

BUSINESS UNIT COATING SYSTEMS



TIBCHEMICALS

PROTEGOL[®] Coating Systems

We Protect Assets



Corrosion
Protection Systems

Thermal Curing
Systems

Domestic Pipe
Sealings

Other Coating
Systems

PROTEGOL® Coating Systems

We Protect Assets

PROTEGOL® Coating Systems is a brand of TIB Chemicals AG.

Since the 1960's we have been dedicated to delivering innovative coatings and linings. Our coatings protect metallic and non-metallic surfaces from corrosion as well as from mechanical and chemical attack. Yet, by doing so we do far more: We protect assets!

With products available for a range of oil, gas and water transmission lines and industrial installations such as tanks, valves and fittings, each PROTEGOL® product has been developed to provide added value through versatility, long service life, ease of application and consistent quality. Whether your project is new construction or maintenance, PROTEGOL® provides maximum internal and external protection against corrosion, abrasion and chemical attack for buried or submerged installations.

Our innovative products are backed up by the expertise of our customer service team who will assess your precise needs, assist in specifying the optimum coatings solution and provide any further advice and support. We supply premium products that are tested, approved and certified to relevant industry standards. This continuous drive for product excellence ensures that we provide state-of-the-art coating solutions which will not only meet but exceed your requirements.

PROTEGOL® Coating Systems

- High protection against corrosion, mechanical and chemical attack
- One-coat solution direct to steel
- VOC free, 100 % solids
- Fast-curing
- Excellent adhesion to steel and FBE
- Good adhesion to PE/PP
- Compatibility to cathodic protection even at elevated temperatures
- Good stability and mechanical strength during pipe handling and laying

Find more information about our products on:
www.tib-chemicals.com



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Focus on PROTEGOL®

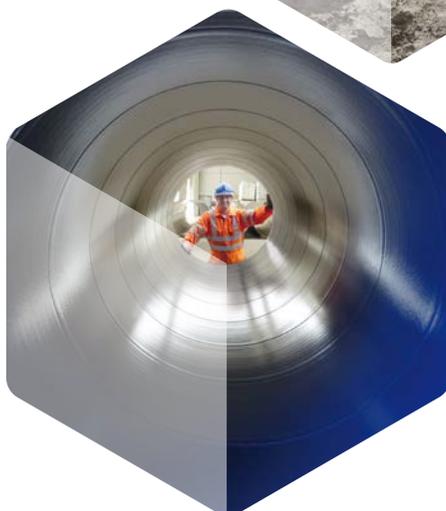
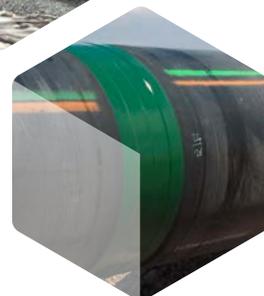


All coatings in our PROTEGOL® range – except for the specialized friction-reducing Flowcoat 08 – are solvent free to reduce explosion risk and fire hazard and improve safety at work.



Although natural gas is not a very corrosive medium. Gas pipelines are sometimes coated internally during manufacturing and installation.

PROTEGOL® Flowcoat thin films are designed to reduce friction, hence facilitating smooth and efficient gas flow.



Pipelines deteriorate at different rates during their planned lifecycle, depending on specific conditions. During the last years, an increasing number of aged pipelines have been excavated for inspection and repair.

Two-component, liquid-applied polyurethane coatings such as PROTEGOL® have been found the most versatile and reliable solution, combining optimum long-term corrosion protection with an appropriate repair system.

Coatings for Oil & Gas Structures

Systems for Oil & Gas Projects	Features
PROTEGOL® UR 32-45 R systems	DIN EN 10290
PROTEGOL® UR 32-55 R systems	DIN EN 10290
PROTEGOL® UR 32-55 PN	ISO 21809-3
PROTEGOL® UR 32-55 TD	DIN EN 10290, brush and spray applicable
PROTEGOL® UR 32-60 systems	DIN EN 10290, 1:1 mixing ratio, instant-set
PROTEGOL® UR 32-62	DIN EN 10290, 1:1 polyurea, instant-set
PROTEGOL® UR 32-63	1:1 polyurea hybrid, instant-set, extreme elongation
PROTEGOL® UR 32-64	1:1 polyurea, instant-set, extreme elongation
PROTEGOL® TB 55 AS	Conductive, media resistance IB1, IB2, IB3 and IB4b
PROTEGOL® EP 32-89 S	DIN EN 10289
PROTEGOL® EP Flowcoat 06 LT	DIN EN 10301, ISO 15741, friction reducing, water-based
PROTEGOL® EP Flowcoat 08	DIN EN 10301, ISO 15741, API RP5 L2, friction reducing, solvent-based

Coatings for Water Structures

Systems for Water Projects	Features
PROTEGOL® UR 32-45	DIN EN 10290, UBA guideline, DVGW W270, potable water
PROTEGOL® UR 32-47	AWWA C222-08, EU 10/2011, potable water
PROTEGOL® UR 32-49	DIN EN 15189: 2006, potable water
PROTEGOL® EP 32-97	AWWA C210-15, potable water
PROTEGOL® PU Repair	1:1 manual repair, for small surfaces, DVGW W270

Cold-Applied Systems

Cartridges	Features
PROTEGOL® UR 32-45/55 L	Pneumatic application device, Flex Hose Brush applied
PROTEGOL® UR 32-45 R	DIN EN 10290, air-assisted spray
PROTEGOL® UR 32-60	DIN EN 10290, 1:1 air-assisted spray
PROTEGOL® PU Repair	1:1 manual repair, for small surfaces, DVGW W270, ÖNORM B 5014/1
PROTEGOL® EP 32-89 S	DIN EN 10289, air-assisted spray, Flex Hose Brush applied

Frequently Asked Questions about PROTEGOL® Coatings



Q: How is PROTEGOL® normally used?



A: PROTEGOL® is normally used on buried or submerged pipes for oil, gas, water and slurry, tanks, valves and fittings, both on the external and internal face of the structure. It is used also on new construction and rehabilitation projects alike, both applied in factory and field.



Q: How much coating thickness is usually applied?



A: The coating thickness varies depending on the project specification, the specified and selected product, norms and standards and specific requirements. It may start as low as with 60 µm for PROTEGOL® Flowcoats. There is virtually no upper limit, for example if the project asks for anti-abrasive features. For solvent free PROTEGOL® coatings it implies that the wet film thickness equals the final dry film thickness.



Q: What is the biggest pipe that can be coated with PROTEGOL®?



A: There is really no upper limit. PROTEGOL® has already been applied to 126" OD pipe. Our systems guarantee tailored solutions across a variety of applications, from small, simple components to large and complex geometries.



Q: Which equipment is required to work with PROTEGOL®?



A: PROTEGOL® Coatings are either spray applied by specialized airless hot spray equipment with the proper mixing proportion or air-assisted pneumatic manual dischargers. Several formulations can be processed manually by brush, spatula or roller. Some of these products can be applied with cartridge systems.



Q: How long has PROTEGOL® been used?



A: The first PROTEGOL®-coated segment was put into service in the 1960's. The first major pipe rehabilitation project was undertaken in Texas/US in 1989. On this occasion, TIB Chemicals supported CRC-Evans Pipeline International in developing the first spray ring for line coating, enabling rehabilitative coating over the ditch of the entire line without prior dismantling.

Frequently Asked Questions about PROTEGOL® Coatings

 **Q: What is PROTEGOL® made of?**

 **A:** Most of our PROTEGOL® Coatings are based on aromatic polyurethanes, some are based on epoxy resins and some more recent developments include polyurea and polyurea hybrids.

 **Q: Where are PROTEGOL® production facilities located?**

 **A:** PROTEGOL® is made in Germany at TIB Chemicals' headquarters in Mannheim. Due to the high demand, production facilities were set up abroad.

 **Q: What are the surface requirements?**

 **A:** Good surface preparation is essential as it profoundly affects the performance of a coating. Poor surface preparation invariably develops a poor adhesive bond between the coating and the substrate and causes premature coating failure.

The surface preparation through abrasive blasting performed by high-pressure special machines allows cleaning the surface thoroughly from deposits and residues to ensure an optimal coating adhesion. The result must be a near white Sa 2 ½, an angular anchor pattern and a profile according to DIN EN 10290. The constructional shaping has to conform to DIN EN 14879, part 1.

Adjacent or underlying coatings as well as small touch up areas may be prepared divergently.

 **Q: How long can PROTEGOL® be expected to last in service?**

 **A:** There are PROTEGOL®-coated structures in service for more than 40 years, and thousands of valves have been in use that long.

 **Q: How to touch up any damages?**

 **A:** Touch up is easily done with the same spray or manual product thus obtaining a final homogeneous coat. Additionally we provide special touch up materials.

Norms and Standards

DIN EN 10289:2004-08: Steel tubes and fittings for onshore and offshore pipelines – External liquid applied epoxy and epoxy-modified coatings

DIN EN 10290:2004-08: Steel tubes and fittings for onshore and offshore pipelines – External liquid applied polyurethane and polyurethane-modified coatings

DIN EN 10301:2004-01: Steel tubes and fittings for on and offshore pipelines – Internal coating for the reduction of friction for conveyance of non-corrosive gas

DIN EN 15189:2007-02: Ductile iron pipes, fittings and accessories – External polyurethane coating for pipes – Requirements and test methods

ISO 21809-3:2016: Petroleum and natural gas industries – External coatings for buried or submerged pipelines used in pipeline transportation systems – Part 3: Field joint coatings; Part 11: Coating repairs on rehabilitation

AWWA C210-15: Liquid-Epoxy Coatings and Linings for Steel Water Pipe and Fittings

AWWA C222-08: Polyurethane Coatings for the Interior and Exterior of Steel Water Pipe and Fittings

EU 10/2011: Commission Regulation on plastic materials and articles intended to come into contact with food

DVGW Worksheet W270: 2007-11: Microbial Enhancement on Materials to Come into Contact with Drinking Water – Testing and Assessment

UBA Coating Guideline – 2016: Guideline for Hygienic Assessment of Organic Coatings in Contact with Drinking Water

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