

## Technical Data Sheet

# MM-metal SQ

Characteristic for this PolymerMetal is the extreme short curing time and the easy processing

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**PT BAUMA ADHESIVE**

16th Floor, Wisma Metropolitan II, Kav. 29-31, Jalan Jendral Sudirman, Jakarta 12920, Indonesia

Phone : (62-21) 5711850 • Fax : (62-21) 5711861 • Website : [www.bauma.com/multimetal](http://www.bauma.com/multimetal) • E-mail : [baumaadhesive.sales@bauma.co.id](mailto:baumaadhesive.sales@bauma.co.id)

Technical Data Sheet

# MM-metal SQ

## Product description

Characteristic for this PolymerMetal are the extreme short curing time and the easy processing. The powdery metal component offers together with the liquid hardener component a corrosion-proof alloy material with high bonding properties. The variable mixing ratio offers application consistencies from pasty to liquid. MM-metal SQ can be used for repairs of components made off any metal or alloy damaged by mechanical or chemical stress or corrosion. We recommend using a PolymerMetal from the MM-metal SS-“product group“ instead of MM-metal SQ in cases where a construction material is required (i.e. for building up rudder bearings, V-grooves/keyways or bearing seatings). MM-metal SQ is a purely repair material.

MM-metal SQ can be used with three different hardeners (Hardener SQ2, Hardener SQ8 or Hardener SQ35), which offer different processing and curing times. Hardeners SQ2 is preferred at low temperatures from 5 °C up to minus 30 °C, Hardener SQ8 and Hardener SQ35 offer longer processing times and are suitable for repairs in ambient temperatures from 5 °C onwards.

## Technical data

Application consistency:	from pasty to liquid
Colour after curing:	grey
Compressive strength (DIN ISO 604):	175 MPa (25375 psi)
Tensile strength:	78 MPa (11310 psi)
Bending strength (DIN 53452):	66 MPa (9570 psi)
Tensile shearing strength on steel:	29 MPa (4205 psi)
Brinell hardness (DIN 50351):	30
Specific passage resistance:	5,50 x 10 <sup>14</sup> Ωcm
Passage resistance:	6,75 x 10 <sup>12</sup> Ω
Linear shrinkage (ASTM D 2566):	0,008 cm/cm
Linear expansion coefficient at 25-45 °C:	25,1 x 10 <sup>-6</sup> K
Temperature resistance:	-150 °C to +250 °C
Corrosion:	none
Electrochemical corrosion (DIN 50900):	none
Machinability:	with standard tools by dry cut
Density (mixed components):	3,00 g/cm <sup>3</sup> pasty
Density (mixed components):	2,33 g/cm <sup>3</sup> liquid

## 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). 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 (it is recommended for blasting to use angular grit material; surface finish approx. 75 µm; purity level approx. Sa 2½ according to Swedish standard SIS 055900 / ISO 8501-1), 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 for use with Hardener SQ2

Mixing ratio by:	Weight	
MM-metal SQ	5	to 2,5
Hardener SQ2 or SQ8 or SQ35	1	1
Application consistency	pasty	to liquid

Mixing ratio by:	Volume	
MM-metal SQ	3	to 1,5
Hardener SQ2 or SQ8 or SQ35	1	1
Application consistency	pasty	to liquid

To find a suitable application consistency it can also be chosen a mixing ratio within the a. m. range, because the mixing ratio is variable.

## Processing data for use with Hardener SQ2

Temperature	Pot life	Curing
-30 °C	6 min	5 days
-20 °C	6 min	30 h
-10 °C	6 min	20 h
-5 °C	6 min	15 h
0 °C	6 min	8 h
5 °C	6 min	1 h

MM-metal SQ and Hardener SQ2 should not be mixed below ambient temperatures of 5 °C.

## Processing data for use with Hardener SQ8

Temperature	Pot life	Curing
5 °C	40 min	6 h
10 °C	25 min	4 h
20 °C	8 min	1 h
25 °C	6 min	30 min
30 °C	5 min	15 min

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

## Processing data for use with Hardener SQ35

Temperature	Pot life	Curing
5 °C	90 min	10 h
10 °C	60 min	4 h
20 °C	35 min	2 h
25 °C	20 min	50 min
30 °C	15 min	30 min
40 °C	7 min	20 min

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



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16th Floor, Wisma Metropolitan II, Kav. 29-31, Jalan Jendral Sudirman, Jakarta 12920, Indonesia

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only the quantity of material which can be processed within the pot life. 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.

If a second coating is required, a surface preparation must be done again.

All used tools should be cleaned straight after use.

### Multiple coating

If a secondary or multiple coating is required, a surface preparation of the previous coating must be done again before applying the PolymerMetal

### Reinforcement

If Fabric tapes (glass fibre or stainless steel) are used, the fibres should be completely coated from both sides when embedded in the PolymerMetal. Several layers increase strength.

### Aftercuring

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

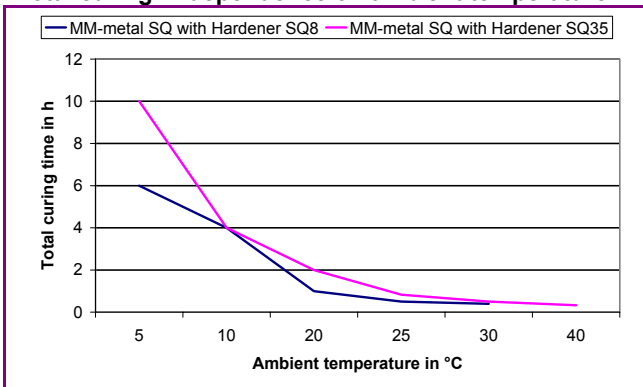
### Working security

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 (MM-metal SQ + Hardener) can be stored for at least 2 years, if kept at temperatures below 25 °C. The materials do not lose their high quality performance after repeated openings of the containers.

### Total curing in dependence on ambient temperature



### Order information

No.	Product	Unit
300	MM-metal SQ, powdery	1000 g
301	Hardener SQ2, liquid	220 g
302	Hardener SQ8, liquid	220 g
303	Hardener SQ35, liquid	220 g

Economicalness	Used quantity	Area	Volume
MM-metal SQ	1000 g	1200 g	0,400 m <sup>2</sup> 400 cm <sup>3</sup>
Hardener SQ	200 g		
MM-metal SQ	833 g	1000 g	0,333 m <sup>2</sup> 333 cm <sup>3</sup>
Hardener SQ	167 g		
MM-metal SQ	2500 g	3000 g	1 m <sup>2</sup> 1000 cm <sup>3</sup>
Hardener SQ	500 g		

Above mentioned data were achieved at a pasty application consistency, that means at mixing ratio of 5 : 1 by weight. The areas were achieved at a layer thickness of 1 mm.

Economicalness	Used quantity	Area	Volume
MM-metal SQ	1000 g	1400 g	0,601 m <sup>2</sup> 601 cm <sup>3</sup>
Hardener SQ	400 g		
MM-metal SQ	714 g	1000 g	0,429 m <sup>2</sup> 429 cm <sup>3</sup>
Hardener SQ	286 g		
MM-metal SQ	1664 g	2330 g	1 m <sup>2</sup> 1000 cm <sup>3</sup>
Hardener SQ	666 g		

Above mentioned data were achieved at a liquid application consistency, that means at mixing ratio of 2,5 : 1 by weight. The areas were achieved at a layer thickness of 1 mm.

No.	Accessories	Unit
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
18	Fabric tape (stainless steel)	100 x 10 cm
20	Fabric tape (glass fibre)	1000 x 5 cm

### Availability

Technical data sheets are generally available in German or English language. MM-metal SQ 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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