



TIBCHEMICALS

PROTEGOL® UR Coating 32-55 TD

Solvent-free, two-component polyurethane coating

Description

PROTEGOL® UR Coating 32-55 TD is a solvent-free two-component polyurethane coating compound. It is certified acc. to DIN EN 10290 „Steel tubes and fittings for on- and offshore pipelines - External liquid applied polyurethane and polyurethane modified coatings“, type 3, for a temperature range from -20 °C to 80 °C.

After prior mixing, PROTEGOL® UR 32-55 TD is applied by one-component airless spraying machine or brushing. It is used whenever a prolonged pot life and a lower viscosity than the one of PROTEGOL® UR 32-45/55 L are required.

Uses

- Supplementary product for PROTEGOL® UR 32-55 for brush and one-component spray application
- Repair of defective areas and mechanical damages
- Pre-brushing of parts with complicated design
- Coating of welded field joints of factory coated steel pipes
- Coating of valves and fittings

Benefits

- Good corrosion protection
- Abrasion resistant
- Impact resistant
- High chemical resistance
- Accomplishes DIN EN 10290

Product Data

The following data have been determined at 20 °C unless otherwise stated:

Type	Internally plasticized two-component material
Base	PUR
Solvents	None
Volume solids	100 %

Consistency	
Comp. A	Liquid
Comp. B	Liquid
Density	
Comp. A	1.57 g/cm ³
Comp. B	1.24 g/cm ³
Comp. A + B	1.49 g/cm ³
Mixing ratio comp. A : B	3 : 1 parts by weight

Application method brush

Max. coating thickness per operation	400 µm on vertical surface
Application temperature	Substrate 10 °C to 30 °C Material 15 °C to 25 °C

Pot life	15 °C	25 min
	20 °C	20 min
	30 °C	15 min

Application method airless spray

Minimum thickness	500 µm
Max. coating thickness per operation	500 µm on vertical surface

Equipment	High efficient airless pump with delivery rate of about 10 l/min and possible pressure ratio of about 66:1, hose diameter 3/8 inch
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Spray tip nozzle orifice	0.021'' to 0.026''
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Spray pressure	200 to 240 bar
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Pot life	20 min
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Waiting period between applications	Depending on temperature between 2 and 22 hours (see page 3)
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Curing time	Touch dry after approx. 6 hours Stackable after approx. 16 hours
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Full mechanical and chemical load	After one week
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Service temperature limits without simultaneous mechanical stress	-20°C to 80°C, up to 110°C for short-term periods (without temperature gradient to the substrate)
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Shore D acc. to DIN 53 505	70 ± 5 *
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Cleaning material	Solvent B or G
Adhesion test (Pull-off method) acc. to DIN EN 10290	At 23°C; 15 MPa
Cathodic disbondment acc. to DIN EN 10290	After 28d, at 23°C; 4.7 mm
Specific electrical insulation resistance, DIN EN 10290	After 100 d, at 23°C; 1.3 + 10 ⁺¹⁰ Ωm ²
Thermal aging (adhesion test) acc. to DIN EN 10290	After 100d at 100°C; 6 N/mm ²
Flexibility acc. to DIN EN 10290	At 23°C, fulfils requirements
Elongation acc. to DIN EN 10290	11%
Max. impact energy acc. to DIN EN 10290	At 23 °C; 8 J/mm

* After the coating has fully reacted and cured.

Colours

Black; others upon request.

Coverage

Approx. 1.5 kg / mm dft. / m² (theoretical value)

Packaging

- 13.34 kg twin pack
- 2.0 kg twin packs, 10 x 2 kg per carton

Storage

In a cool and dry place, approx. 24 month in tightly closed original packs.

Before material withdrawal, component A has to be mixed thoroughly.

When stored below 0°C component B may partly crystallize. In this case warm up to approx. 25 °C in an oven or by oil bath in order to solve the crystals. Do not use water bath, as component B is sensitive to moisture! Component B with crystals should not be used since the pres-

ence of crystals interferes in the curing process.

Storage and Transport Data

PROTEGOL® UR 32-55 TD

	Flash point	RID/ADR	ICAO/IATA-DGR
Comp. A	> 100°C		
Comp. B	> 220°C		
Solvent B	approx. 28°C	cl. 3/fig. 31 c	cl. 3/ UN 1263/ III
Solvent G	approx. 7°C	cl. 3/fig. 5 b	cl. 3/UN 1263/III

Application

Substrate

The steel surfaces to be coated must be dry, clean and free from dust, have a good key and be free from all matter acting as release agents, e.g. oil, grease, old paint. To obtain the necessary conditions, suitable substrate preparation methods such as blasting must be used.

Steel surfaces must be abrasive blast clean to near white, degree of cleanliness according to DIN EN ISO 12944-4 at least Sa 2½. The first coating must be applied immediately after blast cleaning. Later application of the first coat is only permissible if the original degree of cleanliness has been maintained.

The constructional design of steel and iron shall comply with DIN EN 14879, part 1. The surface profile shall range between 50 and 70 µm. The blasting material shall be angled-shot.

Ensure that the substrate temperature is min. 3 °C above the dew point to avoid condensation. The dew point can be determined with a suitable dew point mirror.

Mixing

Both components should be stored between 20 and 25 °C, which will make application easier at lower temperatures, whereas at high summer temperatures the drums shall be stored in a cool place.

Thoroughly mix both components which are supplied in containers matched according to their mixing ratio at the indicated mixing ratio with a slow-speed stirrer, e.g. a drill

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fitted with a stirring paddle running at approx. 400 rpm, or manually. Care should be taken to mix in the material sticking to the walls of the container. Therefore, transfer the mixture to a larger, clean vessel, all material sticking to the walls of the original vessel being scraped off with a palette knife and being added with renewed stirring.

Application by brush

Once PROTEGOL® UR Coating 32-55 TD is homogeneously mixed it may be applied by brush up to 0.4 mm dry film thickness per operation.

In order to repair defective areas in a PROTEGOL® UR 32-55 coating, the repair area shall be roughened. For the coating of complicatedly shaped components PROTEGOL® UR 32-55 TD is applied by brush or trowel in several consecutive layers until the dry film thickness of the factory-applied coating has been reached.

Application by airless spray

Put the pump immediately after mixing directly into the mixing vessel and start spray application. Take care that after every 15 to 20 minutes this vessel has to be changed to avoid that reacted material flows into the pump. After every interruption, the pump, the hose and the pistol have to be cleaned with Solvent B or G.

To ensure a good spray result the material in the spray gun has to have a minimum temperature of 20 °C. That is why we recommend the usage of a flow heater on the high pressure side of the airless pump.

Holiday tests can be carried out after approx. 16 hours, and according to DIN EN 10290, with a voltage of 8 V/μm of nominal thickness, max. 20 kV.

The high voltage holiday test can only be carried out if the material has been applied without any air trapping. We therefore advise to consider this already during mixing.

Relative humidity during application of the coating must be < 80 %. In case of higher relative humidity, ask for our technical advice.

Waiting periods

The waiting period between applications depends on temperature and coating thickness. The previous coating should still be slightly tacky. The seams of cured coating areas shall be roughened to provide good adhesion. The surface must be dry and free of dust and grease. Subsequent coatings should be applied within:

	earliest	latest
At 10°C	22 hours	48 hours
At 20°C	6 hours	36 hours
At 30°C	4 hours	24 hours
At 40°C	2 hours	16 hours

Maintenance of tools

Immediately after use all instruments should be cleaned with Solvent B or G.

Health and Safety

Although PROTEGOL® UR 32-55 TD is solvent-free, it may, if processed at elevated temperatures, develop vapours and aerosols, which may cause irritation to the respiratory tract and the skin. It must be ensured by suitable measures, such as continuous ventilation, mechanical extraction or respiratory protection that such vapours and atomized spray are not inhaled. Therefore, we recommend wearing filter or fresh air masks.

In closed spaces, assure proper and adequate ventilation as well as breathing protection. Hazard warnings and security instructions on the recipients must be followed.

The unprotected skin should not be allowed to come in contact neither with component A nor B. If any of the material has accidentally splashed onto the skin, the affected area should immediately be washed thoroughly with warm soapy water or better with warm non-alkaline cleaners (e.g. Lutrol E 400, BASF). Clean again thoroughly with soap and water.

When using PROTEGOL® UR 32-55 TD all safety precautions applicable to handling polyurethane resins and their hardeners must be observed. They are listed in the

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“Merkblatt für den Umgang mit Isozyanaten” (Instructions for handling isocyanates), ed. October 1987, which is available on request. In addition, the health and safety precautions mentioned on the material safety data sheets, as well as any regulations valid in the respective country should be observed.

According to the regulations on dangerous substances, component B of PROTEGOL® UR 32-55 TD as well as Solvents B and G are liable to danger identification

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