



TIB CHEMICALS

PROTEGOL® UR Coating 32-60 PT Cartridge solvent-free two-component polyurethane coating

Description

PROTEGOL® UR Coating 32-60 PT Cartridge is a two-component polyurethane coating. The product meets the requirements of DIN EN 10290:2002, DIN 3476-2:2018-08, DIN EN ISO 21809-3:2020-09, AWWA C222-18.

Application is made by dispenser. The product can be used for field coating of weld seams as well as for HDD applications with a very high layer thickness. The application takes place in a foil casing free of spray loss.

Product is supplied in collapsible and sustainable Mixpac™ ecopaCC™.

Uses

Internal and external coating of

- Field joints
- Repair of factory and field coatings

Benefits

- Excellent corrosion protection
- Very fast reaction and curing time
- Fast mechanical capacity
- Easy to use
- No flushing - no need for solvent

Referenced Standards

DIN EN 10290:2002 Steel tubes and fittings for onshore and offshore pipelines - External liquid applied polyurethane and polyurethane-modified coatings

DIN 3476-2:2018-08 Valves - Requirements and tests - Part 2: Protection against corrosion by duromer thick coating

DIN EN ISO 21809-3:2020-09 Petroleum and natural gas industries - External coatings for buried or submerged pipelines used in pipeline transportation systems - Part 3: Field joint coatings (ISO 21809-3:2016 + Amd 1:2020); English version EN ISO 21809-3:2016 + A1:2020

AWWA C222-18 Polyurethane Coatings and Linings for Steel Water Pipe and Fittings

Product data

The following data has been obtained at +23°C unless otherwise stated:

| | |
|------------------------|--------------|
| Type | polyurethane |
| Component A (Base) | polyol |
| Component B (Hardener) | isocyanate |

| | |
|----------------|---------|
| Physical state | |
| Component A | viscous |
| Component B | liquid |

| | |
|------------------|------------|
| Viscosity | |
| Comp. A at 25 °C | 1600 mPa*s |
| Comp. B at 25 °C | 1400 mPa*s |

| | |
|-----------------|------|
| Density (g/cm³) | |
| Comp. A | 1,20 |
| Comp. B | 1,20 |
| Comp. A + B | 1,20 |

| | |
|------------------------------|---------|
| Mixing ratio Comp A : Comp B | |
| Gravimetric | 50:50 |
| Volumetric | 1,0:1,0 |

Coating properties

Recommended dry film thickness ≥1500 µm

Actual required DFT may vary in certain applications, please contact us for technical clarification.

| | |
|---|-----------------|
| Service temperature | -20 °C to 95 °C |
| Short term temperature load without temperature gradient to the substrate | 110 °C |
| Minimum surface temperature | 5 °C |
| min. +3°C above dew point | |
| Processing temperature | |
| Component A | 25 °C to 45 °C |
| Component B | 25 °C to 45 °C |
| Max. rel air humidity | 80 % |
| Potlife at 35 °C | 25 sec |
| Potlife at 45 °C | 15 sec |

Release 5/19/2021

TIB Chemicals AG | Mülheimer Straße 16 -22 | 68219 Mannheim | Postfach 81 02 20 | 68202 Mannheim
Telefon +49 621 8901-812 | Fax +49 621 8901-902 | info.protegol@tib-chemicals.com | www.tib-chemicals.com

*This information is given to the best of our knowledge but without obligation. We are not liable for any wrong advice or any advice we may have failed to give.
This data sheet becomes invalid as soon as a new edition has been published. Please contact us for latest.*





TIB CHEMICALS

PROTEGOL® UR Coating 32-60 PT Cartridge solvent-free two-component polyurethane coating

Coating properties according to DIN EN 10290:2002 (typical values)

| | |
|---|---------------------------------------|
| Hardness Shore D (±5) according DIN EN ISO 868 (1 sec.) | 77 |
| Hardness Shore D (±5) according ISO 868 (15 sec.) | 73 |
| Impact resistance (max. impact energy) | 12 J/mm |
| Adhesion to steel | 23 MPa |
| Cathodic disbondment after 28 d at 23 °C | 1,70 mm |
| Specific electrical insulation resistance after 100 d at 23 °C | 4,6 * 10 ⁸ Ωm ² |
| Thermal aging, adhesion (100 d) | 26 MPa (100 °C) |
| Flexural strength | pass |
| Elongation at break | 16 % |

Coating properties according to AWWA (typical values)

| | |
|--|----------------|
| Hardness Shore D according ASTM D4541 | >65 |
| Cath. disbondment (30 d, 23°C, ASTM G8) | 7,34 mm |
| Flexibility (ASTM D522) | pass |
| Abrasion resistance (ASTM D4060) | 6 mg (500 r) |
| Abrasion resistance (ASTM D4060) | 15 mg (1000 r) |
| Impact resistance (ASTM G14) | 9,2 J |
| Dielectric strength (ASTM D149) | 31 kV |
| Water absorption (ASTM D570) | pass |
| Chemical resistance (ASTM D543) | pass |

Coating properties according to ISO 21809-3 (typical values)

| | |
|--|--|
| Impact resistance (Annex D) | 10 J/mm (23 °C) |
| Impact resistance (Annex D) | 6 J/mm (-5 °C) |
| Indentation resistance | 17% (80°C) |
| Indentation resistance | 19% (95 °C) |
| Cathodic disbondment (28 d) | 0,6 mm (23 °C) |
| Cathodic disbondment (28 d) | 5,9 mm (80°C) |
| Cathodic disbondment (28 d) | 17,5 mm (95 °C) |
| Hardness Shore D (±5) | 71 (15 sec) |
| Adhesion (ISO 4624, 23°C) | |
| Adhesion to pipe surface | >12,9 MPa |
| Adhesion to plant coatings | 11,3 MPa (3 LPE) |
| Adhesion after 28-d hot-water immersion at T _{max} (Annex I plus ISO 4624) | |
| Adhesion to pipe surface | 11,1 MPa (95 °C) |
| Adhesion to plant coatings | 9,6 MPa (3 LPE, 95 °C) |
| Specific electrical insulation resistance | 1,2 * 10 ¹⁰ Ωm ² |

Coating properties according to DIN 3476-2 (typical values)

| | |
|---|---------------------------------------|
| Resistance to thermal aging | pass (in air) |
| Resistance to thermal aging | 7 MPa (in water) |
| Spec. el. insulation resistance (23 °C) | 4 * 10 ¹⁰ Ωm ² |
| Spec. el. insulation resistance (70 °C) | 1,2 * 10 ⁵ Ωm ² |
| Elongation at break | 17 % |
| Adhesion (DIN EN ISO 4624) | 14 MPa |
| Cathodic disbondment | 1 mm (28 d, 23 °C) |
| Cathodic disbondment | 4 mm (2 d, 80 °C) |
| Coating properties according to other standards (typical values) | |
| Adhesion to FBE (internal test) | 22,7 MPa |
| Adhesion to FBE (28-day hot water soak; internal test) | 5,9 MPa (95 °C) |
| Cleaning agent | Solvent B, G |
| Repair material | PROTEGOL® PU Repair |
| PROTEGOL® UR Coating 32-60 (Cartridge) | |

Colours

RAL 9011 - Graphite black

Coverage, theoretical

Approx. 1,20 kg/m² at 1.000 µm DFT and not considering excess consumption.

Packing

| | |
|---------------------|-------------|
| Component A | Component B |
| 2K ecopaCC™ 0,33 kg | 0,33 kg |

Shipping and Storage Regulations, Application, Health and Safety

Storage:

In a cool and dry place shelf life is approx. 6 months in tightly closed original packs.

Maintenance of tools:

Immediately after use, all tools should be cleaned with Solvent B, G.

Solvent-free: The product does not contain any volatile organic ingredients (VOC) according to regulation 814.018 (VOCV) of Switzerland (Verordnung 814.018 über die Lenkungsabgabe auf flüchtigen organischen Verbindungen (VOCV))

Refer to our general work instructions for PROTEGOL® Coatings.

Refer to our safety data sheets prior to use.

Carefully read and follow all safety instructions on labels and packaging. Handle and store material

Release 5/19/2021





TIBCHEMICALS

PROTEGOL® UR Coating 32-60 PT Cartridge solvent-free two-component polyurethane coating

with care in accordance with the safety data sheets. Follow and observe any applicable local or national laws and regulations.

Regulations regarding explosion protection with regard to the construction and equipment of facilities (machines) can be found, among other sources, in the corresponding harmonized European standard (DIN EN 16985 "Spray booths for organic coating material - Safety requirements" (former DIN EN 12215 and DIN EN 13355)); furthermore, local laws and/or regulations must be observed.

Contact us to make sure you have the latest version of safety data sheet, technical data sheet and work instruction at hand.

Important Notice:

The information on the properties of the product components represent average values that correspond to our defined quality specifications. Our products are manufactured and controlled in accordance with strict quality management and quality control requirements, which are subject to ISO 9001: 2015 certification. Information on the default values defined by us are given in the acceptance test certificates. The product properties marked as "typical values" are taken from the test reports of external institutes, unless otherwise stated. The information in our documents in printed or electronic form is based on our knowledge and experience. Due to numerous possible influences in the processing and application of our products, our statements do not release the processor from the responsibility to test the goods for their own procedures and purposes; Legally binding assurance of certain properties or suitability for a specific application cannot be derived from our information. It is the responsibility of the recipient of our products to observe any property rights as well as existing laws and regulations.

Release 5/19/2021

