

Technical Data Sheet

Ceramium®

Ceramium offers maximum wear resistance against continuous material loss on metallic surfaces

(Data Sheet Version 11.0 dd. 01.04.2009)



MultiMetal
the MetalExistenceCompany™

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Technical Data Sheet

Ceramium®

Product description

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.

Ceramium is a two-component-product and it is available in pasty or liquid application consistency.

Technical data

Application consistency:	pasty or liquid	
Colour after curing:	grey	
Compressive strength (DIN ISO 604):	148 MPa (21460 psi)	
Tensile strength:	79 MPa (11455 psi)	
Bending strength (DIN 53452):	77 MPa (11165 psi)	
Tensile shearing strength:	MPa	psi
on steel:	28	4060
on aluminium:	26	3770
on brass:	23	3335
on copper:	21	3045
on bronze:	22	3190
Brinell hardness (DIN 50351):	28	
Specific passage resistance:	5,1 x 10 ¹⁴ Ωcm	
Passage resistance:	7,4 x 10 ¹² Ω	
Linear expansion coefficient at 25-45 °C:	5,9 x 10 ⁻⁶ K	
Temperature resistance:	-150 °C to +260 °C	
Corrosion:	none	
Electrochemical corrosion (DIN 50900):	none	
Machinability:	with SiC-grinding plates or Diamond tools by dry cut	
Cutting speed:	v _c = 60 - 125 m/min	
Cutting depth:	a _p = 0,5 - 1 mm	
Feed:	f = 0,1 - 0,2 mm/r	
Roughness grade after use of diamond-equipped tools:	3,4 μm	
Density (mixed components):	2,03 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). 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

- Immoderate quantities of salt accumulations in pitting may require wet blasting followed by dry blasting. Alternatively, dry blasting followed by high pressure fresh water cleaning, drying and finally, dry blasting again is possible.
- 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 Ceramium and polish after a short drying period

Processing data

Mixing ratio by:	Weight	Volume
Ceramium	100	6
Hardener CE	8	1
Tool		Measuring cup

Temperature	Pot life	Curing
5 °C	70 min	5 days
15 °C	50 min	2 days
20 °C	35 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 cups can be used to measure the required volume parts of the components. The big measuring cup is for the use of Ceramium, the small cup is for Hardener CE. Measuring cups must be filled to marking.

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

Depending on the application consistency the mixture 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 material with pressure onto the work piece to avoid air bubbles in the interface between metal and material ensuring a good surface contact. Immediately afterwards apply the required layer thickness on the still soft material.

All used tools should be cleaned straight after use.

Multiple coating

At work piece temperature approx. 15 - 17 °C	apply successive layer after 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 material 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.

Reinforcement

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

Aftercuring

The mechanical, thermal and chemical properties of Ceramium 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 (Ceramium + Hardener CE) 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
601	Ceramium, pasty	695 g
611	Hardener CE, pasty	55 g
602	Ceramium, liquid	695 g
607	Hardener CE, liquid	55 g

Economicalness	Used quantity	Area	Volume
Ceramium	695 g	750 g	0,369 m ²
Hardener CE	55 g		369 cm ³
Ceramium	926 g	1000 g	0,492 m ²
Hardener CE	74 g		492 cm ³
Ceramium	1881 g	2032 g	1 m ²
Hardener CE	151 g		1000 cm ³

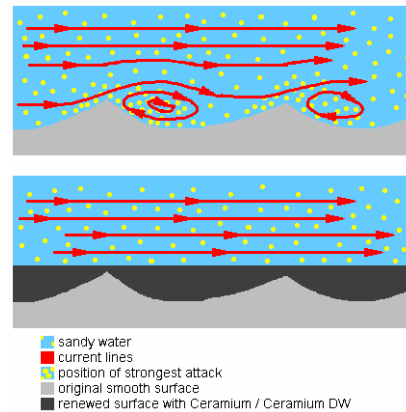
The areas were achieved at a layer thickness of 1 mm.

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

Ceramium, liquid is also available in:

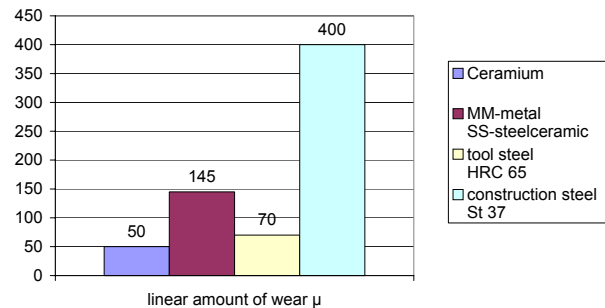
No.	Product	Unit
802	MM-Basic Set	1 pc

Wear resistance



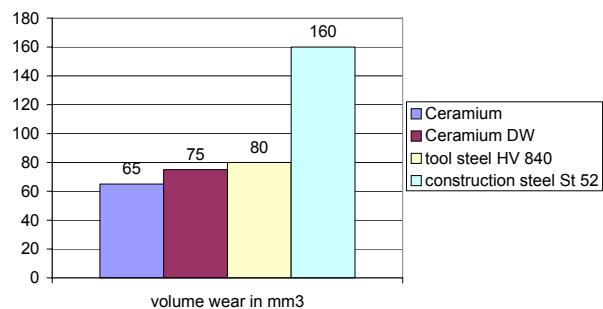
Ceramium offers maximum wear resistance against continuing material loss on metallic surfaces.

Dry wear test



The type of wear phenomena occurring at the tests corresponds with the sliding abrasion (three body abrasion) according to DIN 50320.

Wet wear test



Duration of test: 16 h / testing medium: water and SiC with different viscosities / grain size: 0 - 0,1 mm / temperature: appr. 60 °C

The type of wear phenomena occurring at the tests corresponds with the particle abrasion (erosion water) according to DIN 50320.

Availability

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