment, clean all substrates once more with Permaloid® Silicone Remover 7010 or Permaloid® Silicone Remover 7799.

## Application.

**Important note for the mixing system:**

The mixing colours in Series 295 can be used only as part of a colour formula. If any of the mixing colours is applied on its own, the mixing colour may react differently to that which is described/specifed in this Technical Data Sheet.

**Reducer:**

- Permacron® Supercryl Reducer 3054
- Permacron® Supercryl Reducer 3055 express (for smaller areas and fast repairs)
- Permacron® Supercryl Reducer 3056 slow

**1. Base coat**

A special undercoat colour is only necessary for three-stage pearl colours:

**Undercoat colour**

- Permacron®Base Coat Series 293
  (for undercoat colour, see colour search tools CRplus or Internet)

See special notes.
<table>
<thead>
<tr>
<th>Method of application:</th>
<th>Compliant</th>
<th>HVLP</th>
</tr>
</thead>
</table>
| Application viscosity at +20°C material temperature: | | DIN 4 mm: 17 - 18 seconds  
ISO 4 mm: 41 - 45 seconds |
| Reducer at +20°C material temperature: | | Please use mixing stick for Series 293 / 295. |
| Spray nozzle*: | | 1.2 - 1.3 mm  
1.3 - 1.4 mm |
| Spray pressure*: | | 2 - 2.5 bar  
- |
| Atomising pressure*: | | -  
0.7 bar |
| Number of coats: | | a) white base coat, 3 coats = max. 40 µm  
b) other base coats, 2 coats = max. 25 µm  
(with an intermediate flash-off time of 5 – 10 minutes) |
| Special note: | | Apply each coat evenly so that the film is opaque and the substrate fully covered. |
| Flash-off time (before clear coat): | | 10 – 15 minutes at +20°C depending on the reducer used |

### 2. Pearl base coat:

<table>
<thead>
<tr>
<th>Method of application:</th>
<th>Compliant</th>
<th>HVLP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application viscosity at +20°C material temperature:</td>
<td></td>
<td>Pearl Base Coat Series 295</td>
</tr>
</tbody>
</table>
| Reducer at +20°C material temperature: | | DIN 4 mm = 17 – 18 sec.  
ISO 4 mm = 41 – 45 sec. |
| Spray nozzle*: | | 1.2 - 1.3 mm  
1.3 - 1.4 mm |
| Spray pressure*: | | 2 - 2.5 bar  
- |
| Atomising pressure*: | | -  
0.7 bar |
| Number of coats: | | a) three-stage colours, 2 coats = 15 – 20 µm  
b) two-stage colours, 2 – 4 coats = max. 45 µm  
(with an intermediate flash-off time of 5 – 10 minutes) |
| Flash-off: (before clear coat): | | 10 – 15 minutes at +20°C depending on the reducer used |

* see manufacturer's instructions
1. The visual effect of the finish depends on careful application of the recommended paint system in accordance with the instructions given. For two-stage colours only 2 coats = max. 25 µm may be applied wet-on-wet on top of a non-sanding surfacer. Three-stage colours cannot be applied wet-on-wet on top of a non-sanding surfacer.

2. The original finish dictates whether a two-stage or three-stage pearl colour (with a special undercoat colour) is required. The respective undercoat colour is shown in our colour search tools CRplus or Internet.

3. For three-stage colours the undercoat colour should be mixed with 20% Permacron® MS hardener and 30% reducer or with 15% Permasolid® HS hardener and 40% reducer to prevent dye-back of the base coat.
   As an alternative, the undercoat colour can be mixed with 10% VHS hardener and 45% Supercryl reducer.

4. Blend-in system:
   (to achieve a perfect colour transition from the repair area to the adjacent areas)

   a) **Preparation:**
   Sand surfacer (dry with P 400 - 500 or wet with waterproof P 800). Sand adjacent areas on which no surfacer was applied lightly but thoroughly with sanding pad (fine). Clean all substrates once more with Permaloid Silicone Remover 7010 or Permaloid Silicone Remover 7799. Wipe away any surplus silicone remover with a lint-free cloth, taking care to avoid streaks.

   b) **Two-stage pearl colours:**
   Spray the area on which the surfacer was applied with Pearl Base Coat Series 295 (at spray viscosity) so that it forms an opaque film. Extend the area of application of each subsequent coat through a process of overlapping to ensure that it matches the original finish. Mix the ready-to-spray Pearl Base Coat Series 295 1:1 with Supercryl Reducer 3054 to reduce it further and evenly fade out the overlapping area.
   After a flash-off time of approx. 15 minutes, the substrate is ready to be recoated.

**Special notes.**
c) Three-stage pearl colours:

Spray the area on which the surfacer was applied with Base Coat Series 293 (undercoat colour) so that it forms an opaque film and extend the area of application of each subsequent coat through a process of overlapping.

Mix the ready-to-spray Base Coat Series 293 1:1 with Supercryl Reducer 3054 to reduce it further and create a light, translucent fade out.

Spray a total of 2 coats of Pearl Base Coat Series 295 (at spray viscosity) on the same area, extending the area of application of each coat through a process of overlapping to ensure that it matches the original finish.

Mix the ready-to-spray Pearl Base Coat Series 295 1:1 with Supercryl Reducer 3054 to reduce it further and evenly fade out the overlapping area.

After a flash-off time of approx. 15 minutes, the substrate is ready to be recoated.

---

**Data.**

**Viscosity as supplied:**
4 mm, +20°C, DIN 53211:

**Flash point:**

at least 90 seconds
above +23°C

**Solids content:**

base coat without reducer: approx. 29.0% by weight
mixed with 65% Reducer 3054: approx. 18.3% by weight

base coat without reducer: approx. 19.1% by vol.
mixed with 65% Reducer 3054: approx. 11.3% by vol.

**Specific weight:**

approx. 1.00 g/cm³
approx. 0.94 g/cm³

approx. 0.94 g/cm³

**Coverage*:**

at 15 µm dry film thickness:

approx. 11.3% by vol.
approx. 7.5 g/m²

---

* The coverage was calculated on the basis of the recommended dry film thickness and the solids content by volume. No allowance was made for wastage during application.
Permasolid®
HS Clear Coat 8030.

Permasolid® HS Clear Coat 8030 is a VOC-compliant, high-grade High Solid clear coat.

- versatile in use with Permasolid® HS hardener and Permasolid® VHS hardener
- good gloss and flow
- brilliant surface finish
- suitable for matt finishes on large areas (with Permasolid® Matting Component MA 110)

For professional use only!
VR Technical Data Sheet No. EN / 8030 / 01
**Substrate.**

Suitable base coats:
- Permahyd® Base Coat 280/285
- Permahyd® Hi-TEC Base Coat 480

See VR Data Sheets 280, 285, 480.0

**Application with Permasolid® HS Hardeners:**

Mixing ratio: 2:1 by volume with
- Permasolid® HS Hardener 3307 extra fast
- Permasolid® HS Hardener 3309 fast
- Permasolid® HS Hardener 3310
- Permasolid® HS Hardener 3312 slow
- Permasolid® HS Hardener 3315 extra slow

See VR Technical Data Sheet No. 3307_3315

Pot life: Ready for use 90 minutes at +20°C.

Method of application:

<table>
<thead>
<tr>
<th>Application viscosity at 4 mm, +20°C, DIN 52311:</th>
<th>Compliant</th>
<th>HVLP</th>
</tr>
</thead>
<tbody>
<tr>
<td>mixing viscosity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sprayed viscosity at 4 mm</td>
<td>1.3 - 1.4 mm</td>
<td>1.3 - 1.5 mm</td>
</tr>
<tr>
<td>Spray pressure*</td>
<td>2 - 2.5 bar</td>
<td>-</td>
</tr>
<tr>
<td>Atomising pressure*</td>
<td>-</td>
<td>0.7 bar</td>
</tr>
<tr>
<td>Number of coats</td>
<td>1.5 coats</td>
<td></td>
</tr>
<tr>
<td>Recommended film thickness</td>
<td>50 – 60 µm dry film thickness</td>
<td></td>
</tr>
</tbody>
</table>

* See manufacturer's instructions!
Application with Permasolid® VHS Hardeners:

Mixing ratio:
3:1 by volume with
Permasolid® VHS Hardener 3220 fast
Permasolid® VHS Hardener 3225
Permasolid® VHS Hardener 3230 slow
Permasolid® VHS Hardener 3240 extra slow

VR Technical Data Sheet No. 3220_3240

Reducer:
Permacron® Reducer 3380

Pot life:
Ready for use 60 - 90 minutes at +20°C.
(depending on hardener used)

Method of application:
Application viscosity, 4 mm, +20°C, DIN 52311:

<table>
<thead>
<tr>
<th>Compliant</th>
<th>HVLP</th>
</tr>
</thead>
<tbody>
<tr>
<td>mixing viscosity</td>
<td></td>
</tr>
<tr>
<td>12.5 - 15 % Permacron® Reducer 3380</td>
<td></td>
</tr>
<tr>
<td>1.3 - 1.4 mm</td>
<td>1.3 - 1.5 mm</td>
</tr>
<tr>
<td>2 - 2.5 bar</td>
<td>-</td>
</tr>
<tr>
<td>-</td>
<td>0.7 bar</td>
</tr>
<tr>
<td>1.5 coats</td>
<td></td>
</tr>
<tr>
<td>50 – 60 µm dry film thickness</td>
<td></td>
</tr>
</tbody>
</table>

Drying.

Air drying:

At +20°C ambient temperature:
dust dry: 40 - 50 minutes
dry for assembly: 4 - 6 hours
dry: overnight

* See manufacturer's instructions!
Force drying:

Flash-off time: 5 - 10 minutes

Drying time and temperature: 30 - 40 minutes at +60°C metal temperature

Infrared drying:

Flash-off time: 5 minutes

Drying time:
- short wave: 10 - 15 minutes
- medium wave: 15 - 20 minutes

Special notes:

Elastification of rigid & halfrigid types of plastic:
First, add 15% Permasolid® Elastic Additive 9050 to the clear coat.

Mixed with HS Hardener - 2:1
Mixed with VHS Hardener - 3:1
+ 15% Permacron® Reducer 3380

Important note: longer drying time.

Data.

Flash point:

VOC content:
2004/42/IIB(d)(420)420

The EU limit value for this product (product category IIB.d) in ready to use form is max. 420 g/litre of VOC.

The VOC content of this product in ready to use form is max. 420 g/l.
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Permasolid®
HS Clear Coat 8035.

Permasolid® HS Clear Coat 8035 is a VOC-compliant, high-grade, productive High Solid clear coat.

- easy and efficient to apply in 1.5 coats
- versatile in use with
  Permasolid® HS hardener and Permasolid® VHS hardener
- good gloss and flow
- easy to polish

For professional use only!
VR Technical Data Sheet No. EN / 8035 / 01
Substrate.

Suitable base coats:
- Permahyd® Base Coat 280, 285 and 286
- Permahyd® Hi-TEC Base Coat 480
- Permahyd® Fascination Colors
(see VR Technical Data Sheet No. 0280, 0285, 0286, 480.0, 480.1, SYS 101.3)

Application with Permasolid® HS Hardeners:

Mixing ratio:
- 2:1 by volume with Permasolid® HS Hardener 3309 fast
- Permasolid® HS Hardener 3310
- Permasolid® HS Hardener 3312 slow
- Permasolid® HS Hardener 3315 extra slow
- VR Technical Data Sheet No. 3307_3315

Pot life:
- Ready for use 60 - 90 minutes at +20°C.
  (depending on hardeners used)

Method of application:

Application viscosity 4 mm, +20°C, DIN 52311:

<table>
<thead>
<tr>
<th></th>
<th>Compliant</th>
<th>HVLP</th>
</tr>
</thead>
<tbody>
<tr>
<td>mixing viscosity</td>
<td></td>
<td>mixing viscosity</td>
</tr>
<tr>
<td>Spray nozzle*</td>
<td>1.2 - 1.3 mm</td>
<td>1.3 - 1.4 mm</td>
</tr>
<tr>
<td>Spray pressure*</td>
<td>2 - 2.5 bar</td>
<td>-</td>
</tr>
<tr>
<td>Atomising pressure*</td>
<td>-</td>
<td>0.7 bar</td>
</tr>
<tr>
<td>Number of coats:</td>
<td>1.5** coats</td>
<td></td>
</tr>
<tr>
<td>Recommended film thickness:</td>
<td>50 - 60 µm dry film thickness</td>
<td></td>
</tr>
</tbody>
</table>

* See manufacturer's instructions!

** When applying this clear coat, the first half coat should be a light coat almost forming an opaque film. A full coat should then follow directly.
Application with Permasolid® VHS Hardeners:

Mixing ratio:

3:1 by volume with
Permasolid® VHS Hardener 3220 fast
Permasolid® VHS Hardener 3225
Permasolid® VHS Hardener 3230 slow
Permasolid® VHS Hardener 3240 extra slow
VR Technical Data Sheet No. 3220_3240

Reducer:

Permacron® Reducer 3380
Permacron® Reducer 3385
Permasolid® HS Accelerator 9025***
Permasolid® Additive 9026***

Pot life:

Ready for use 60 - 90 minutes at +20°C.
(depending on hardeners used)

Method of application:

Application viscosity,
4 mm, +20°C, DIN 52311:

Reducer at
+20°C material temperature:

Spray nozzle*:

1.2 - 1.3 mm
1.3 - 1.4 mm

Spray pressure*:

2 - 2.5 bar
-

Atomising pressure*:

-
0.7 bar

Number of coats:

1.5** coats

Recommended film thickness:

50 - 60 µm dry film thickness

Special notes:

(appplies only if this clear coat is mixed with Permasolid® VHS Hardeners)

*** When this clear coat is used to repair smallest damages (speed repair method), 12.5% Permasolid® Reducer 3380 / 3385 may be replaced by 12.5% Permasolid® HS Accelerator 9025 or Permasolid® Additive 9026.

Do not use for horizontal areas.

* See manufacturer’s instructions!

** When applying this clear coat, the first half coat should be a light coat almost forming an opaque film. A full coat should then follow directly.
Drying.

Air drying:

- **At +20°C ambient temperature:**
  - Dust dry: 20 - 30 minutes
  - Dry for assembly: 4 - 5 hours
  - Dry: overnight

Force drying:

- **Flash-off time:** 5 - 10 minutes
- **Drying time:** 20 - 30 minutes
- **And temperature:** at +60°C metal temperature

Infrared drying:

- **Flash-off time:** 5 minutes
- **Drying time:**
  - Short wave: 10 - 15 minutes
  - Medium wave: 15 - 20 minutes

Special note:

- Elastification of rigid and haftrigid types of plastic:
  - First, add 15% of Permasolid® Elastic Additive 9050 to the clear coat.
  - Mixed with HS Hardener - 2:1
  - Mixed with VHS Hardener - 3:1
  - + 20% Permacron® Reducer 3380

  **Important note:** longer drying time.

Data.

- **Flash point:** above +23°C
- **VOC content:**
  - 2004/42/IIB(d)(420)420

The EU limit value for this product (product category IIB.d) in ready to use form is max. 420 g/litre of VOC.

The VOC content of this product in ready to use form is max. 420 g/l.
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Permasolid®
HS Diamond Clear Coat 8450.

Permasolid® HS Diamond Clear Coat 8450 is a VOC-compliant High Solid clear coat. It is used to repair vehicles which in production line are coated with clear coats of higher scratch resistance.

- high mechanical and chemical resistance
- easy to use
- durable gloss
- very good polishing properties

For professional use only!
VR Technical Data Sheet No. EN / 8450 / 02
**Substrate.**

Suitable substrates:
- Permahyd® Base Coat 280, 285, 286
- Permahyd® Effect Paints
- Permahyd® Hi-TEC Base Coat 480
  (see VR Technical Data Sheet No. 0280, 0285, 0286, 480.0, 480.1, SYS 101.3)

**Application.**

Mixing ratio:
- 3:1 by volume with Permasolid® VHS Hardener 3225
- Permasolid® VHS Hardener 3240 extra slow *

Pot life:
- Ready for use 80 - 100 minutes at +20°C.
  (depending on hardeners used)

Method of application:

<table>
<thead>
<tr>
<th>Application viscosity</th>
<th>Compliant</th>
<th>HVLP</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 mm, +20°C, DIN 53211:</td>
<td>mixing viscosity</td>
<td></td>
</tr>
</tbody>
</table>

| Spray nozzle**: | 1.2 - 1.3 mm | 1.3 - 1.4 mm |
| Spray pressure**: | 2 - 2.5 bar | - |
| Atomising pressure**: | - | 0.7 bar |

Number of coats***: 1.5 coats

Recommended film thickness: 45 - 55 µm dry film thickness

**Drying.**

Air drying:
- At +20°C ambient temperature:
  - dust dry: 70 - 80 minutes
  - dry for assembly: 4 - 6 hours
  - dry: overnight

---

* Meets the specifications of the automotive industry, e.g. Mercedes Benz
** See manufacturer’s instructions!
*** When applying this clear coat, the first half coat should be a light coat forming an opaque film. A full coat should then follow directly.
### Force drying:

| Flash-off time: | 5 - 15 minutes |

| Drying time at +60 - 65°C metal temperature: | 30 - 35 minutes |

### Infrared drying:

| Flash-off time: | 5 - 15 minutes |

| Short wave: | 8 - 12 minutes |

### Special note:

Do not mix Permasolid® HS Diamond Clear Coat 8450 with Permasolid® Elastic Additive 9050 or Permasolid® Matting Component MA 110, as this may have negative effects on the scratch resistance of the clear coat.

### Blending / Polishing

**Pretreatment:**

Sand the total fade out area carefully with a dual action sander with 3M Trizact Fine Finishing Disc P3000 3M 50076 150 mm (optional for small areas with 75mm disc).

Before spraying, small dust inclusions may be sanded with Trizact microfine sanding disc.

**Coating:**

Mix Permasolid®HS Diamond Clear Coat 8450 according to TDS.

a) Spray the repair area with ready-for-use clear coat

b) Fade out neat Permacron® Speed Blender 1036 into the adjacent old paintwork. Remain inside the sanded area!

**Drying:**

Low bake for 30 - 35 minutes at +60 - 65°C metal temperature.

Followed by at least 12 minutes IR drying (short wave) at 100%.

---

### Special notes:

Do not blend areas which are directly visible (no horizontal areas such as hood or roof etc.).

On original finishes of higher scratch resistance (e.g. Mercedes Benz/PSA)
Further steps.

After cooling 1 - 3 hours:

Polishing:

Sand the entire area with random orbital sander and 3M Trizact P3000 Fine Finishing Disc 50076 150 mm. Pay special attention to the fade-out area (see "clear coat" b).

Level the transition visible after sanding with 3M Perfect-it III Extra Fine Compound 80349. Adequate sanding must be guaranteed.

a) Polish using a polishing machine (medium speed) and 3M Buffing Pad 01927. Pour a little 3M Perfect-it III Extra Fine Compound 80349 onto the buffing pad. Follow the direction of rotation of the machine, and do not polish against the edge.

b) Polish again (medium to high speed) using 3M Polishing Foam orange 2362 [for better cooling]. Pour a little 3M Perfect-it III Extra Fine Compound 80349 onto the polishing foam.

c) Wipe off any wax and oil with 3M Finish Control Spray 55535 or silicone remover 7010 to find out if it is necessary to work on the surface again. *

d) To seal the cleaned area, polish again using a random orbital polishing machine and 3M Polishing Foam orange 2362. Pour a little 3M Perfect-it III Extra Fine Compound 80349 onto the polishing foam.

If the finish is still not satisfactory, the entire polishing process may be repeated if necessary.

Data.

Flash point:

above +23°C

VOC content:

2004/42/IIB(d)(420)420

The EU limit value for this product (product category IIB.d) in ready to use form is max. 420 g/litre of VOC.

The VOC content of this product in ready to use form is max. 420 g/l.

* Other polishing compounds or products from other manufacturers of polishing compounds may also be used. Please observe their instructions.
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Permasolid®
HS Clear Coat 8055

Permasolid® HS Clear Coat 8055 is a high-gloss, VOC-compliant High Solid clear coat.

- variable and easy application in 1.5 coats (preferred) or 2 coats
- good vertical stability
- fast through drying
- good final hardness after drying
- good gloss and flow

For professional use only!
VR Technical Data Sheet No. EN / 8055 / 03
**Substrate.**

**Suitable substrates:**
- Permahyd® Base Coat 280, 285 and 286
- Permahyd® Hi-TEC Base Coat 480
- Permahyd® Fascination Colors
(see VR Technical Data Sheet No. 0280, 0285, 0286, 480.0, 480.1, SYS 101.3)

**Application.**

**Mixing ratio:**
3:1 by volume with
- Permasolid® VHS Hardener 3220 fast
- Permasolid® VHS Hardener 3225
- Permasolid® VHS Hardener 3230 slow
- Permasolid® VHS Hardener 3240 extra slow

The selection of hardeners depends on temperature and object size.

**Additive:**
- Permasolid® HS Clear Coat Additive 9034
- Permasolid® HS Accelerator 9025***
- Permasolid® Additive 9026***

Please observe the special notes indicated by *** and the Technical Data Sheets of 9025 and 9026 !

**Pot life:**
Ready for use 60 - 120 minutes at +20°C.
(depending on hardeners used)
### Method of application:

| Spray nozzle* | 1.3 - 1.4 mm | 1.3 - 1.4 mm |
| Spray pressure* | 2 - 2.5 bar | - |
| Atomising pressure* | - | 0.7 bar |

#### Application viscosity

<table>
<thead>
<tr>
<th>4 mm, +20°C, DIN 53211:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additive at +20°C</td>
</tr>
<tr>
<td>Material temperature:</td>
</tr>
<tr>
<td>Permasolid® HS Clear Coat Additive 9034***</td>
</tr>
</tbody>
</table>

#### Additive at +20°C

**5%**

#### Special notes:

**When this clear coat is used to repair smallest damages (speed repair method), 5% Permasolid® HS Clear Coat Additive 9034 may be replaced by 5% Permasolid® HS Accelerator 9025 or Permasolid® Additive 9026.**

**Attention:**

The mixing described here for speed repair applications must not be used on horizontal surfaces.

#### Elastification of rigid and halfrigid types of plastic:

First, add 15% of Permasolid® Elastic Additive 9050 to the clear coat.

Mix 3:1 with VHS hardener

+ 5% Permasolid® HS Clear Coat Additive 9034

### Important note:

longer drying time.
Drying.

Air drying:

At +18 - 22°C
ambient temperature: overnight

Force drying:

Flash-off time: 5 - 10 minutes

Drying time at +60 - 65°C metal temperature: 25 - 35 minutes

Infrared drying:

Flash-off time: 5 - 10 minutes

short wave: 10 - 15 minutes

Data.

Flash point: above +23°C

VOC content: 2004/42/IIID(d)(420)420

The EU limit value for this product (product category IIB.d) in ready to use form is max. 420 g/litre of VOC. The VOC content of this product in ready to use form is max. 420 g/l.
The information provided in this documentation has been carefully selected and arranged by us. It is based upon our best knowledge on the subject at the date of issuance. The Information is given for information purposes only. We are not liable for its correctness, accuracy and completeness. It is up to the user to check the information with regard to up-to-dateness and suitability for his intended purpose.

The relevant Material Safety Data Sheet and Warnings displayed on the product label need to be observed.

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Permasolid®
HS Optimum Plus Clear Coat
8650.

Permasolid® HS Optimum Plus Clear Coat 8650 is a VOC-compliant high-grade High Solid clear coat. Optimal application even under unfavourable spray booth conditions, e.g. low drying temperature.

• variable and productive application
• dries very quickly
• easy and fast to polish
• It is possible to use Permasolid® HS Accelerator 9025 / Permasolid® Additive 9026 with this clear coat

For professional use only!
VR Technical Data Sheet No. EN / 8650 / 05
### Substrate.

**Suitable base coats:**

- Permahyd® Hi-TEC Base Coat 480
- Permahyd® Base Coat 280/285
- Permahyd® Fascination Colors and Effect Base Coats
  (see VR Technical Data Sheet No. 280, 285, 286, 480.0, 480.1, SYS 101.3)

### Application.

**Mixing ratio:**

3:1 by volume with
- Permasolid® VHS Hardener 3220 fast
- Permasolid® VHS Hardener 3225
- Permasolid® VHS Hardener 3230 slow
- Permasolid® VHS Hardener 3240 extra slow

**Reducer:**

- Permacron® Reducer 3380
- Permacron® Reducer 3385 slow
- Permasolid® HS Accelerator 9025***
- Permasolid® Additive 9026***

Please observe the special notes indicated by *** and the Technical Data Sheets of 9025 and 9026!

**Pot life:**

Ready for use 45 - 60 minutes at +20°C.
(depending on hardeners used)
### Application viscosity

4 mm, +20°C, DIN 53211:

<table>
<thead>
<tr>
<th>Mixing viscosity</th>
<th>Compliant</th>
<th>HVLP</th>
</tr>
</thead>
</table>

### Reducer at +20°C

Material temperature:

| 10% Permacron® Reducer 3380 / 3385*** |

### Spray nozzle*

| 1.2 - 1.3 mm | 1.3 - 1.4 mm |

### Spray pressure*

| 2 - 2.5 bar | - |

### Atomising pressure*

| - | 0.7 bar |

### Number of coats:

| 1.5** coats |

### Recommended film thickness:

| 40 - 60 µm dry film thickness: |

### Special notes:

*** When this clear coat is used to repair smallest damages (speed repair method), 10% Permasolid® Reducer 3380 / 3385 may be replaced by 10% Permasolid® HS Accelerator 9025 or Permasolid® Additive 9026. Do not use for horizontal areas.

** When applying this clear coat, the first half coat should be a light coat almost forming an opaque film. A full coat should then follow directly.

---

**Special note:**

Elastification of rigid and halfrigid types of plastic:

First, add 15% of Permasolid® Elastic Additive 9050 to the clear coat.

Mixed 3:1 with VHS Hardener +

10% Permacron® Reducer 3380 or

10% Permacron® Reducer 3385 slow

**Important note:** longer drying time.

---

### Drying.

**Air drying:**

At +20°C ambient temperature

<table>
<thead>
<tr>
<th>Dust dry:</th>
<th>15 - 30 minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry for assembly:</td>
<td>2 - 5 hours</td>
</tr>
<tr>
<td>Dry:</td>
<td>Overnight</td>
</tr>
</tbody>
</table>

---

* See manufacturer’s instructions!

** See manufacturer’s instructions!
Force drying:

Flash-off time: 5 minutes

Hardener: VHS Hardener 3220 fast
Drying time: 10 - 15 minutes

Hardener: VHS Hardener 3225
Drying time: 15 - 25 minutes

Hardener: VHS Hardener 3230 slow
Drying time: 20 - 30 minutes

Hardener: 3240 extra slow
Drying time: 25 - 35 minutes

Temperature: at +60°C metal temperature

See Technical Data Sheet 3220 - 3240 for usage of the VHS hardeners.

Infrared drying:

Flash-off time: 5 minutes

Drying time (depending on film thickness and hardener):
- short wave: 8 - 12 minutes
- above +23°C

Data.

Flash point: above +23°C

VOC content:
- 2004/42/IIB(d)(420)420

The EU limit value for this product (product category IIB.d) in ready to use form is max. 420 g/litre of VOC.
The VOC content of this product in ready to use form is max. 420 g/l.
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Permacron®
MS VarioPlus Clear Coat 8050.

Permacron® MS VarioPlus Clear Coat 8050 is a high-grade two-pack Medium Solid clear coat.

The clear coat is particularly versatile and can be used for a wide range of repair jobs (from spot repairs to full refinishes).

It is mixed with Permacron® MS hardeners or Permasolid® HS hardeners.

- very easy to apply and use
- excellent flow
- fast drying (20 - 30 minutes)
- very good polishing properties
- good filling power and excellent top coat flow
- very good resistance

For professional use only!
VR Technical Data Sheet No. EN / 8050 / 00
Substrate.

Suitable base coats:

Permacron® Base Coat 293/295

Application:

Mixing ratio:

2:1 by volume with
Permacron® MS Express Hardener 3333
Permacron® MS Express Hardener 3344 fast
Permacron® MS Express Hardener 3355 extra fast

or

2:1 by volume with
Permasolid® HS Hardener 3307 extra fast
Permasolid® HS Hardener 3309 fast
Permasolid® HS Hardener 3310
Permasolid® HS Hardener 3312 slow
Permasolid® HS Hardener 3315 extra slow

Pot life:

Ready for spraying 60 - 90 minutes at +20°C (depending on the hardener used)

Reducer:

Permacron® Reducer 3364

Method of application:

Application viscosity 4 mm, +20°C, DIN 53211:

<table>
<thead>
<tr>
<th>Compliant</th>
<th>HVLP</th>
</tr>
</thead>
<tbody>
<tr>
<td>17 - 19 seconds</td>
<td></td>
</tr>
</tbody>
</table>

Reducer at +20°C material temperature:

| | |
| --- | |
| 5% | |

Spray nozzle*:

| | |
| --- | |
| 1.2 - 1.4 mm | 1.3 - 1.4 mm |

Spray pressure*:

| | |
| --- | |
| 2 - 2.5 bar | - |

Atomising pressure*:

| | |
| --- | |
| - | 0.7 bar |

Number of coats:

2 coats
with 5 - 10 minutes flash-off time between coats

Recommended film thickness:

50 - 60 µm dry film thickness:

* See manufacturer's instructions!
Drying.

Air drying:

At +20°C ambient temperature:
- Dust dry: 30 - 40 minutes
- Dry for assembly: 4 - 5 hours
- Dry: overnight

Force drying:

Flash-off time: 5 - 10 minutes
Drying time: 20 - 30 minutes
and temperature: at +60°C - 65°C metal temperature

Infrared drying:

Flash-off time: 5 - 10 minutes
Drying time:
- Short wave dark base coat: 13 minutes at 50% power
- Short wave light base coat: 3 minutes at 50% power followed by 10 min. full power

Data.

Flash point: above +23°C
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Permacron®
MS Express Hardener.

3333
3344 fast
3355 extra fast

Permacron® MS Express Hardeners new are polyisocyanate hardeners for two-pack products from our 2K-Acryl-System.

They are highly reactive, easy to use and accelerate the completion of the drying process for:
Permacron® Automotive Top Coat Series 257
Permacron® / Permasolid® 2K acrylic surfacer
Permacron® 2K clear coat

Having three versions means that all painting conditions can be optimally catered for and highly reliable application is guaranteed.

For professional use only!
VR Technical Data Sheet No. EN / 3333_3355 / 00
Application.

Possible base materials:
- Permacron® Automotive Top Coat Series 257
- Permacron® / Permasolid® 2K acrylic surfacers
- Permacron® 2K clear coat

Field of application:
1. Permacron® MS Express Hardener 3333
   Suitable for full and partial refinishes, even at high temperatures.

2. Permacron® MS Express Hardener 3344 fast
   Suitable for full and partial refinishes at normal temperatures.

3. Permacron® MS Express Hardener 3355 extra fast
   Suitable for partial refinishes at low temperatures and low volumes of outgoing air in the spray booth.

Mixing ratio:

See Technical Data Sheet of the respective base material.

<table>
<thead>
<tr>
<th>Selection of hardeners</th>
<th>MS Express Hardener 3333</th>
<th>MS Express Hardener 3344 fast</th>
<th>MS Express Hardener 3355 extra fast</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full or partial refinish (large objects)</td>
<td>++</td>
<td>+</td>
<td>- -</td>
</tr>
<tr>
<td>Partial refinish (spot repairs)</td>
<td>+</td>
<td>++</td>
<td>+ +</td>
</tr>
<tr>
<td>High temperature above +25°C</td>
<td>++</td>
<td>-</td>
<td>- -</td>
</tr>
<tr>
<td>Normal temperature +20°C to +25°C</td>
<td>++</td>
<td>++</td>
<td>-</td>
</tr>
<tr>
<td>Low temperature +15°C to +20°C</td>
<td>-</td>
<td>+</td>
<td>+ +</td>
</tr>
<tr>
<td>Low baking</td>
<td>++</td>
<td>++</td>
<td>+</td>
</tr>
<tr>
<td>Air drying</td>
<td>+</td>
<td>++</td>
<td>+ +</td>
</tr>
<tr>
<td>Permacron® MS Dura Plus 8580</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Permacron® Reducer 3364</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

++ ideal  
+ suitable  
- not particularly suitable  
-- unsuitable
### Data.

<table>
<thead>
<tr>
<th></th>
<th>MS Express Hardener 3333</th>
<th>MS Express Hardener 3344 fast</th>
<th>MS Express Hardener 3355 extra fast</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Density</strong></td>
<td>0.99 g/cm³</td>
<td>0.98 g/cm³</td>
<td>0.98 g/cm³</td>
</tr>
<tr>
<td><strong>Flash point:</strong></td>
<td>+24 °C</td>
<td>+24 °C</td>
<td>+24 °C</td>
</tr>
</tbody>
</table>

### Storage.

**Storage conditions:**

- Do not store in damp conditions.
- After use, replace container lid immediately, ensuring an airtight seal.

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Permacron® MS Special Hardener 3368

Permacron® MS Special Hardener 3368 is a polyisocyanate hardener for two-pack products from our “2K-Acryl-System”. Its increased solids content improves the coverage of the base materials and reduces solvent emissions. This hardener guarantees highly reliable application of:
- Permacron® Automotive Top Coat Series 257
- Permacron®/Permasolid® 2K acrylic surfacer
- Permacron® 2K clear coat

<table>
<thead>
<tr>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health and safety</td>
</tr>
<tr>
<td>Data</td>
</tr>
<tr>
<td>Storage</td>
</tr>
</tbody>
</table>

This product is for the professional painting of vehicles only.
Application

Possible base materials: Permacron®Automotive Top Coat Series 257
Permacron®2K clear coat
Permacron®Daylight Fluorescent Paint 8568
Permacron®/Permasolid®2K acrylic surfacer

Fields of application: Suitable for all full and partial refinishes at normal and high temperatures, in particular for top coats.

Mixing ratio: See Technical Data Sheet of the respective base materials.

Health and safety

Coating materials which are ready for application and contain isocyanate can cause irritation of the mucous membranes - especially of the respiratory system - and thus trigger hypersensitive reactions. Inhalation of the fumes or overspray can provoke sensitization. When handling coating materials containing isocyanates, all precautions applicable to coating materials containing solvents must be taken. Overspray and fumes should not be inhaled. Individuals suffering from allergies or asthma and those prone to respiratory diseases may not work with coating materials containing isocyanate. In addition to the regulations governing health protection and fire and explosion prevention - and in particular any national accident prevention regulations concerning the application of coating materials - your attention is drawn to the warning regarding isocyanates on the hardener tin label.

Data

Specific weight: approx. 0.99 g/cm³
Flash point: above +23°C
VOC value: 600 g/l
Storage

**Guaranteed shelf life:** 6 months in sealed original containers

**Storage conditions:**

- Do not store in damp conditions.
- After use, replace container lid immediately, ensuring an airtight seal.

The employed tests comply with state-of-the-art technology regarding methods and accuracy. The quoted measuring results do not constitute a legal warranty of specific product features or of the products’ suitability for a specific purpose. Warning remarks on the labels must be observed. Any existing industrial property rights must be considered. According to our general terms and conditions of domestic and export sale, we warrant that our products are in the condition specified in the contract.
Permasolid®
VHS Hardeners.

3220 fast
3225
3230 slow
3240 extra slow

Permasolid® VHS hardeners are the hardeners specially developed for our High-Solid products.

Their high solids content allows for economical and eco-friendly application.

Having four versions means that all painting conditions can be optimally catered for and highly reliable application is guaranteed.

For professional use only!
VR Technical Data Sheet No. EN / 3220_3240 / 00
**Application.**

Possible base materials:

- Permasolid® HS Express Surfacer 5250
- Permasolid® HS Premium Surfacer 5310
- Permasolid® HS Wet-on-Wet Surfacer 5330
- Permasolid® HS SpectroFlex Surfacer 5400
- Permasolid® HS Vario Surfacer 8590
- Permasolid® HS Automotive Top Coat Series 275
- Permasolid® HS Clear Coat 8030
- Permasolid® HS Clear Coat 8033
- Permasolid® HS Clear Coat 8034
- Permasolid® HS Diamond Clear Coat 8450*
- Permasolid® HS Optimum Clear Coat 8600
- Permasolid® HS Clear Coat 8035
- Permasolid® HS Clear Coat 8650

Field of application:

1. **Permasolid® VHS Hardener 3220 fast**
   Suitable for partial refinishes and low volumes of outgoing air in the spray booth.

2. **Permasolid® VHS Hardener 3225**
   Suitable for full and partial refinishes at normal temperatures.

3. **Permasolid® VHS Hardener 3230 slow**
   Suitable for full and partial refinishes, even at high temperatures.

4. **Permasolid® VHS Hardener 3240 extra slow**
   Suitable for full and partial refinishes, even at very high temperatures.

Mixing ratio:

See Technical Data Sheet of the respective base material.

* Permasolid® HS Diamond Clear Coat 8450 may only be mixed with Permasolid® VHS Hardener 3240 (scratch resistance).
## Selection of hardeners

<table>
<thead>
<tr>
<th></th>
<th>VHS Hardener 3220 fast</th>
<th>VHS Hardener 3225</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full or partial refinish (large objects)</td>
<td>- -</td>
<td>+</td>
</tr>
<tr>
<td>Partial refinish (spot repairs)</td>
<td>+ +</td>
<td>+</td>
</tr>
<tr>
<td>High temperature above +25°C</td>
<td>- -</td>
<td>+</td>
</tr>
<tr>
<td>Very high temperature +30°C to +35°C</td>
<td>- -</td>
<td>-</td>
</tr>
<tr>
<td>Normal temperature +20°C to +25°C</td>
<td>- -</td>
<td>+ +</td>
</tr>
<tr>
<td>Low temperature +15°C to +20°C</td>
<td>+ +</td>
<td>-</td>
</tr>
<tr>
<td>Low baking</td>
<td>+</td>
<td>+ +</td>
</tr>
<tr>
<td>Air drying</td>
<td>+ +</td>
<td>+ +</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>VHS Hardener 3230 slow</th>
<th>VHS Hardener 3240 extra slow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full or partial refinish (large objects)</td>
<td>+</td>
<td>+ +</td>
</tr>
<tr>
<td>Partial refinish (spot repairs)</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>High temperature above +25°C</td>
<td>+</td>
<td>+ +</td>
</tr>
<tr>
<td>Very high temperature +30°C to +35°C</td>
<td>-</td>
<td>+ +</td>
</tr>
<tr>
<td>Normal temperature +20°C to +25°C</td>
<td>+ +</td>
<td>+ +</td>
</tr>
<tr>
<td>Low temperature +15°C to +20°C</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Low baking</td>
<td>+ +</td>
<td>+ +</td>
</tr>
<tr>
<td>Air drying</td>
<td>+ +</td>
<td>+</td>
</tr>
</tbody>
</table>

+ + ideal                      + suitable
- not particularly suitable - - unsuitable

**Flash point:** +24°C
Storage.

Storage conditions:

Do not store in damp conditions.

After use, replace container lid immediately, ensuring an airtight seal.

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Permasolid® HS Hardener

3307 extra fast
3309 fast
3310
3312 slow
3315 extra slow

Permasolid® HS hardeners are the hardeners specially developed for our High-Solid products. Their high solids content allows for economical and eco-friendly application.

Having five versions means that all painting conditions can be optimally catered for and highly reliable application is guaranteed.

For professional use only!
VR Technical Data Sheet No. 3307_3315/03/2007-GB
Application.

Possible base materials:
- Permasolid® HS Premium Surfacer 5310
- Permasolid® HS Express Surfacer 5250
- Permasolid® HS SpectroFlex 5400
- Permasolid® HS Vario Surfacer 8590
- Permasolid® HS Non-Sanding Surfacer 5330
- Permasolid® HS Clear Coat 8030
- Permasolid® HS Clear Coat 8035

Field of application:

1 Permasolid® HS Hardener 3307 extra fast
   Suitable for spot repairs and partial refinishes at low temperatures.

2 Permasolid® HS Hardener 3309 fast
   Suitable for partial refinishes at low temperatures and low volumes of outgoing air in the spray booth.

3 Permasolid® HS Hardener 3310
   Suitable for full and partial refinishes at normal temperatures.

4 Permasolid® HS Hardener 3312 slow
   Suitable for full and partial refinishes, even at high temperatures.

5 Permasolid® HS Hardener 3315 extra slow
   Suitable for full and partial refinishes, even at very high temperatures. Finishes applied using this hardener are characterised by excellent gloss and flow.

Mixing ratio:

See Technical Data Sheet of the respective base material.
<table>
<thead>
<tr>
<th>Selection of hardeners</th>
<th>HS Hardener 3307 extra fast</th>
<th>HS Hardener 3309 fast</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full or partial refinish (large objects)</td>
<td>- -</td>
<td>-</td>
</tr>
<tr>
<td>Partial refinish (spot repairs)</td>
<td>+ +</td>
<td>+ +</td>
</tr>
<tr>
<td>High temperature above +25°C</td>
<td>- -</td>
<td>- -</td>
</tr>
<tr>
<td>Very high temperature +30°C to +35°C</td>
<td>- -</td>
<td>- -</td>
</tr>
<tr>
<td>Normal temperature +20°C to +25°C</td>
<td>- -</td>
<td>-</td>
</tr>
<tr>
<td>Low temperature +15°C to +20°C</td>
<td>+ +</td>
<td>+</td>
</tr>
<tr>
<td>Low baking</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Air drying</td>
<td>+ +</td>
<td>+ +</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Selection of hardeners</th>
<th>HS Hardener 3310</th>
<th>HS Hardener 3312 slow</th>
<th>HS Hardener 3315 extra slow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full or partial refinish (large objects)</td>
<td>+</td>
<td>+ +</td>
<td>+ +</td>
</tr>
<tr>
<td>Partial refinish (spot repairs)</td>
<td>+</td>
<td>+</td>
<td>- -</td>
</tr>
<tr>
<td>High temperature above +25°C</td>
<td>+</td>
<td>+</td>
<td>+ +</td>
</tr>
<tr>
<td>Very high temperature +30°C to +35°C</td>
<td>-</td>
<td>+</td>
<td>+ +</td>
</tr>
<tr>
<td>Normal temperature +20°C to +25°C</td>
<td>+ +</td>
<td>+ +</td>
<td>+</td>
</tr>
<tr>
<td>Low temperature +15°C to +20°C</td>
<td>-</td>
<td>-</td>
<td>- -</td>
</tr>
<tr>
<td>Low baking</td>
<td>+ +</td>
<td>+ +</td>
<td>+ +</td>
</tr>
<tr>
<td>Air drying</td>
<td>+ +</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

++ ideal
++ suitable
- not particularly suitable
- - unsuitable
<table>
<thead>
<tr>
<th>Data.</th>
<th>HS Hardener 3307 extra fast</th>
<th>HS Hardener 3309 fast</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific weight:</td>
<td>0.98 g/cm³</td>
<td>1.00 g/cm³</td>
</tr>
<tr>
<td>Flash point:</td>
<td>below +21°C</td>
<td>above +23°C</td>
</tr>
<tr>
<td>HS Hardener 3310</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specific weight:</td>
<td>0.99 g/cm³</td>
<td>1.00 g/cm³</td>
</tr>
<tr>
<td>Flash point:</td>
<td>above +23°C</td>
<td>above +23°C</td>
</tr>
<tr>
<td>HS Hardener 3315 extra slow</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specific weight:</td>
<td>1.01 g/cm³</td>
<td></td>
</tr>
<tr>
<td>Flash point:</td>
<td>above +23°C</td>
<td></td>
</tr>
</tbody>
</table>
**Storage.**

**Guaranteed shelf life:**
6 months in sealed original containers

**Storage conditions:**
- Do not store in damp conditions.
- After use, replace container lid immediately, ensuring an airtight seal.

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Horbeller Straße 17
D-50858 Köln
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Fax ++49 (0)2234 - 6019-4100
www.spieshecker.com

Spies Hecker.
A member of DuPont Performance Coatings.
Permacron® Reducers
for Passenger Car Refinishing.

On the following pages, a description is given of those Permacron® reducers which are ideally suited for passenger car refinishes.

With these reducers, the application viscosity of the base materials can be adjusted to guarantee ideal application under all conditions.

Permacron® MS Dura Plus 8580
Permacron® Reducer 3364
Permacron® Reducer 3380
Permacron® Reducer 3365 slow
Permacron® Reducer 3385 slow
Permacron® Reducer 3366 extra slow

For professional use only!
VR Technical Data Sheet No. 3364_8580/03/2008-GB
### Field of application*

**Mixing ratio:**

*See Technical Data Sheet of the respective base material.*

<table>
<thead>
<tr>
<th>Reducers:</th>
<th>MS Dura plus 8580</th>
<th>Reducer 3364</th>
<th>Reducer 3380</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permasolid® HS Automotive Top Coat Series 275</td>
<td>+</td>
<td>+</td>
<td>++</td>
</tr>
<tr>
<td>2K HS clear coats**</td>
<td>- -</td>
<td>- -</td>
<td>++</td>
</tr>
<tr>
<td>2K acrylic primers/ surfacers</td>
<td>++</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>PVB primers/ surfacers</td>
<td>++</td>
<td>++</td>
<td>++</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reducers:</th>
<th>Reducer 3365 slow</th>
<th>Reducer 3385 slow</th>
<th>Reducer 3366 extra slow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permasolid® HS Automotive Top Coat Series 275</td>
<td>+ (1)</td>
<td>++ (1)</td>
<td>+ (2)</td>
</tr>
<tr>
<td>2K HS clear coats**</td>
<td>- -</td>
<td>-</td>
<td>- -</td>
</tr>
<tr>
<td>2K acrylic primers/ surfacers</td>
<td>+ (1)</td>
<td>+ (1)</td>
<td>+ (2)</td>
</tr>
<tr>
<td>PVB primers/ surfacers</td>
<td>- (1)</td>
<td>- (1)</td>
<td>-</td>
</tr>
</tbody>
</table>

| + + ideal                   | + suitable         | - not particularly suitable |
|                            |                    | - - unsuitable             |

(1) only for high temperatures above +25°C  
(2) only for high temperatures above +35°C  

---

* This table is intended as a general overview of the possible use of all Permacron® reducers. Further details provided in the Technical Data Sheets of the respective base materials should be given priority consideration.

** HS clear coats mixed 3:1 with Permasolid VHS hardener plus reducer.
<table>
<thead>
<tr>
<th>Product</th>
<th>Main field of application</th>
<th>Use</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permacron® MS Dura plus 8580.</td>
<td>Reducer with drying accelerator for all 2K acrylic products</td>
<td>Adjusts the viscosity of priming materials and top coats at low and medium temperatures</td>
<td>Specific weight: 0.88 g/cm³</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Flash point: above +23°C</td>
</tr>
<tr>
<td>Permacron® Reducer 3364.</td>
<td>Universal reducer for all 2K acrylic products</td>
<td>Adjusts the viscosity of priming materials and top coats at low and medium temperatures</td>
<td>Specific weight: 0.88 g/cm³</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Flash point: above +23°C</td>
</tr>
<tr>
<td>Permacron® Reducer 3380.</td>
<td>This specially developed reducer is particularly suited to reduce the viscosity of Permasolid® HS Automotive Top Coat Series 275, Permasolid® 2K acrylic surfacers and Permasolid® HS clear coats mixed 3:1 with Permasolid VHS hardener plus reducer.</td>
<td>Adjusts the viscosity of priming materials and top coats at low and medium temperatures</td>
<td>Specific weight: 0.82 g/cm³</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Flash point: above +23°C</td>
</tr>
</tbody>
</table>

3/06.03.2008
<table>
<thead>
<tr>
<th>Permacron® Reducer 3365</th>
<th>Permacron® Reducer 3385</th>
<th>Permacron® Reducer 3366</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main field of application:</strong></td>
<td><strong>Main field of application:</strong></td>
<td><strong>Main field of application:</strong></td>
</tr>
<tr>
<td></td>
<td>Reducer for all 2K acrylic products</td>
<td>This specially developed reducer is particularly suited to reduce the viscosity of Permasolid® HS Automotive Top Coat Series 275 and Permasolid® 2K acrylic surfacers.</td>
</tr>
<tr>
<td><strong>Use:</strong></td>
<td>Improves levelling and absorption of overspray at spray booth temperatures of above +25°C and for large objects</td>
<td>It may also have a positive effect on the VOC content of several products.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Improves levelling and absorption of overspray at spray booth temperatures of above +25°C and for large objects</td>
</tr>
<tr>
<td><strong>Data:</strong></td>
<td><strong>Data:</strong></td>
<td><strong>Data:</strong></td>
</tr>
<tr>
<td>Specific weight: 0.92 g/cm³</td>
<td>Specific weight: 0.90 g/cm³</td>
<td>Specific weight: 0.94 g/cm³</td>
</tr>
<tr>
<td>Flash point: above +23°C</td>
<td>Flash point: above +23°C</td>
<td>Flash point: above +55°C</td>
</tr>
</tbody>
</table>

Permacron® Reducer 3366 extra slow.

Reducer for all 2K acrylic products

Improves levelling and absorption of overspray at spray booth temperatures of above +35°C and for large objects

Specific weight: 0.94 g/cm³
Flash point: above +55°C
Storage.

Guaranteed shelf life: 6 months in sealed original containers

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www.spieshecker.com

Spies Hecker.
A member of DuPont Performance Coatings.

5/06.03.2008
Permacron® Reducers for Passenger Car Refinishing

Permacron® Reducer 3364
Permacron® Reducer 3365 slow
Permacron® Reducer 3366 extra slow
Permacron® MS Dura plus 8580
Permacron® Supercryl Reducer 3054
Permacron® Supercryl Reducer 3055 express
Permacron® Supercryl Reducer 3056 slow
Permacron® Supercryl Reducer 3057 extra slow

Fields of application of all Permacron® reducers*

On the following pages, a description is given of those Permacron® reducers which are ideally suited for passenger car refinishes. With these reducers, the application viscosity of the base materials can be adjusted to guarantee ideal application under all conditions.

For professional use only!
### Permacron® Reducer 3364

<table>
<thead>
<tr>
<th>Main field of application</th>
<th>Universal spray reducer for all 2K acrylic products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use</td>
<td>Adjusts the viscosity of priming materials and top coats at low and medium temperatures</td>
</tr>
<tr>
<td>Data</td>
<td></td>
</tr>
<tr>
<td>Specific weight:</td>
<td>0.88 g/cm³</td>
</tr>
<tr>
<td>Flash point:</td>
<td>above +23°C</td>
</tr>
<tr>
<td>VOC value:</td>
<td>879 g/l</td>
</tr>
</tbody>
</table>

### Permacron® Reducer 3365 slow

<table>
<thead>
<tr>
<th>Main field of application</th>
<th>Spray reducer for all 2K acrylic products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use</td>
<td>Improves levelling and absorption of overspray at spray booth temperatures of above +25°C and for large objects</td>
</tr>
<tr>
<td>Data</td>
<td></td>
</tr>
<tr>
<td>Specific weight:</td>
<td>0.92 g/cm³</td>
</tr>
<tr>
<td>Flash point:</td>
<td>above +23°C</td>
</tr>
<tr>
<td>VOC value:</td>
<td>919 g/l</td>
</tr>
</tbody>
</table>
**Permacron® Reducer 3366 extra slow**

<table>
<thead>
<tr>
<th>Main field of application</th>
<th>Spray reducer for all 2K acrylic products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use</td>
<td>Improves levelling and absorption of overspray at spray booth temperatures of above +35°C and for large objects</td>
</tr>
</tbody>
</table>

**Data**

<table>
<thead>
<tr>
<th>Specific weight:</th>
<th>0.94 g/cm³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flash point:</td>
<td>above +55°C</td>
</tr>
<tr>
<td>VOC value:</td>
<td>939 g/l</td>
</tr>
</tbody>
</table>

**Permacron® MS Dura plus 8580**

<table>
<thead>
<tr>
<th>Main field of application</th>
<th>Spray reducer with drying accelerator for all 2K acrylic products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use</td>
<td>Adjusts the viscosity of priming materials and top coats at low and medium temperatures</td>
</tr>
</tbody>
</table>

**Data**

<table>
<thead>
<tr>
<th>Specific weight:</th>
<th>0.88 g/cm³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flash point:</td>
<td>above +23°C</td>
</tr>
<tr>
<td>VOC value:</td>
<td>879 g/l</td>
</tr>
</tbody>
</table>

**Permacron® Supercryl Reducer 3054**

| Use                        | Adjusts the viscosity of Permacron®Base Coat Series 293/295 at medium application temperatures and for larger objects |

**Data**

<table>
<thead>
<tr>
<th>Specific weight:</th>
<th>0.84 g/cm³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flash point:</td>
<td>above +23°C</td>
</tr>
<tr>
<td>VOC value:</td>
<td>839 g/l</td>
</tr>
</tbody>
</table>
### Permacron® Supercryl Reducer 3055 express

<table>
<thead>
<tr>
<th>Use</th>
<th>Adjusts the viscosity of Permacron® Base Coat Series 293/295 at low and medium application temperatures or for small objects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data</td>
<td></td>
</tr>
<tr>
<td>Specific weight:</td>
<td>0.87 g/cm³</td>
</tr>
<tr>
<td>Flash point:</td>
<td>above +23°C</td>
</tr>
<tr>
<td>VOC value:</td>
<td>869 g/l</td>
</tr>
</tbody>
</table>

### Permacron® Supercryl Reducer 3056 slow

<table>
<thead>
<tr>
<th>Use</th>
<th>Adjusts the viscosity of Permacron® Base Coat Series 293/295 at high application temperatures and for large objects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data</td>
<td></td>
</tr>
<tr>
<td>Specific weight:</td>
<td>0.87 g/cm³</td>
</tr>
<tr>
<td>Flash point:</td>
<td>above +23°C</td>
</tr>
<tr>
<td>VOC value:</td>
<td>869 g/l</td>
</tr>
</tbody>
</table>

### Permacron® Supercryl Reducer 3057 extra slow

<table>
<thead>
<tr>
<th>Use</th>
<th>Adjusts the viscosity of Permacron® Base Coat Series 293/295 at very high application temperatures above +35°C and for large objects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data</td>
<td></td>
</tr>
<tr>
<td>Specific weight:</td>
<td>0.92 g/cm³</td>
</tr>
<tr>
<td>Flash point:</td>
<td>above +23°C</td>
</tr>
<tr>
<td>VOC value:</td>
<td>924 g/l</td>
</tr>
</tbody>
</table>
**Fields of application of all Permacron® reducers**

<table>
<thead>
<tr>
<th></th>
<th>Reducer 3364</th>
<th>Reducer 3365 slow</th>
<th>Reducer 3366 extra slow</th>
<th>MS Dura plus 8580</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Base Coat Series 293/295</strong></td>
<td>– –</td>
<td>– –</td>
<td>– –</td>
<td>– –</td>
</tr>
<tr>
<td><strong>Automotive Top Coat Series 257</strong></td>
<td>+ +</td>
<td>+ 1)</td>
<td>+ 2)</td>
<td>+ +</td>
</tr>
<tr>
<td><strong>2K acrylic clear coats</strong></td>
<td>+ +</td>
<td>+ 1)</td>
<td>+ 2)</td>
<td>+ +</td>
</tr>
<tr>
<td><strong>2K acrylic primers/surfacers</strong></td>
<td>+ +</td>
<td>+ 1)</td>
<td>– 2)</td>
<td>+ +</td>
</tr>
<tr>
<td><strong>PVB primers/surfacers</strong></td>
<td>+ +</td>
<td>– 1)</td>
<td>– –</td>
<td>+ +</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Supercryl Reducer 3054</th>
<th>Supercryl Reducer 3055 express</th>
<th>Supercryl Reducer 3056 slow</th>
<th>Supercryl Reducer 3057 extra slow</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Base Coat Series 293/295</strong></td>
<td>+ +</td>
<td>+ +</td>
<td>+ + 1)</td>
<td>+ + 2)</td>
</tr>
<tr>
<td><strong>Automotive Top Coat Series 257</strong></td>
<td>– –</td>
<td>– –</td>
<td>– –</td>
<td>– –</td>
</tr>
<tr>
<td><strong>2K acrylic clear coats</strong></td>
<td>– –</td>
<td>– –</td>
<td>– –</td>
<td>– –</td>
</tr>
<tr>
<td><strong>2K acrylic primers/surfacers</strong></td>
<td>– –</td>
<td>– –</td>
<td>– –</td>
<td>– –</td>
</tr>
<tr>
<td><strong>PVB primers/surfacers</strong></td>
<td>– –</td>
<td>– –</td>
<td>– –</td>
<td>– –</td>
</tr>
</tbody>
</table>

+ + ideal  + suitable  – not particularly suitable  – – unsuitable

1) only for high temperatures above +25°C  2) only for high temperatures above +35°C

*This table is intended as a general overview of the possible uses of all Permacron® reducers. Further details provided in the Technical Data Sheets for the respective base materials should be given priority consideration.*
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Permasolid® Elastic Additive 9050.

Permasolid® Elastic Additive 9050 is an additive based on special polyester resins.

It is used to adjust the following products to the elasticity required for painting plastic parts:

- Permasolid® HS surfacer
- Permasolid® HS clear coat
- Permacron® MS clear coat
- Permasolid® HS automotive top coat
- Permacron® MS automotive top coat
- Permafleet® HS surfacer
- Permafleet® HS clear coat
- Permafleet® 2K top coat
- Permaflex® 2K top coat

Permasolid® Elastic Additive 9050 gives the paint system a lasting high degree of elasticity.

For professional use only!
VR Technical Data Sheet No. EN / 9050 / 00
### Field of application.

**Elasticizing agent for:**
- Permasolid® HS surfacer
- Permasolid® HS clear coat
- Permacron® MS clear coat
- Permasolid® HS Automotive Top Coat 275
- Permacron® Automotive Top Coat 257
- Permafleet® HS surfacer
- Permafleet® HS clear coat
- Permafleet® HS Top Coat 670/675
- Permafleet® MS Top Coat 630
- Permaflex® PUR Top Coat 570
- Permaflex® Acrylic Plus Top Coat 575

### Application.

**Mixing ratio:**

Add 10 - 20% Permasolid® Elastic Additive 9050 for all commonly found types of plastic.

Not necessary for UP-GF.

Add 30% to coat PVC tarpaulin.

The base material should first be mixed with Permasolid® Elastic Additive 9050. Then a suitable hardener is added (see Technical Data Sheet of the respective base material). For details on the mixing ratio with hardener and reducer, please refer to the Technical Data Sheet of the respective base material.

**Note:**

We are offering mixing mixing stick K2 for the elastification of Permasolid® HS surfacers and HS clear coats and mixing stick K3 for Permasolid® HS Automotive Top Coat 275.

**Special note:**

Allow for longer drying times when adding Permasolid® Elastic Additive 9050.

Please refer to the respective TDS.

Therefore, to optimize the sanding properties, all elasticized 2K surfacers should be dried for at least 45 minutes at +60°C.

### Data.

**Flash point:**

above +23°C

### Storage.

**Storage conditions:**

After use, replace container lid immediately, ensuring an airtight seal.
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Permasolid®
Matting Component MA 110.

Permasolid® Matting Component MA 110 gives Permasolid® HS Clear Coats and Permasolid® HS Automotive Top Coat 275 a matt top coat finish on metal and plastic parts.

For professional use only!
VR Technical Data Sheet No. EN / 0110 / 03
Substrate.

Suitable substrates:
1. Fully cured, well maintained and lightly sanded original or old finish.
2. Plastic parts coated with a primer and surfacer

Substrate pretreatment:
For plastic parts, see System Data Sheet "The Paint System for Plastic Parts" (VR Technical Data Sheet No. 903.1).

Application.

Products:
- Permasolid® Matting Component MA 110
- Permasolid® HS Clear Coat 8030
- Permasolid® HS Clear Coat 8033
- Permasolid® HS Clear Coat 8034
- Permasolid® HS Clear Coat 8035
- Permasolid® HS Clear Coat 8055
- Permasolid® HS Optimum Clear Coat 8600
- Permasolid® HS Optimum Plus Clear Coat 8650
- Permasolid® HS Automotive Top Coat 275
- Permasolid® HS Hardener 3312
- Permasolid® HS Hardener 3315 slow
- Permasolid® VHS Hardener 3230 slow
- Permasolid® VHS Hardener 3240 extra slow
- Permacron® Reducer 3364
- Permacron® Reducer 3380
- Permacron® Reducer 3365 slow
- Permacron® Reducer 3385 slow
- Permasolid® HS Additive 9034

Degree of gloss / matting and notes on application

Notes on application.

Drying.

Force drying:
Flash-off time: 15 - 20 minutes
Drying time at
+60 - 65°C metal temperature  45 minutes

1. It is not necessary to add Permasolid® Elastic Additive 9050.
2. Shake or stir Permasolid® Matting Component MA 110 well in the can.
3. Mix Permasolid® Matting Component MA 110 and Permasolid® HS Clear Coat or Permasolid® HS Automotive Top Coat 275 according to specification and only mix this mixture shortly before application with hardener and reducer. The ready-to-spray mixture should be applied immediately. If the mixture is left in the mixing cup or spray gun cup for a longer period of time (15 min), it has to be stirred once more before it can be used (settling behaviour).
4. Permasolid® Matting Component MA 110 may influence the hiding power.
5. The actual gloss level achieved is influenced by various factors aside from the colour.
The use of different hardeners, thinners, methods of application, drying conditions and film thicknesses leads to different gloss levels (up to 20%).

<table>
<thead>
<tr>
<th>Higher gloss level</th>
<th>Lower gloss level</th>
</tr>
</thead>
<tbody>
<tr>
<td>faster hardener</td>
<td>slower hardener</td>
</tr>
<tr>
<td>faster reducer</td>
<td>slower reducer</td>
</tr>
<tr>
<td>higher application viscosity</td>
<td>lower application viscosity</td>
</tr>
<tr>
<td>higher dry film thickness</td>
<td>lower dry film thickness</td>
</tr>
<tr>
<td>shorter flash-off time</td>
<td>longer flash-off time</td>
</tr>
<tr>
<td>force drying</td>
<td>Air drying</td>
</tr>
</tbody>
</table>

6. **It is absolutely necessary to spray a sample** to achieve the degree of gloss that matches the car. Measuring the degree of gloss (at an angle of 60°) on adjacent parts may also be helpful.
7. Blending or refinishing the matt clear coat within a part, e.g. a side part, or speed repair is not possible.
Care.

Paintwork care:

8. It is not possible to polish dust inclusions, therefore cleanliness during the entire refinishing process is very important.

Do not use any paint cleaning compounds, sanding or polishing compounds, or gloss preservers (wax) for paintwork care. They may damage the paint surface.

If, by accident, wax gets on the paint surface, remove it immediately with a commercial silicone remover. Take care not to exert high pressure on the paint surface.

Do not allow any resinous, greasy or oily substances to get on the paint surface, as these may leave traces. Any contamination must be removed immediately with a cloth soaked in benzine. Do not exert pressure or rub too strongly.

If possible, remove any insects or bird droppings immediately by soaking with water and spraying with insect remover before washing the car. Any remaining traces may not be removed by intensive rubbing.

Tar stains on the paint surface may be removed with a commercial tar remover.

Do not attach any stickers, foils, magnetic labels or similar to the painted surface. They may damage the paint.

Data.

Flash point: above +23°C

VOC content: 2004/42/IIB(e)(840)600

The EU limit value for this product (product category IIB.e) in ready to use form is max. 840 g/litre of VOC. The VOC content of this product in ready to use form is max. 600 g/l.
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The relevant Material Safety Data Sheet and Warnings displayed on the product label need to be observed.

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www.spieshecker.com

Spies Hecker.
A member of DuPont
Performance Coatings.
Permahyd®
Blend-In Additive 9005.

Permahyd® Blend-In Additive 9005 helps to achieve an invisible blend with Permahyd® base coat series 280/285/286.

It serves to facilitate blending.

For professional use only!
VR Technical Data Sheet No. EN / 9005 / 00
Substrate.

Suitable substrates:

1. Fully cured, solvent resistant, well preserved and lightly sanded original or old paintwork.
2. Surfaces coated with a primer or a surfacer.

Suitable priming materials:

Depends on the object and on the substrate, in accordance with our system recommendation.

Substrate pretreatment:

Thoroughly clean original or old finish and Permasolid® surfacer with Permahyd® Silicone Remover 7080 or, if heavily soiled, first with Permaloid® Silicone Remover 7010.

Dry sand with random orbital sander and dust extraction P400 – 500 or wet sand with P800 – 1000.

Lightly sand blend area of the undamaged original finish with P1000 - 1200 grade, or e.g. with 3M Scotch Brite ultra fine.

Before further treatment, carefully clean sanded areas once more with Permahyd® Silicone Remover 7080 to remove all dust, paint residue from sanding and other impurities.
Application.

Reducer: Not necessary.

Method of application:

<table>
<thead>
<tr>
<th>Application viscosity</th>
<th>Compliant</th>
<th>HVLP</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 mm, +20°C, DIN 53211:</td>
<td>Ready to spray</td>
<td></td>
</tr>
</tbody>
</table>

Spray nozzle*: 1.2 - 1.3 mm  WSB/1.3 mm

Spray pressure*: 2.0 - 2.5 bar -

Atomising pressure*: - 0.7 bar

Depending on the colour and hiding power, apply 3 - 5 light/dry coats of ready-to-use Permahyd® Base Coat Series 280/285/286 with reduced pressure (0.8 - 1.5 bar)** to the area to be repaired.

Allow each coat to flash-off until matt. Matting can be accelerated by blowing off.

Then, mix ready-to-use base coat 1:1 with Blend-In Additive 9005.

Depending on the colour, apply 2 - 3 light coats of the 1:1 blending mixture to adjust the effect. Blend the fade-out area using reduced pressure (0.8 - 1.5 bar)**.

Flash-off time (before clear coat): 15 - 20 minutes at +20°C

Ways to reduce flash-off times*:

Surface matting can be accelerated by blowing off with an air diffuser (hand-held or stationary device).

It is possible to blow off with the spray gun after waiting at least 5 minutes.

Drying time: 5 minutes

* See manufacturer’s instructions!

** Regardless of the manufacturer’s recommendation, the input pressure should be reduced as indicated for this blend-in system.
Recoating.
Recoat with:

Permasolid® 2K clear coat

Special notes.
Do not apply this product in its pure form.

Data.
Flash point:

above +23°C

Storage.
Storage conditions:

Frost-free!
Store between 5°C and 35°C

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Spies Hecker.
A member of DuPont
Performance Coatings.
Permacron®
Speed Blender
1036.

The Permacron® Blend-In Additive 1036 was developed to guarantee easy blending-in of 2K clear coats and top coats.

- easy to use (in its pure form)
- good wetting on all substrates
- very fine fade-out to the old finish

For professional use only!
VR Technical Data Sheet No. 1036/09/2009 - GB
Preparation.

Base coat application:
Keep the surfacer area as small as possible. Reccoat until surfacer area is fully covered (overlapping coats)

Blend-in system for 2K clear coats.

Mixing ratio:

Permasolid® 2K clear coat
Mix according to Technical Data Sheet of clear coat.

Painting:
Recoat Permahyd® Basecoat Series 280/285 with adjusted clear coat. (overlapping coats)

Blending-in:
Apply pure Permacron® Speed Blender 1036 to the blend-in area within the sanded area.

Blend-in system for 2K top coats.

Mixing ratio:

Permasolid® HS Automotive Top Coat Series 275
Mix according to Technical Data Sheet of top coat.

Painting:
Recoat until surfacer area is fully covered. (overlapping coats)

Blending-in:
Apply pure Permacron® Speed Blender 1036 to the blend-in area within the sanded area.

Polishing the blend-in areas.

Air drying:
Polishing the blend-in areas at +20°C ambient temperature overnight

Force drying:
Flash-off time: 5 - 10 minutes
Drying time at 60°C metal temperature: 30 minutes
Polishing the blend-in areas at +20°C ambient temperature after 1 hour
Infrared drying:

Flash-off time: 5 - 10 minutes

Short wave: 10 minutes

Polishing the blend-in areas at +20°C ambient temperature after 1 hour

Polish the blend-in areas with fine polishing paste (e.g. Perfect-it™III Extra Fine Compound 80349) manually or by polishing machine (e.g. Perfect-it™III Compound 09550).

In the end, polish with high-gloss polish (e.g. 3M).

Data.

Viscosity as supplied: 11 seconds (DIN 4 mm)

Flash point: 20 °C

Solids content: 4.7 % by weight
            (without reducer) 3.75 % by volume

Specific weight: 0.926 g/cm³

Storage.

Guaranteed shelf life: 6 months in sealed original containers
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Permaloid® Silicone Remover 7010 / 7799.

Permaloid® Silicone Remover 7010 is a slowly evaporating organic solvent mixture, and Permaloid® Silicone Remover 7799 a fast evaporating mixture used primarily to remove oil and grease residue.

For professional use only!
VR Technical Data Sheet No. 7010_7799/04/2007-GB
**Use.**

**Application:**

Apply Permaloid® Silicone Remover 7010 or Permaloid® Silicone Remover 7799 with a spray bottle or clean cloth.

Wipe dry with a clean cloth before the silicone remover evaporates.

**Special notes:**

1) Allow cleaned surfaces to dry completely before recoating.

2) Do not allow the silicone remover to dry on the surface.

3) This product is not suitable for cleaning spray guns or tools.

4) Always use a clean cloth.

5) Heavily soiled parts must be cleaned twice.

**Data.**

<table>
<thead>
<tr>
<th>Permaloid® Silicone Remover 7010</th>
<th>Permaloid® Silicone Remover 7799</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific weight: 0.75 g/cm³</td>
<td>0.74 g/cm³</td>
</tr>
<tr>
<td>Flash point: +26 °C</td>
<td>+4 °C</td>
</tr>
<tr>
<td>VOC content:</td>
<td></td>
</tr>
<tr>
<td>The EU limit value for this product (product category IIB.a) in ready to use form is max. 850 g/litre of VOC.</td>
<td>The VOC content of this product in ready to use form is max. 770 g/litre.</td>
</tr>
</tbody>
</table>
Storage.

Guaranteed shelf life: 6 months in sealed original containers

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Permahyd®
Silicone Remover 7080.

Permahyd® Silicone Remover 7080 does not require any special warnings on the label. It is a waterborne cleaning agent with a very low organic solvents content and special cleaning additives content.

Permahyd® Silicone Remover 7080 is used for cleaning sanded old or original finishes, and surfaces coated with a primer or surfacer which have been subsequently sanded.

For professional use only!
VR Technical Data Sheet No. EN / 7080 / 00
### Usage.

**As silicone remover:**
Mainly for cleaning surfaces coated with a primer or surfacer before these are treated further.

**Application:**
Apply with a spray bottle onto parts or partial areas of the bodywork and remove with a clean, dry cloth.

Allow cleaned surfaces to dry completely or blow dry before recoating.

**Special notes:**
Do not allow the silicone remover to dry on the surface.
Always use a clean cloth.
Heavily soiled parts must be cleaned twice.
This product is not suitable for removing release agent residues from UP-GF or other plastic parts.
This product is not suitable for cleaning spray guns or tools.

### Data.

**Flash point:**
above +23 °C

**VOC content:**
2004/42/IIB(a)(200)200

The EU limit value for this product (product category IIB.a) in ready to use form is max. 200 g/litre of VOC.

The VOC content of this product in ready to use form is max. 200 g/l.
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