Technical Data Sheet

# MM-metal SQ

PolymerMetal with easy processing
and extreme short curing time




MultiMetall
the MetalExistenceCompany®

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# MM-metal SQ

## Product description


Characteristic for this PolymerMetal are the easy processing and the extreme short curing time. 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 two different hardeners (Hardener SQ2 or Hardener SQ8), which offer different processing and curing times. Hardener SQ2 is preferred at low temperatures from 5 °C up to minus 30 °C; Hardener SQ8 offers a longer processing time and is 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 $10^{14}$ Ωcm |
| Passage resistance: | 6,75 x $10^{12}$ Ω |
| Linear coefficient of thermal expansion at 25-45 °C: | 25,1 x $10^{-6}$ 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/$cm^3$ pasty |
| Density (mixed components): | 2,33 g/$cm^3$ liquid |

## Chemical resistance

Already after curing a good resistance is existent; a higher 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, 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 at least with 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 | 1 | | 1 |
| Application consistency | pasty | to | liquid |

| Mixing ratio by: | Volume | | |
|---|---|---|---|
| MM-metal SQ | 3 | to | 1,5 |
| Hardener SQ2 or SQ8 | 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.

## 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. 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.

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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, preferably by careful light blasting, before applying the next coating.

**Reinforcement**
If Fabric tapes or mats made of glass fibre or stainless steel are used optionally, the fabric should be completely coated on both sides and 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**

| Product | Temperature commendation | Shelf life |
|---|---|---|
| MM-metal SQ | ~ 22 °C | min. 2 years |
| Hardener SQ2 | 2 … 10 °C (refrigerator) | min. 2 years |
| Hardener SQ8 | ~ 22 °C | min. 2 years |

The storing of the high-reactive Hardener SQ2 at higher temperatures, even over short periods only, can lead to a shorter shelf life. However, the basis MM-metal SQ, which is sensitive to low temperatures, must not be stored in the refrigerator. Even after repeated openings of the containers the high quality performance is preserved.

**Order information**

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

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

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<br>Hardener SQ | 1000 g<br>400 g | 1400 g | 0,601 $m^2$ | 601 $cm^3$ |
| MM-metal SQ<br>Hardener SQ | 714 g<br>286 g | 1000 g | 0,429 $m^2$ | 429 $cm^3$ |
| MM-metal SQ<br>Hardener SQ | 1664 g<br>666 g | 2330 g | 1 $m^2$ | 1000 $cm^3$ |

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 |
| 14 | MM-Release agent, liquid | 100 ml |
| 33 | Mixing plate (synthetic material) | 20 x 12 cm |
| 16 | Mixing stick (stainless steel) | pc |
| 15 | Mixing cup (synthetic material) | pc |
| 18 | Fabric tape (stainless steel) | 100 x 10 cm |
| 20 | Fabric tape (glass fibre) | 1000 x 5 cm |
| 22 | Fabric mat (glass fibre) | 30 x 40 cm |
| 23 | Application roller | pc |

**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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