



## Technical Data Sheet

# Molymetall®

Molymetall is a PolymerMetal with a very low coefficient of friction and self-lubricating properties

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## Technical Data Sheet

# Molymetall®

### Product description

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. Possible applications are i.e. hydraulic pistons, pillar guides, slide bearings, slide ways, tappet guides.

Molymetall is a two-component product. Depending on the used hardener component the application consistency of the PolymerMetal becomes a pasty or a liquid one after mixing.

### Technical data

Application consistency:	pasty or liquid
Colour after curing:	grey
Compressive strength (DIN ISO 604):	170 MPa (24650 psi)
Tensile strength:	75 MPa (10875 psi)
Bending strength (DIN 53452):	100 MPa (14500 psi)
Tensile shearing strength on steel:	29 MPa (4205 psi)
Brinell hardness (DIN 50351):	32
Specific passage resistance:	$5,8 \times 10^{13} \Omega\text{cm}$
Passage resistance:	$7,4 \times 10^{11} \Omega$
Linear shrinkage (ASTM D 2566):	0,0001377 cm/cm
Linear expansion coefficient at 25-45 °C:	$3,5 \times 10^{-6} \text{ K}$
Temperature resistance:	-150 °C to +250 °C
Corrosion:	none
Electrochemical corrosion (DIN 50900):	none
Fluidity:	disposes extreme fluidity (when used with Hardener Molymetall liquid)
<b>Machinability:</b>	with standard tools by dry cut
Cutting speed:	$v_c = 40 - 55 \text{ m/min}$
Cutting depth:	$a_p = 0,5 - 1 \text{ mm}$
Feed:	$f = 0,1 - 0,2 \text{ mm/r}$
Roughness grade after grinding:	approx. $0,49 \mu\text{m}$
Density (mixed components):	$3,33 \text{ g/cm}^3$

### Chemical resistance

Already after curing a very good resistance is existent; highest resistance is effected after curing for approx. 6 days at approx. 21°C (alternatively for approx. 4 h at approx. 21°C followed by approx. 15 h at 35 - 40°C). Molymetall is resistant to mineral and synthetic oils, emulsions and grease. The resistance to chemical stress like acids, caustic solutions, solvents, salts, gases, etc. depends on the concentration, temperature and duration of the exposure. Further details can be given on request.

### Surface preparation

- Mechanically rough up the surface by blasting, cutting,

grinding...

- Clean by sweeping, blowing off or exhausting
- Thoroughly degrease with MM-Degreaser Z or MM-Degreaser C or at least a good grease dissolver (ethyl acetate, acetone,...); don't use alcohol, benzine or paint thinner
- Apply a thin layer of MM-Release agent on the surfaces, that should not bond with the PolymerMetal and polish after a short drying period

### Processing data

Mixing ratio by:	Weight	Volume
Molymetall	80	8
Hardener Molymetall	3	1
Tool		Measuring spoon yellow
Temperature	Pot life	Curing
5 °C	70 min	5 days
15 °C	50 min	2 days
20 °C	30 min	24 h
25 °C	25 min	20 h
30 °C	20 min	18 h

The processing shouldn't be carried out below + 5 °C.

### Application instruction

Before mixing the components the work piece should be prepared in accordance with the surface preparation. Always use clean tools for the removal of the components to avoid a reaction within the tins. We recommend mixing only the quantity of material which can be processed within the pot life.

The available measuring spoons yellow can be used to measure the required volume parts of the components. The big measuring spoon is for the use of Molymetall, the small spoon is for Hardener Molymetall. Spoons must be filled levelled.

Under consideration of the mixing ratio the components must be mixed very thoroughly.

Depending on the application consistency the mixture (the PolymerMetal) can be applied with a spatula, brush or any other suitable tool by applying, pouring or injecting.]

When using a spatula, a brush et cetera, first thoroughly apply a thin layer of the PolymerMetal with pressure onto the work piece to avoid air bubbles in the interface between metal and PolymerMetal ensuring a good surface contact. Immediately afterwards apply the required layer thickness on the still soft PolymerMetal.

All used tools should be cleaned straight after use.

### Multiple coating

At work piece temperature	apply successive layer after
approx. 15 - 17 °C	approx. 3 h 30 min
approx. 20 - 22 °C	approx. 90 min
approx. 28 - 30 °C	approx. 80 min

At a work piece temperature of 29 °C for example a successive layer should be applied approx. 80 min after mixing the PolymerMetal for the previous layer.

If the previous coating is already partly cured, it is obligatory to do a surface preparation again by roughening (preferably by careful light blasting) the previous coating before applying the next coating.

#### Aftercuring

The mechanical, thermal and chemical properties of Molymetall can be improved by aftercuring, when warming up the metallic substrate for approx. 2 hours at approx. 100 °C after partial curing or curing.

#### Working security

Avoid eye and skin contact. In case of skin contact, wash thoroughly with soap and water. In case of eye contact, rinse thoroughly with water.

#### Storage

Both components (Molymetall + Hardener Molymetall) can be stored for at least 5 years, if kept at temperatures below 25 °C. The materials do not lose their high quality performance after repeated openings of the containers.

#### Order information

No.	Product	Unit
401	Molymetall, pasty	800 g
403	Hardener Molymetall, pasty	30 g
404	Hardener Molymetall, liquid	30 g

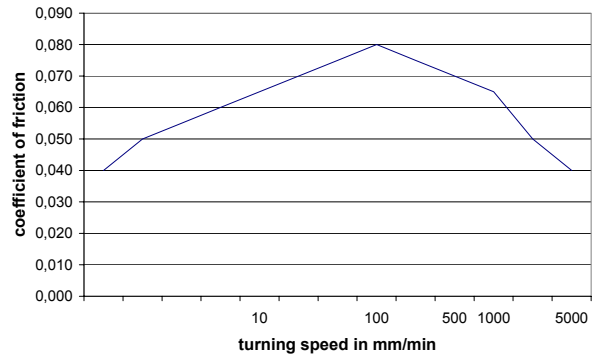
When using the pasty hardener the PolymerMetal's consistency stays pasty, when using the liquid hardener, the PolymerMetal can be injected.

Economicalness	Used quantity	Area	Volume
Molymetall	800 g	830 g 0,249 m <sup>2</sup>	249 cm <sup>3</sup>
Hard. Molymetall	30 g		
Molymetall	964 g	1000 g 0,301 m <sup>2</sup>	301 cm <sup>3</sup>
Hard. Molymetall	36 g		
Molymetall	3207 g	3327 g 1 m <sup>2</sup>	1000 cm <sup>3</sup>
Hard. Molymetall	120 g		

The areas were achieved at a layer thickness of 1 mm.

No.	Accessories	Unit
26	Measuring spoon yellow	1 set
10	MM-Degreaser Z, liquid	1000 ml
11	MM-Degreaser Z, liquid	250 ml
24	MM-Degreaser C, liquid	250 ml
14	MM-Release agent, liquid	100 ml

#### Coefficient of friction as a function of speed



Load: 0,5 N/mm  
 Lubrication: oil 38 cSt  
 Pair: Molymetall ./ GG25

#### Availability

Technical data sheets are generally available in German or English language. Molymetall is 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.

#### Note

The product information and instructions provided in this leaflet were prepared to the best of our knowledge and serve information purposes only. We recommend that appropriate tests are carried out prior to application in order to ensure that the products and methods fulfil the purpose desired by the user. In this procedure, the given data may serve as a basis. Application and processing of the products lie outside our possible control and are therefore the sole responsibility of the user.

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