



## PolymerMetals®

### Introduction

MultiMetall Germany invests for more than 30 years in polymer-metallic material technologies for the maintenance of metals and alloys. In plants and constructions often functional particularly important components are exposed to stresses like break, tear, corrosion, cavitation, chemical or thermal demands. Components treated with PolymerMetals can be preventatively protected against above mentioned stresses. Furthermore MultiMetall's cold repair technology facilitates a gentle material treatment and a durable repair of damaged parts.

Wherever technical security is concerned, PolymerMetals offer the required quality. Certificates from classification societies, test results from research laboratories as well as positive evaluations from customers worldwide verify that fact. Even at problematic surfaces, on oil, grease, fuel or under water, PolymerMetals are used. This technology is called „Direct-MM-Bonding“.

### PolymerMetals - Excellent properties

Engineers and technicians need to have a clear picture of the quality of the products available on the market to be able to choose the best product. Therefore we decided to list excellent properties of different MultiMetall-products in the following overview. Please make your own comparison and let the figures speak for themselves.

• Compressive strength (DIN ISO 604):	211 MPa
• Compressive strength after aftercuring (DIN ISO 604):	245 MPa
• Bending strength (DIN 53452):	110 MPa
• Hardness (DIN 50351):	55 Brinell
• E-module at 20 °C (DIN EN ISO 6721-5):	15.600 MPa
(DIN EN ISO 6721-5):	(2.262.000 psi)
• Torsional storage module at 20 °C	5.900 MPa
(DIN EN ISO 6721-2):	(855.500 psi)
• Corrosion:	none
• Electrochemical corrosion (DIN 50900):	none
• Resist against internal pressure:	300 bar
• Totally cured at temperatures up to:	minus 30 °C
• Total curing time:	3 min
• Repairs in high temperature range	
at metal temperatures up to:	300 °C
at water cooled metal surfaces up to:	550 °C
• Repairs of all metals and alloys	
• Application of oily, greasy or fuel contaminated metal surfaces	
• Application under water or on wet metal surfaces	
• Surface protection against erosion, abrasion, cavitation & corrosion	
• Chemical resistance very high against acids, lyes & solvents	
• Storage over 5 years without any loss of quality possible	

### Storage

Most PolymerMetals can be stored for 5 years, if kept at temperatures below 25 °C. The materials do not lose their high quality performance after repeated openings of the containers.

### Acceptance by classification societies

American Bureau of Shipping  
China Classification Society  
Det Norske Veritas  
Germanischer Lloyd  
Lloyd's Register of Shipping  
Nippon Kaiji Kyokai  
Russian Type Approval

### Availability

Technical data sheets are generally available in German or English language. PolymerMetals are only produced in Germany and delivered worldwide within short time by MultiMetall. In addition to that our products are internationally available from many MultiMetall-partners. Ask for further products from MultiMetall.

### Repair of components with PolymerMetals

air sleeves • axles • bearing housings • bearing seating • boiler • compensators • compressors • condensers / capacitors • conveyor belts • cooling tubes • cyclone • cylinder barrels • cylinder sleeves • engine blocks • engines • exhaust pipelines • exhaust pipes • exhaust turbines • gaskets • gearbox housings • guide rails • heat exchangers • housings for gas inlet and outlet • hulls • hydraulic cylinders • hydraulic oil pipes • hydraulic pistons • impellers • kort nozzles • oil coolers • oil pipelines / oil feed pipes • oil tanks • petrol pipelines / petrol feed pipes • petrol tanks • plain bearings • plungers • propellers • pumps • rudder bearings • seals • shaft plates • shafts • slab frames • spline shafts • steam pipelines / steam feed pipes • tappet guides • transformers • turbine housings • turbochargers • V-grooves / keyways • valve housings • valves • vibration dampers • water coolers • water pipes • water tanks

### Trademarks

MultiMetall®  
PolymerMetal®  
Ceranium®  
Molymetal®  
Sealium®  
XETEX®

### Reference list (Extract of German customers)

ABB, BASF, KSB Aktiengesellschaft, Steag, DEA Mineralöl AG, Deutsche Shell AG, Porsche, Daimler-Chrysler, Bayer AG, GEA Energietechnik GmbH, VEBA, Texaco, Blohm & Voss, Howald Deutsche Werft, Hapag-Lloyd Container Linie GmbH, MAN B&W Diesel AG, MBB, Gränges Metalock, RWE Energie AG, Thyssen Henschel Industrietechnik GmbH, Mannesmann AG, Mannesmann Rohr, Saarbergwerke AG, Siemens Anlagenbau, Siemens Energieerzeugung KWU - Industrieturbinenbau & Kraftwerke, Thyssen Krupp Stahl AG

**MultiMetall**  
the MetalExistenceCompany™



## Overview product range

### MM-metal SS-steelceramic

MM-metal SS-steelceramic is the PolymerMetal with the widest range of application for repairs and maintenance of all metals and alloys. MM-metal SS-steelceramic offers a very high quality at mechanical repairs of damaged devices (i.e. caused by crack, corrosion, abrasion, impact or chemical stress).

Machinability: SiC-grinding plates, Diamond tools

### MM-metal SQ

Characteristic for this PolymerMetal are the extreme short curing time and the easy processing. The variable mixing ratio offers application consistencies from pasty to liquid. MM-metal SQ can be used at ambient temperatures up to minus 30 °C.

Machinability: standard tools

### MM-metal SS-steel 382

MM-metal SS-steel 382 is a PolymerMetal and construction material. The high performance material MM-metal SS-steel 382 delivers the best technical data under mechanical and physical stress.

Machinability: standard tools

### MM-metal SS

PolymerMetals of the SS-basis possess very high quality standards for the reconstitution of metallic devices. These PolymerMetals are available with the alloy materials steel, aluminium, copper and bronze.

Machinability: standard tools

### MM-metal oL-steelceramic

MM-metal oL-steelceramic is a PolymerMetal tested and certified for the repair of oily, greasy or fuel contaminated metals and alloys in case of stress due to cracks, corrosion, abrasion, impact or chemicals. MM-metal oL-steelceramic can also be used to seal oil, grease or fuel pouring from leaks at systems under pressure.

Machinability: SiC-grinding plates, Diamond tools

### MM-metal UW

MM-metal UW is a PolymerMetal with extreme short curing time. It is certified for repairs under water or on wet metal surfaces. Possible application areas of MM-metal UW are the repair of under water components or the sealing of leaks. MM-metal UW can also be used to seal water pouring from leaks at systems under pressure.

Machinability: SiC-grinding plates, Diamond tools

### Ceranium®

Ceranium offers maximum wear resistance against continuous material loss on metallic surfaces. With viscous-hardened layers, Ceranium protects against erosion, abrasion, cavitation or corrosion in case of dry or wet or chemical stress.

Machinability: SiC-grinding plates, Diamond tools

### Ceranium® CH

Ceranium CH is a high resistant polymer-ceramic against wear and chemicals.

Machinability: SiC-grinding plates, Diamond tools

### Ceranium® BD

Ceranium BD is a cold-setting two-component construction adhesive on basis of epoxy resin / ceramic, which has been developed for high-strength bonding. The application is the joining of materials (i.e. metals, ceramics and plastics) with very high strength at high mechanical, static and dynamic loads.

### VP 10-017

VP 10-017 is a viscoplastic polymer-ceramic with high impact and cavitation resistance. This extremely smooth surface protection provides very high resistance against chemicals and has a high mechanical-physical load capacity.

### VP 10-500

VP 10-500 is a PolymerMetal for repair and maintenance of metals in the high temperature range. It is a hot-hardening material which does have a clearly higher temperature resistance than cold-hardening polymer materials. A high chemical resistance especially against sulphuric acid is given.

Machinability: SiC-grinding plates, Diamond tools

### Molymetall®

Molymetall is a PolymerMetal with a very low coefficient of friction and self-lubricating properties. The emergency running properties against solid dry friction such as sliding wear and stick-slip are excellent. After curing, Molymetall can be processed to a finished measure up to the  $\mu$ -area.

Machinability: standard tools

### Sealium®

Mostly Sealium is used as sealant and sealing of metallic casting materials. Furthermore alloys and thermal coated components can be treated with Sealium. As a one-component material with extremely high capillary activity, Sealium penetrates micro-porosities or hairline cracks and reacts in the structure of the metallic material.

### MM-metal S

With its rapid hardening i.e. quick repairs and the removal of bubbles in cast parts are possible applications. Application consistencies from liquid to pasty are obtained by altering the mixing ratio of metal powder and hardener. PolymerMetals of the S-basis are available in steel, iron, aluminium, copper and bronze.

Machinability: standard tools

### MM-Elastomer

MM-Elastomer is a material with rubber-like characteristics. Using MM-Elastomer elastic connections can be created or components repaired which are i.e. subject to abrasion. The range of MM-Elastomer goes from Shore A hardness 40 to 95.

### MM-Sets

Some PolymerMetals are available with plenty accessories as MM-Set to offer optimum assistance at versatile repair problems.