PolymerMetall®

Introduction
MultiMetall Germany invests for more than 40 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 post-curing (DIN ISO 604):	245 MPa
Flexural strength (DIN 53452):	110 MPa
Hardness (DIN 50351):	55 Brinell
Modulus of elasticity at 20 °C (DIN EN ISO 6721-5):	15.600 MPa (2.262.000 psi)
Modulus of torsion at 20 °C (DIN EN ISO 6721-2):	5.900 MPa (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	

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 • bridge bearings • 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®
PolymerMetall® • Ceramium®
Molymetall® • Sealium® • XETEX®

Reference list (Extract of German customers)
ABB AG • AG der Dillinger Hüttenwerke • AIDA Cruises • Alstom Power Service GmbH • Atlas Copco Energas GmbH • Blohm + Voss Industrietechnik GmbH • Bombardier Transportation GmbH • BVG Berliner Verkehrsbetriebe • Carl Büttner Ship Management • Continental AG Automotive Systems • Daimler AG • DB AG • Deutsche BP AG • Deutz AG • E.ON AG • ENSO Energie Sachsen Ost AG • Erdgas Südsachsen GmbH • Europipe GmbH • Evonik Power Saar GmbH • German Tanker Shipping GmbH & Co. Ship Owners & Tanker Operators • HeidelbergCement AG • Henschel Industrietechnik GmbH • HKM Hüttenwerke Krupp Mannesmann GmbH • Holborn Europa Raffinerie GmbH • IVECO Motors FPT Deutschland • K + S KALI GmbH • KKW Krümmel • KKW Brokdorf • KS Aluminium-Technologie GmbH • KSB AG • LEW Lechwerke AG • LH Luitpoldhütte AG • MAN Diesel SE • Metalock Industrie Service GmbH • MTU Friedrichshafen GmbH • N-ERGIE AG • Norddeutsche Reedereien H. Schuldt GmbH & Co KG • PCK Raffinerie GmbH • Peiner Umformtechnik GmbH • Pirelli Kabel & Systeme GmbH & Co.KG • Porsche AG • Ruhrpumpen GmbH • RWE AG • Saarstahl AG • Salzgitter AG • Shell Deutschland Oil GmbH • Siemens AG Power Generation • Stadtwerke München • Stadtwerke Trier • ThyssenKrupp Industrieservice GmbH • ThyssenKrupp Marine Systems Blohm & Voss Repair GmbH • ThyssenKrupp Steel Europe AG • Vattenfall Europe AG • ZF Friedrichshafen AG

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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 components (e.g. caused by crack, corrosion, abrasion, impact or chemical stress).
Machinability: SiC-grinding plates, Diamond tools

MM-metal SQ
Characteristic for this PolymerMetal are the easy processing and extreme short curing time. 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 components. 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

Ceramium®
Ceramium offers maximum wear resistance against continuous material loss on metallic surfaces. With tough hard layers, Ceramium protects against erosion, abrasion, cavitation or corrosion in case of dry or wet or chemical stress.
Machinability: SiC-grinding plates, Diamond tools

Ceramium® CH
Ceramium CH is a wear resistant Polymer-Ceramic with excellent resistance against chemicals. These include inorganic (mineral) and organic (carboxylic) acids - also in concentrated form – as well as halogenated and aromatic hydrocarbons, ester, ketone, alcohols, bases and oxidising salt solutions.
Machinability: SiC-grinding plates, Diamond tools

XETEX® BD
XETEX 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 (e.g. metals, ceramics and plastics) with very high strength at high mechanical, static and dynamic loads.

VP 10-017
VP 10-017 is a tough elastic PolymerCeramic with high impact and cavitation resistance. This extremely smooth surface protection provides a good 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 µ-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
PolymerMetals of the S-basis are used for removing bubbles in cast parts, for quick repairs and for visual improvements. MM-metal is available with high metal filling particular for the cast materials 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 e.g. subject to abrasion. The range of MM-Elastomer goes from Shore A hardness 40 to 95.

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