PRODUCT INFORMATION

# 2K MS Polymer Power Bond - greenTech

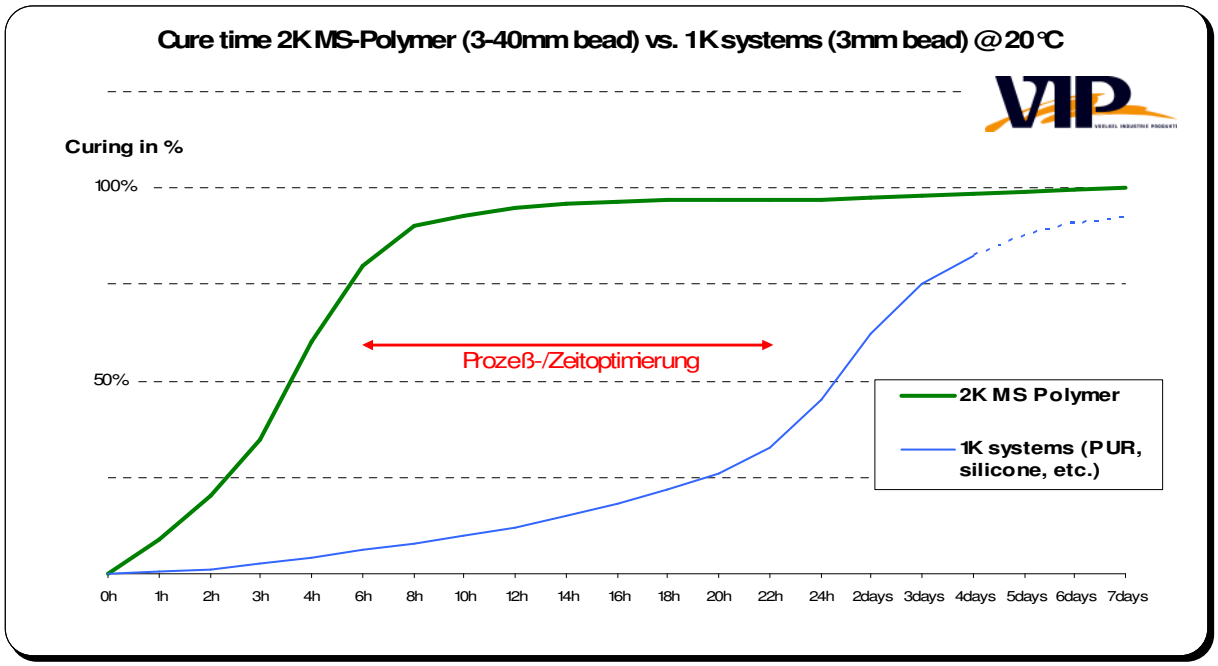
MS-POLYMERS

## 1. Characteristics:

Through the research & development of *Modified Silane Polymers (MS-Polymers)* a success story in bonding technology has been reinvigorated combining the properties of conventional bonding systems like polyurethanes, silicones and acrylates, without the necessity of keeping their weak points. The result is a silane hardening, highly viscous and permanently flexible 2-part adhesive and sealant.

With its fast and especially homogeneous through-cure the *2K-MS-Polymere* is rapidly becoming the solution when an increase in process speed is necessary. This innovative bonding technology is revolutionising working processes in many industries and eliminates waiting times and special storage areas for curing dated 1K technology (especially on large work-pieces). The *2K-MS-Polymer* already today is a superb substitute for many (moisture cure) 1K systems, that can cause problems through slow hardening processes. Bonded work-pieces can also be over painted „wet on wet". The eco friendly 2K system can be over painted with both, acrylic and water based paint systems. A built in primer has been included in the formula. For this reason the *2K-MS-Polymer* can be used on most surfaces without the use of a primer.

The *2K-MS-Polymer* is completely free of any hazchem certification and does full-fill even the most stringent Health and Safety directives and is a truly green product for the modern eco friendly work place.



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## 2. „Pro"-facts at a glance:

- Working processes are revolutionised
- Without primer on many substrates
- Homogeneous through cure mechanism (from inside to outside) – Through cure is independent from surrounding temperature or humidity
- Overpaintability (wet-on-wet)
- No pinholing
- No hazchem declaration - no solvents, no isocyanates, no silicones, no volatile organic compounds (VOCs)
- PIF-free (Paint Irritation Free)
- High chemical resistance
- Usability is non dependent on surrounding temperature or humidity.
- UV- stable & weathering resistant & non ageing
- Odour neutral

## 2a. Excourse: MS Polymeres vs. Silicones/ Polyurethanes

| Properties | MS Polymeres | Silicones | Polyurethanes |
|---|---|---|---|
| UV Stability | Very good | Very good | Fair |
| Weathering resistance | Very good | Very good | Good |
| Pin Holing | No | - | Yes |
| Odour | Minimal | Minimal | Mostly strong |
| Through cure | Fast | Partly very slow | Fair |
| Increase in hardness after full cure | No | No | Frequently |
| Overpaintability | wet-on-wet | No | Yes |
| Compatability with Acrylic paints | Very good | Bad | Mostly bad |
| Compatability with Alcydic resins | Good | Fair | Good |
| Inhibition of through cure through Paints and other chemicals | No | Not overpaintable | Very critical |

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## 3. Applications:

| Areas of use: | Applications: |
|---|---|
| ***Automotive & Truck & Transport:***<br>*>> Coach building*<br>*>> Automotivel*<br>*>> Caravan*<br>*>> Buses*<br>*>> Truck & Transport*<br>*>> Trains (Coach building)*<br>*>> Farming Machinery*<br>*>> Special Transport Manufacturing* | Sandwichelements, Articulated Trucks, Large Covering Elements, Machinery Covers, Spoilers<br>Bonding of Casing Elements,<br>Interior- Elements<br>Edge Covers<br>Exterior Covers<br>Bonding of Design Stripes<br>Bonding of Floor-Elements on Steel Frames<br>GRP-Elements in Front and Back Areas on Steel Frames<br>Sealing of Overlapping Sheets, Profiles, Wet Areas, Hatches, Tailgates, etc.<br>Aluminiumpanels on Steel Sheets<br>Universal Sealing<br>Bonding of Side Windows<br>Bonding of Foams onto the Floor for Securing the Main Harness |
| ***Structural & Civil Engineering*** | Signs, Mirrors, Trims, Reinforcements, Supports<br>Attachment, Floor-, Delation Seams<br>Restoration & Renovation<br>Roofs, Windows, Panels, Openings, Cable shafts<br>Sealing of Visible Seams<br>Filling of Holes and Cuts<br>Bonding of large Surfaces<br>Bonding of Raillings<br>Bonding of Natural Stone |
| ***Aircon and Cooling*** | Bonding of Vents and Shafts<br>Bonding of Conductors<br>General Sealing |
| ***Windows, Conservatories, Glass Industry*** | Windowframes<br>Door Elements<br>Bonding of Facia Elements<br>Roof Window Bonding<br>Sealing an Bonding of Conservatories |

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| | |
|---|---|
| ***Marine & Ship Building*** | Interior- Elements, Ships Hulls, Teak-Deck Sealing, Fixtures and Fitting Assembly and Sealing<br>Watertight assembly of Clamps and Fittings<br>Watertight Sealing of Skylights, Shutters, Windows<br>Bonding and Sealing of Interrior Panels |
| ***Wind & Solar Energy*** | Bonding of Vortex Generators on the Upper Side of the Blade<br>Sealing of the Towers and the Rotor Head<br>Bonding of Photovoltaik- Elements on the Metal Supporting Frame<br>Sealing / Bonding of Control Casings and Cable-Shafts<br>Bonding of Photovoltaik-Safety-Foil (ETFE) to Aluminium/ ABS<br>Bonding of Modular-Frames |
| ***Plastic Working Industry*** | Bonding of Reinforcments and Supports<br>Attachment of Fixtures and Fittings<br>Insrtion of PUR- Foam-Parts<br>Attaching Rubberlips to Plastic Casings |
| ***Metal Working Industry*** | Bonding of Fixtures and Sleeves<br>Bonding/Sealing of Panels<br>Seam Sealing |
| ***Fair-, Shop- and Counter Developement*** | Bonding of Wall Elements<br>Dekor- Elements (Signs, etc.)<br>Bonding of Foodstuffs Displays<br>Bonding of Display Cabinets<br>Bonding/Sealing of dissimilar substrates |
| ***Plant-, Model- and Machinery Engineering*** | Seam Sealing<br>Bonding/Sealing of dissimilar substrates |

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## 4. Technical properties

| | |
|---|---|
| **Chemical Base** | 2-K Modified Silane Polymeres (MS Polymer) |
| **Product Name** | Power Bond 2K |
| **Colour** | White, grey, black |
| **Packaging Sizes**  | 250ml, 600ml, Hobbocks, Drums *<br>* for further information on products and pricelists, please check out our webpage at: www.vip-gmbh.com |
| **Solids** | 100% |
| **Consistency** | thixotropic, pasteus |
| **Viscosity ( share rate 0.1 – 1/s)**<br>**Viscosity ( share rate 1 – 1/s)** | Component A: 1.000<br>Component B: 4.500<br>Component A: 140<br>Component B: 500 |
| **Mixing Ratio (volume)** | 1:1 |
| **Density**<br>@ +23°C / 50% rh | Component A: 1,37 g/ml, +/- 0,02 g/ml<br>Component B: 1,36 g/ml, +/- 0,02 g/ml |
| **Shore Hardness (A) - DIN 53505**<br>@ +23°C / 50% rh | Sh-A 40-45 (after 7 days) |
| **Working Temperature (material)** | from +5°C to +40°C |
| **Working Temperature (environment)** | from +5°C to +40°C |
| **Temperature Resistance** | from -40°C to +90°C<br>short term (1-2 hrs) to +120°C |
| **Potlife**<br>@ +23°C / 50% rh | ~ 40 mins |
| **Fixture time**<br>@ +23°C / 50% rh | ~ 20 mins |
| **Working time**<br>@ +23°C / 50% rh | ~ 25 - 45 mins |
| **Tack free**<br>@ +23°C / 50% rh | ~ 30 mins |
| **Workable after**<br>@ +23°C / 50% rh | ~ 3 hrs |
| **Cure time**<br>@ +23°C / 50% rh | ~ 4 hrs |
| **Tear strength (DIN EN 1465)**  | ~ 2,0 N/mm² |
| **Elongation** | ~ 500% |
| **Module at 100% density**<br>@ 7 Tage / +23°C / 50% rF | ~ 0,7 N/mm² |
| **Change in volume** | < 10% |
| **Maximum gapwidth** | 40 mm |

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## Chemical Resistance

***A** = no effect
***B** = minimal effect
***C** = failure not recommended

Caution: Prolonged storage in water will have a negative effect in the adhesion

| | |
|---|---|
| Water | A |
| Saltwater | A |
| Aliphatic Solvents | A |
| Öil & Grease | A |
| Diluted anorganic acids and alkalines | A |
| Ester | B |
| Ketones | B |
| Aromatics | B |
| Concentrated Acids | C |
| Chlorinated Hydrocarbon | C |

## Shelf Life

@ +4-22°C / 50%rF

9 months

## Shelf Conditions

Cool and Dry
Keep away from direct sunlight

## Conversion table

1 feet (ft.) = 304.8mm
*(°C x 1.8) + 32 = °F*
(°F-32) x 5/9 = °C
*mm/25.4 = inches (in.)*
µm /25.4 = mil
*N x 0.225 = lb*
N/mm x 5.71 = lb/in

1 MPa = 1 N/mm² = 145 psi
*mPa.s = cP*
1inch (in.) = 25.4mm
*N·m x 8.851 = lb·in*
N·m x 0.738 = lb·ft
*N·mm x 0.142 = oz·in*
1mm= 39.37mil = 0.03937 in.

## Adhesive-Consumption Table

>> Number of metres per 100ml

| | With of adhesive bead | | |
|---|---|---|---|
| **Bead thickness** | **5mm** | **10mm** | **15mm** |
| **2mm** | *10m* | *5m* | *3,3m* |
| **4mm** | *5m* | *2,5m* | *1,6m* |
| **6mm** | *3,3m* | *1,6m* | *1,1m* |
| **8mm** | *2,5m* | *1,2m* | *0,8m* |
| **10mm** | *2m* | *1m* | *0,6m* |

## 5. Substrates:

| Metals | | Plastics | | Composites & Others | |
|---|---|---|---|---|---|
| Aluminium (eloxised) | **A** | ABS | **A** | GRP | **A** |
| Aluminium (abraded) | **A** | PA | **X** | Carbon | **X** |
| Brass | **A** | PBT | **X** | BMC (Bulk Molding Compound) | **X** |
| Cast Iron | **A** | PC | **A** | DMC (Dough Molding Compound) | **X** |
| Copper | **A** | PE - HDPE, LDPE, PP, PTEE | **X** | SMC (Sheet Molding Compound) | **X** |
| Iron | **A** | PETG | **X** | EPDM | **A** |
| Stainless Steel | **A** | PMMA (Acrylicglass, Plexiglass®) | **A** | Biofibre-Compound (Hemp & Flax) | **A** |
| Metal Paints (2K) | **A** | Polyester | **A** | PP-EPDM | **A** |
| Steel (elektrolytically galvanised) | **A** | PP | **X** | Siliciumcarbide, -nitride, -boride | **X** |
| Steel (fire galvanised) | **A** | PPE | **X** | | |
| Steel (galvanised) | **A** | PPSU | **X** | Concrete | **A** |
| Steel (phosporised) | **A** | PS (Polystyrol) – Styropor | **A** | Basalt | **A** |
| Steel (sandblasted) | **A** | PUR | **A** | Glass | **A** |
| Chromium Steel | **A** | PVC - hard/soft | **A** | Granite | **A** |
| Galvanised Metals | **A** | PDCPE (Telene) | **X** | Rubber | **X** |
| | | TPO (thermoplastic polyolefines) | **X** | Wood | **A** |
| | | | | Ceramics | **A** |
| | | | | Marble | **A** |
| | | | | Natural stone (eg. Sandstone) | **A** |
| | | | | | |

**A** = very much suitable, partly without (*) or with suitable chemical and/or mechanical pre treatment (*).
**X** = not specifically tested.

***)** Thorough cleaning of the substrates is always necessary. A suitable primer will always increase the adhesion, regardless of the adhesive system you are intending to use. Because of the large variety of usages of the individual products and the magnitude of circumstances (e.g. methods of usage, surface conditions, system build, etc.) the user is obliged to do a personal trial prior to usage. VIP GmbH offers the possibility of bonding trials in VIP's own lab for classification of various substrates and suitable adhesives.

## 6. Directions for use:

Before the Application of the Power Bond it is necessary to check the safety data sheet (SDS) for info on Precautions and Security Measures associated with the product. Even on not classified products the usual precautions for chemical materials should always be adhered to.

Easy application with hand operated or pneumatic dosage gun. To prevent any irregularities in the dried product a guaranteed (1:1) mixing ratio must be achieved at all times. This is only possible using the suitable static mixers recommended by VIP.

On all different types of **Plastic** we recommend the prior use of a primer. Surfaces must always be dry and free of any grease. The thickness of the adhesive bead is dependent on the materials to be bonded. Please press on the other surface within 10 mins of application. If required please smoothen over the seam using a plastic spatula. The cure time is dependent on thickness and temperature. The optimum gap width of the Bond should be 1-6 mm dependent on adhesive area, material elongation, stress and mechanical strain.

**Metal surfaces** must be free from dust, oils, greases and similar materials. The same goes for rust and other forms of corrosion. We recommend to clean metals with a solvent based spirit wipe and to sand or shot blast them afterwards.

We recommend trials with the intended paint, because of the large variety of different **Paints** and **Varnishes**. Some acrylic resins can cause a delay in the full cure. The paint should be applied over the fresh Sealant after a maximum of 4 hours. For best results, please apply the paint wet-on-wet. The drying of the paint can take longer if the paint is applied after a while. The material can always be over painted after cleaning with acetone.

If the surface of the substrate to be bonded is too cold (e.g. below freezing), a thin film of condensed water might build on the surface, and this can cause adhesion failure. These surfaces must be tempered and dried sufficiently prior to applying the adhesive.

## 6a. VIP Accessories for use

| **Product Description** | | **Art. No.*** |
|---|---|---|
| Special Cleaner | 1K Alkaline Liquid Cleaner- For Plastics & Metal surfaces | PMX 4910 |
| Primer 1 | 1K Primer MS Polymer - for non porous substrates | PBO 6715 |
| Primer 2 | 1K Primer MS Polymer - for porous surfaces | PBO 6705 |
| | | |
| Dosage gun 250/310ml | 1:1 Cartridge application - manually – metal – ***Deluxe*** | ZUB 5001 |
| Dosage gun 600ml | 1:1 Cartridge application - manually – metal – ***Deluxe*** | ZUB 5100 |
| Mixer standard green | For 200-600ml cartridges - 19 Mixing elements – square - 10,7mm | PMX 4953 |
| | | |

*) For further accessories, please check out the latest VIP Product/Pricelists or our web page: www.vip-gmbh.com


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