

EPOCAST

DEVCON[®] CELLOFLEX-M

SHAFT COATING SYSTEM - APPLICATION PROCEDURE

No.: #DCM112017

Date 16.11.2021



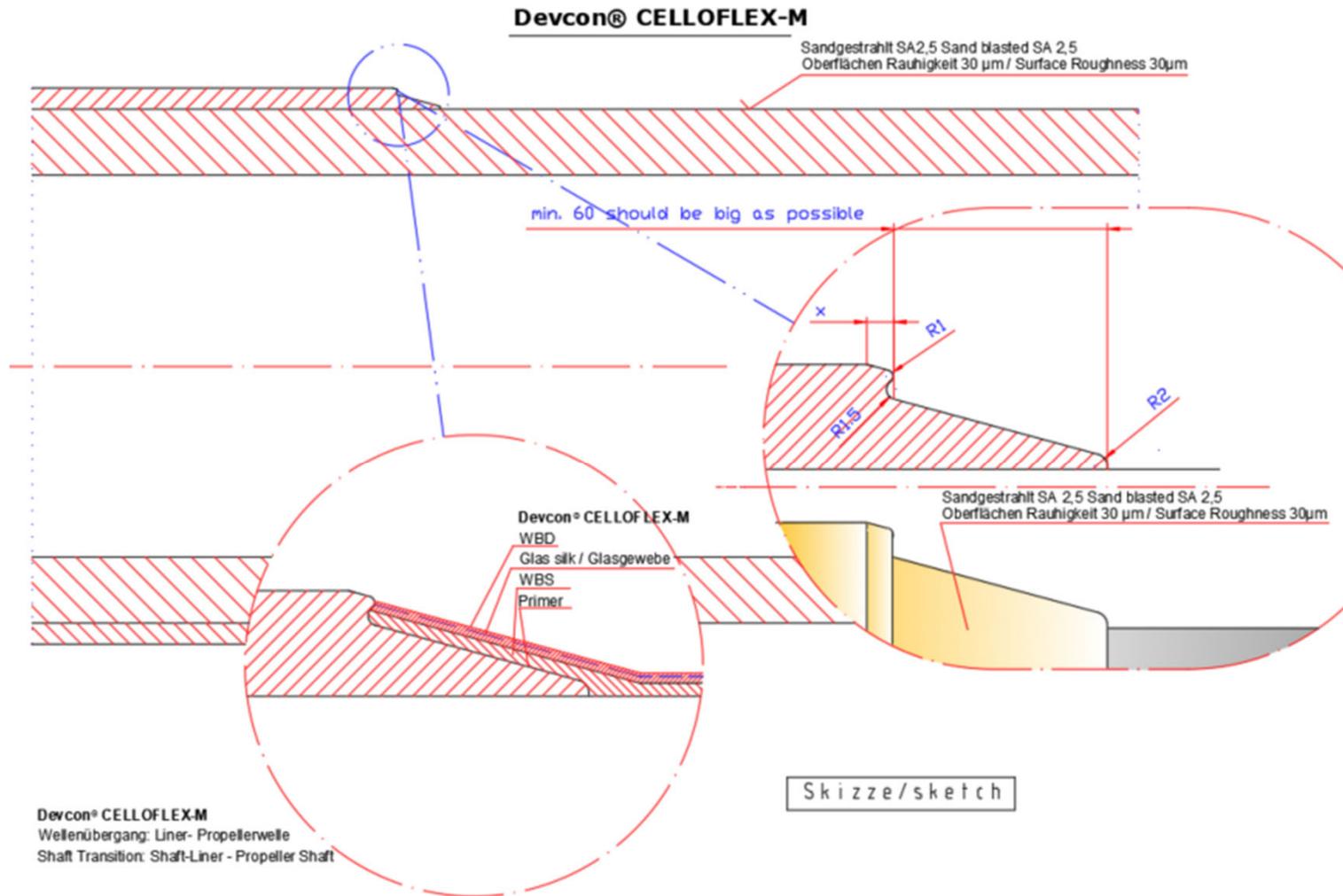
TW Performance Polymers

Please read carefully our technical data sheet / working procedure, act accordingly and fill in all measured data into the Applicator Test certificate

Note, Applicators have to take attention on the actual safety instructions from facility, country and SDSs from country where the product is been applied.

Shown personal with their PPE in this document may differ from that, therefore the pictures inside this document are not binding, show only how to apply the products.

Recommended design of shaft connection ring, couplings and liner bushes



Before start of application please check:

- Ambient Temp. °C (°F)
(min. ambient temp. 13°C - 25 °C, (56°F to 77°F)
but should not exceed 35°C (95°F)
- Measure humidity
- Calculate dew point temperature in °C (°F)
Dew-point will be calculated by using a dew point calculator and should assist to have the correct ambient temperature in order to avoid any condensation on the shaft
see <http://www.dpcalc.org/>

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HERSTELLER PRÜFZERTIFIKAT für Devcon® CELLOFLEX-M PROPELLERWELLENBEKLEIDUNG
 MANUFACTURER TEST CERTIFICATE for Devcon® CELLOFLEX-M SHAFT COATING

Kunde/Customer: Bestell-Nr /Purchase Order-No.:
 Anlageteil/Device / Unit:

Temperaturmessung zur Vermeidung von Schwitzwasserbildung
 Measurement of Temperature to avoid condensation at application

Datum/Date							
Umgebungstemp./Ambient Temp. °C							
Wellen/Kuppl. / Shaft/Coupling Temp. °C							
Luftfeuchtigkeit / Humidity %							
Taupunkt Temp./Dew-point temp. °C							
Oberflächenrauigkeit / Surface roughness in µm (minimum 30 µm)							

Berechnung mit Taupunktrechner / Calculation with Dew point calculator

Schichtdickenmessung / Measurement of Coating Thickness

Meßgerät Typ/Nr. / Magnetic coating thickness type No: MIKROTEST S5 III

Max. Schichtdicke / Max. Thickness : mm

Min. Schichtstärke / Min. Thickness : mm

Porentest / High Voltage Spark Test

Typ / Type : POROTEST DC

Prüfspannung / Test Voltage :

Durchschlag / Flash : Yes No

Für die Richtigkeit / For Exactness

	Datum Date	Name Name	Unterschrift / Stempel Signature / Stamp
Kunde / Customer			
Ausführende Firma Execution company			
Klassifikationsgesellschaft Classification Society			

Empfohlene Prüfspannung (abhängig vom Meßgerät und Herstellerempfehlung)
 Recommended Test Voltage (depends on High Voltage Tester Type and Recommendation from Maker)

Schichtstärke / Coating thickness		Prüfspannung Test Voltage
µm	mils	KV
1000	40	4,7
1250	50	5,5
1500	60	6,3
2000	80	8,0
2500	100	9,6
3000	120	11,1
3500	140	12,6
4000	160	14,1

- Job Protocol
- Record all nos.

Required Tools 1

Adhesive Tape 19mm coil



Knife



Scissors 10 inch



Grinder



Required Tools 2

Serrated pallet Knife 4mm



Pallet Knife (toothless)



Japan Spatula (set of 4)



Stainless Steel Pallet Knife



Required Tools 3

Trowel



Emery Paper (Graining 80)



Brush Roll (10 cm wide) wool 5mm



Holder Brush Roll (10 cm)



Required Tools 4

- Wipes (lint free)
- Plastic Foil, sufficient m²/ yards² to cover floor and area which has to be protected around
- Flat Brush (approx. 2 inch wide, ¼ inch thick)

Safety Devices

Safety Devices

Please refer to the actual and relevant Safety Data Sheets for specific guidance on recommended Personal Protective Equipment (PPE). These may be found by visiting <http://epocast.com/products/products/devcon-celloflex-m/>; <https://itwperformancepolymers.com/data-sheets/safety-data-sheets/>

Applicators have to attend accord to actual safety instructions from facility, country and SDSs from the country where the product is been applied. If not available contact the local member of the worldwide distributor network <https://itwperformancepolymers.com/distributors/>

Required materials

- Product WBS (~2,5 ltr. Incl.) resin and hardener
Unit per 1,43 m² / 5,4 sqft
- Product WBD (~1,0 ltr. Incl.) resin and hardener
Unit per 1,3 m² / 14 sqft
- Cleaner which degreases, cleans and evaporates completely
residue
- Primer
50 ml per m² / 50 ml per 10 sqft
- Glass-silk tape (100 mm wide / 4 inch wide)
per m² / sqft
- Glass-cloth (only for taper area at couplings)
per m² / sqft
- Jiffy Mixer HS1(min 4x Mixer) 4 per m² / sqft

Clean the shaft with special solvent (degreases, cleans and evaporates completely residue) and wipe (lint free)

....

- (shaft must be free from rust, oil, paint ect. and must be sandblasted acc. to SA 2.5 achieving a roughness of min. 30 μm)
- Attention on safety see SDS
- Before next step can start surface has to be dry

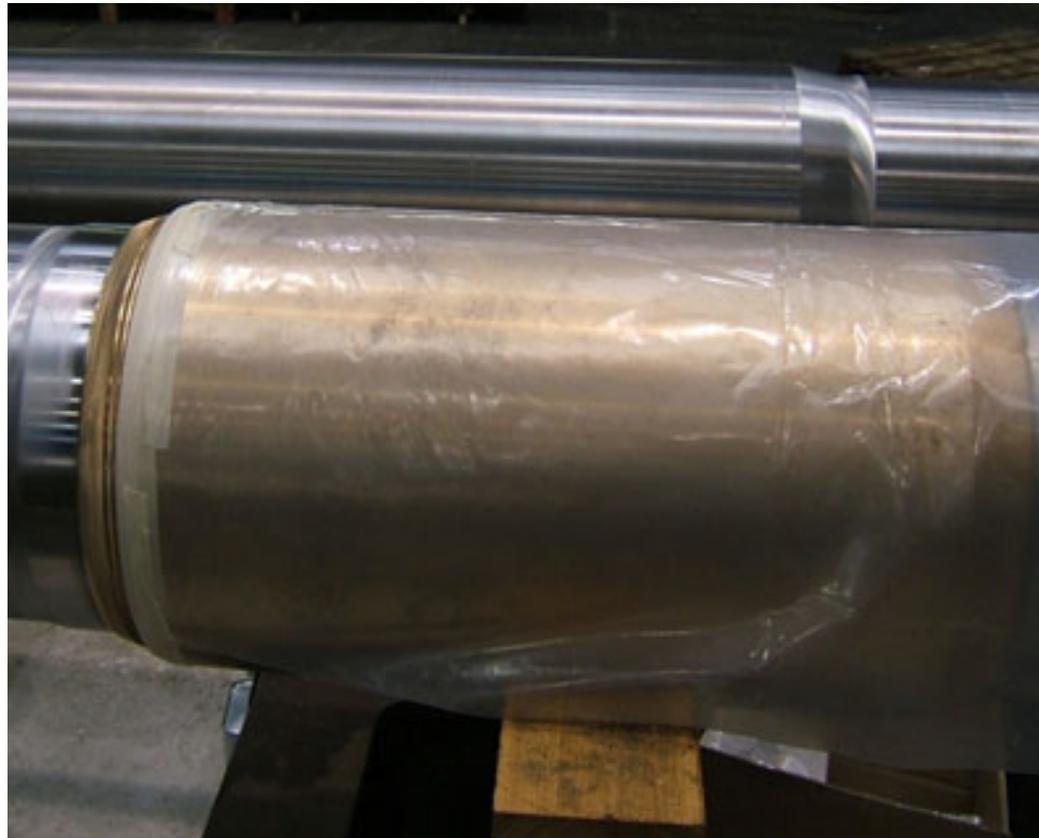


... restrict the shaft liners from the area to be coated ...

(material has to be applied on conical ends of shaft liners)



... protect the shaft liners ...



Apply a Primer...

- Upon removal of subsets close original container at once.
- A thin layer of Primer is to be applied with a brush on the bonding surfaces.
- The open time of the primer is about 30 minutes.
- Apply direct after dry WBS (see next slides)
- Attention on safety see SDS



... mix the component “**WBS**” resin and hardener to a homogeneous mixture with our special mixer ...

- Add WBS material of component B (hardener) into the tin/container of WBS component A (resin)
- Mix both components by using a Jiffy mixer type HS-1. Mixing time should be at least 3 to 4 minutes to assure that both components are mixed homogenously. Speed should be approx. 150-400 rpm



... apply the whole quantity of elastic **WBS** mass onto the shaft ...

WBS is applied onto and around the shaft by hand.



...and dispense equally by using a serrated pallet-knife (4mm) in order to achieve the required thickness of layer. Let it cure.

The position of serrated pallet knife should be 90° to the shaft.
As this varies and to assure an equal required thickness of 2 to 3 mm WBS, we recommend to use a 4 mm serrated pallet knife.
Curing time see table slide 18



Apply an additional thin layer **WBS** in order to achieve a smooth surface. Dispense the material equally with a normal spatula / pallet knife.

The second layer of WBS should only fill the grooves of 1st layer and could be carried out as soon as the first layer is cured (See curing time table slide 18).



Curing time of each layer WBS:

- < 13°C No Curing
- 13 – 20°C approx. 20 hours
- 20 – 25°C approx. 15 hours
- 25 – 30°C approx. 10 hours
- > 30°C <10 hours

WBS	13 °C (56 °F)	21 °C (70 °F)	32 °C (90 °F)
Pot life: approx.	35 min	25 min	20 min

Measure the WBS thickness with a magnetic thickness gauge after curing.

(actual: 3mm, minimum : 2mm “Manufacturer test certificate” – see slide 4)



Complete the test procedure with high voltage spark tester (Porotest – see table slide 22).



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Coating thickness		Test Voltage
µm	mils	KV
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1250	50	5,5
1500	60	6,3
2000	80	8,0
2500	100	9,6
3000	120	11,1
3500	140	12,6
4000	160	14,1

Mix the covering layer **WBD** resin and hardener to a homogenous mixture with our special mixer ...

- Add WBD material of component B (hardener) into the tin/container of WBD component A (resin)
- Mix both components by using a Jiffy mixer type HS-1. Mixing time should be at least 3 to 4 minutes to assure that both components are mixed homogeneously. Speed should be approx. 300-500 rpm



... apply **WBD** with a brush / brush roller onto the cured base layer **WBS** ...

Tools/Materials required for Devcon Celloflex-M Coating,
(Brush Roll 10 cm / 4 inch wide wool 5 mm)



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... and wrap immediately a glass silk tape in a spiral manner around the shaft before the hardening process of **WBD** starts. The edges should not overlap.

Material quality:

Type ROVING

Propeller Shaft and cylindrical area coupling:
Glass silk tape 280 g/m² (100 mm / 4 inch wide)

Tapper area coupling: glass cloth 180 g/m²



Apply immediately an additional layer of **WBD** on the glass silk tape and let it cure.



Curing time of each layer WBD:

- < 13°C No Curing
- 13 – 20°C approx. 18 hours
- 20 – 25°C approx. 12 hours
- 25 – 30°C approx. 8 hours
- > 30°C approx. 5 hours

WBD	13 °C (56 °F)	21 °C (70 °F)	32 °C (90 °F)
Pot life approx.:	30 min	25 min	20 min
On shaft, approx.:	2 hours	1,5 hours	1 hour

Apply further layers of **WBD** (after curing of each single layer) in order to achieve a proper and good looking surface.

Acc. to experience after 4 layers (incl. 1st layer with glass silk) a proper appearance should be achieved.

Thickness will be approx. 0,5 to 1,5 mm



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Repair of Devcon ® CELLOFLEX-M coating

dated 01.03.2015

Repair of / with Devcon® CELLOFLEX-M shaft coating

Repair procedure of shafts/couplings (coated with Devcon® CELLOFLEX-M)

Before starting coating procedure, the shaft has to be sand blasted in accordance to SA 2.5 or for the unique case as agreed by ITW Engineered Polymers GmbH. The surface of the shaft should have a minimum surface roughness of Rt 30 µm in order to realize the best bonding effect between the surface and the shaft coating system. Before starting the coating procedure, the shaft has to be cleaned from rust, oil, paint etc.

1. Mechanically remove of the coating at the damaged coating area plus 10 cm on all sides of the damaged area until the surface of the shaft. Edges should be conical in order to achieve a better bonding effect after repair. It is not necessary to remove coating all around the shaft. Avoid damaging of the shaft with tools etc! Shaft has to be metallic clean before start of application.
2. Start application of Devcon® CELLOFLEX-M according to our application procedure by cleaning the shaft area with special solvent.
3. Fill the area which has to be repaired with the WBS until you reach the level of the existing coating. Let the WBS cure. Unevenness can be solved by grinding the surface after hardening. (Use of the glass silk tape for repair of damaged area depends on dimension of the area. In case glass silk tape is being used as well, follow our general application procedure)
4. Apply finally the WBD.

Repair procedure of shafts / couplings (coated with previous CELLOFLEX)

1. Mechanically remove the damaged coating area plus 10 cm on right and left side of the area until the surface of the shaft. At the edges the 3 layers have to be left open gradually in a width of 20mm (like steps, in order to reach a better bonding effect). Avoid damaging of the shaft with tools etc! Coating has to be removed all around the shaft for repair. Shaft has to be metallic clean before start of application.
2. Start application of Devcon® CELLOFLEX-M by cleaning the shaft area with special solvent.
3. Apply WBS, WBD, and glass silk tape according to our application procedure.

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