

ANTICOR[®]

CORROSION OF STEEL

PROTECTION MATERIALS & TECHNOLOGIES

2024



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Dear Partner,

I am pleased to present to you this catalog in the new version, in which you can find not only technologies and products for anti-corrosion protection, but also application instructions, devices and tools necessary for the performance and supervision of insulation works.

The new edition of the catalog coincided with the 30th anniversary of the founding of the ANTICOR company. It is a special time and occasion when I can personally thank you for decades of fruitful cooperation, your opinions, proposals for changes and innovations. That is why today we can enjoy proven technologies and products of the highest quality, thanks to which we achieve reliability and safety during the operation of infrastructure and media transmission.

However, first of all, I would like to thank you for your trust, partnership relations and long-term cooperation, often lasting 30 years.

Wishing you more years of satisfaction with our joint development, we remain at your disposal in the selection of technologies, materials as well as technical consulting.

Yours faithfully,

Tomasz Bochenek

President of the Board

Requirements for passive insulation materials

The requirements for organic coatings for corrosion protection of underground or underwater steel pipelines are specified in the EN 12068 standard. Coating standard are divided into classes which comply the resistance to mechanical damage, operating temperature, and special conditions of coating application.

The belonging of a coating to a given class of mechanical strength depends on the measurement results from the following tests:

- Impact resistance.
- Indentation resistance pressure.
- Specific electrical insulation resistance.
- Cathodic disbondment resistance.
- Peel strength layer to layer / inner to inner + outer to inner / outer to outer.
- Peel strength to pipe surface / to factory coating.
- Lap shear strength.

Norma EN 12068

Cathodic protection - External organic coatings for the corrosion protection of buried or immersed steel pipelines used in conjunction with cathodic protection - Tapes and shrinkable materials.

In the above-mentioned the standard specifies requirements for organic coatings based on tapes or shrink materials to protect underground pipelines or pipelines immersed in water against corrosion working in conjunction with cathodic protection measures. The coatings are classified depending on the functional requirements.

The products and technologies offered by ANTICOR for securing and protecting steel pipelines and fittings meet the requirements and have been positively assessed for compliance with EN 12068 (DIN 30672). The assessments are confirmed by tests, appropriate checks of the properties of the products in the required range by testing documentation, physical inspection, laboratory tests based on appropriate samples, and thus the approval of materials and technologies for their use in accordance with the law by European accredited bodies.

The European Commission, EFTA and national competent authorities consider that accreditation confirms the reliability of conformity assessment bodies and is therefore a means of building trust in them on the part of users. Accreditation thus contributes to strengthening the mutual trust of the Member States in the competence of individuals conformity assessors and, consequently, to the attestations of conformity they issue. Accreditation guarantees that the bodies involved in conformity assessment activities they possess the required competences and, therefore, it is essential to achieve a more equal level of service provided by these units.

Classification of coatings depending on the strength class according to EN 12068:

- **Class A** – low mechanical strength (plastic insulations for application on fittings).
- **Class B** – medium mechanical strength (universal insulations intended for low and medium pressure gas pipelines).
- **Class C** – high mechanical strength (insulations of high resistance intended for high pressure transit gas pipelines).

Classification of coatings depending on the temperature class of continuous operation according to EN 12068:

- **Class 30** – coatings for which thermal requirements have not been specified should be suitable for use at least in the maximum constant working temperature T_{max} up to 30°C.
- **Class 50** – coatings of this class should be suitable for use at a maximum constant working temperature T_{max} up to 50°C.
- **HT Class** – coatings of this class should be suitable for use at a maximum constant working temperature, T_{max} above 50°C (increments of 10°C).

The table below shows the requirements for insulation coatings by class, a complete table can be found in EN 12068.

Coating class	Working temperature	Impact resistance [J]	Indentation resistance pressure [N/mm ²]	Adhesion to factory coating [N/mm]	Peel strength [N/mm ²]*
A	30/50/HT	≥ 4	0.1	≥ 0.2	≥ 0.05
B		≥ 8	1.0	≥ 0.2	≥ 0.05
C		≥ 15	10.0	≥ 0.4	≥ 0.05

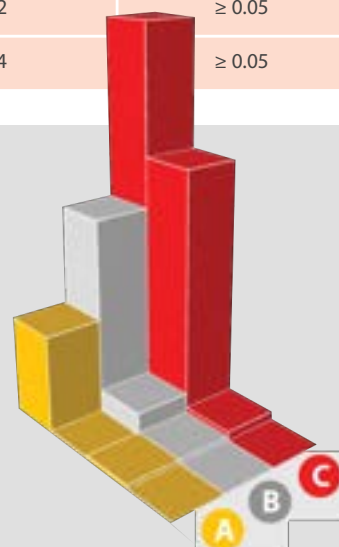
*Does not apply to tape coatings with a layer of petroleum mass in class A.

Requirements for modern anti-corrosion coatings

Regardless of the type of coating and the coating application technology, appropriate values must be obtained, as follows:

- Adhesion to the protected surface, adhesion to the factory coating and between individual layers, also on tabs (if any).
- Shear resistance (and the associated sliding off the factory coating).
- Indentation and impact resistance.
- Water absorption and vapor permeability.
- Resistance to bacteria causing microbial corrosion.
- Unit resistance.
- Cathodic disbondment resistance.

The last two of the above properties play an essential role in the proper interaction of the coating with cathodic protection.



Corrosion protection coatings

System ANTICORWrap, System Polyken

PE tape coatings in B30, B50, C30 and C50 classes meet EN 12068 and are designed for anticorrosion coating of:

- Steel pipes.
- Welded joints.
- Pipe fittings, etc.



Properties of tapes

Properties	Unit	ANTICORWrap 740-32	ANTICORWrap 750-20	ANTICORWrap 755-20	ANTICORWrap 762-60	POLYKEN 930-35	POLYKEN 942-30	POLYKEN 955-28
Total thickness	mm	0.85	0.50	0.54	1.60	0.89	0.76	0.71
PE film thickness	mm	0.30	0.20	0.30	0.10	0.17	0.17	0.36
Adhesive thickness	mm	0.55	0.30	0.24	1.50	0.72	0.59	0.35
Elongation	%	> 750	> 750	> 400	> 70	> 340	> 500	> 500
Roll width*	mm	50, 100	50, 100	50, 100	50, 100	51, 102	50, 100	50, 100
Roll length	m	15	30	30	10	15.25	15; 30	15; 30
Colour		black	black, yellow	black, yellow	black	yellow	black	black

* Other size on request

Coating systems

Coating thickness [mm]	Coating class	System type*	Primer	Filling mastic	Basic anticorrosion protection layer	Mechanical protection layer
2.16	B30	1T	ANTICORWrap Primer 727	Butylmastik	ANTICORWrap 755-20, 2x50%	
3.20	B30	1T	ANTICORWrap Primer 729	Butylmastik	ANTICORWrap 762-60, 1x50%	
2.67	B30	1T	POLYKEN 1027	Butylmastik	POLYKEN 930-35, 1x66%	
2.55	B50	1T	ANTICORWrap Primer 720	Butylmastik	ANTICORWrap 740-32, 1x66%	
6.40	C30	1T	ANTICORWrap Primer 729	Butylmastik	ANTICORWrap 762-60, 2x50%	
3.40	C50	1T	ANTICORWrap Primer 720	Butylmastik	ANTICORWrap 740-32, 2x50%	
2.70	C50	2T	ANTICORWrap Primer 720	Butylmastik	ANTICORWrap 740-32, 1x50%	ANTICORWrap 750-20, 1x50%
2.90	C50	2T	POLYKEN 1027	Butylmastik	POLYKEN 942-30, 1x50%	POLYKEN 955-28, 1x50%

* 1T - a single-tape system ("monotape"), * 2T - a double-tape system.

The coatings listed above meet the requirements of EN 12068.

Corrosion protection coatings

Technology of surface preparation for the application of a tape coating

Preparation of the steel surface

Remove rust, welding contaminations, dust, oil, grease, moisture, and other contaminants from the pipe surface. Prepare the surface so as to achieve the Sa2½ standard of cleanliness according to ISO 8501. Remove remainders of abrasive materials and dust caused by abrasive blasting. Use a fat-free solvent to degrease the surface (isopropyl alcohol, acetone, denatured alcohol, gasoline, etc.). Note: these are flammable materials. To remove moisture, the surface may be slightly heated with a burner or blowpipe flame but the temperature of the pipe before the application of a primer may not exceed 40°C. In exceptional circumstances, surface may be prepared to the St 3 standard with the use of special powered rotating brushes with hard wire bristles arranged in strands.

Preparation of the surface of an existing factory-applied coating

Clean the existing protective coating, roughen the surface by gently applying a stream of abrasive material or with the use of abrasive cloth (grit 40) and degrease at a length of ca. 200 mm beyond its edges. Remove any remainders of abrasive materials. The edges of adjacent insulation should be prepared to 15° bevels or smooth the edges using BUTYLMASTIK after primer application.

Application of a primer

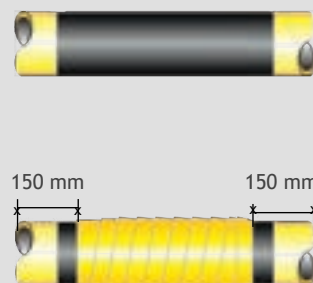
Apply a primer on the surface, including the cleaned areas of former insulation. The primer should be carefully mixed before application. The temperature of the surface should be by at least 3°C higher than the dew point. Leave the primer layer until it reaches the dust dryness condition (the layer is viscous but does not soil fingers when touched). The time needed depends on the temperature and ambient humidity values. Always use primers and tapes supplied by the same vendor.

Note:

Primer cannot be diluted. The coating should be applied as soon as possible after the primer is dust free condition. Do not expose the applied coating to prolonged sunlight.

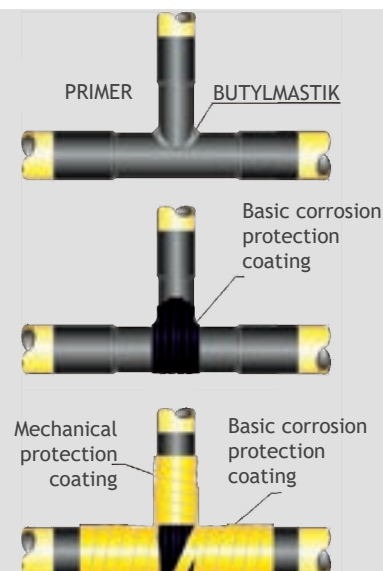
Insulating a pipeline or steel pipe

1. Prepare the surface for the application of the tape coating in accordance with the technology.
2. Apply a layer of basic anti-corrosion protection by winding the tape in a spiral, manually or with a hand wrapping machine, according to the requirements of a given insulation class (table: Coating systems page 5), with the overlap approx. 100 mm over existing insulation. The minimum overlap should not be less than 50%. In case of pipe insulation, leave the ends free from insulation for a length of approx. 200 mm. Apply the tape under tension preliminary. With the correct tension, the belt width is reduced by approximately 1 to 2%. Control the tape tension. Greater force is required to tension the tape at low temperatures.
3. Create a mechanical protection layer, extending approx. 150 mm over the existing pipe insulation. Overlaps should not overlap with the main protection layer. In case of insulation pipes, leave the ends free 150 mm long insulation.
4. Check the tightness of the coating with a spark flaw detector (in accordance with the instructions of the compact flaw detector). Test voltage: 5 kV / mm of coating thickness, but not more than 15 kV - according to EN 12068.



Insulating tees and angular connections

1. Prepare the surface for the application of the tape coating in accordance with the technology.
2. Soften the angular connection of the pipe and the weld face with BUTYLMASTIK.
3. Make subsidiary insulation in the area of the angular connection of the pipes with strips of tape with slight tension.
4. Apply a layer of basic anti-corrosion protection by winding the tape in a spiral, manually or with a hand wrapping machine, according to the requirements of a given insulation class (table: Coating systems page 5), with the overlap approx. 100 mm over existing insulation. The minimum overlap should not be less than 50%. Apply the tape under tension preliminary. With the correct tension, the belt width is reduced by approximately 1 to 2%. Control the tape tension. Greater force is required to tension the tape at low temperatures.
5. Create a mechanical protection layer, extending approx. 150 mm over the existing pipe insulation. Overlaps should not overlap with the main protection layer. In case of insulation pipes, leave the ends free 150 mm long insulation.
6. Check the tightness of the coating with a spark flaw detector (in accordance with the instructions of the compact flaw detector). Test voltage: 5 kV / mm of coating thickness, but not more than 15 kV - according to EN 12068.



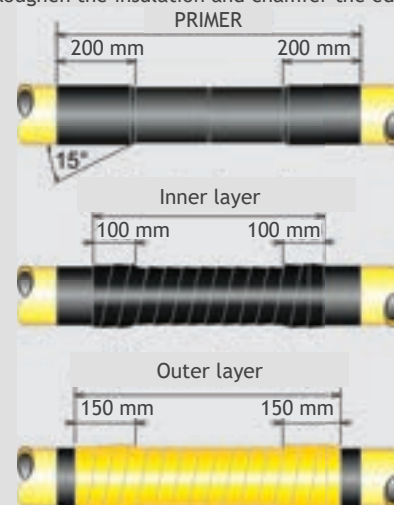
NOTE: materials for making insulation coatings should be conditioned at the temperature of 10 ÷ 25°C directly before use.

Corrosion protection coatings

Insulation the welded joint

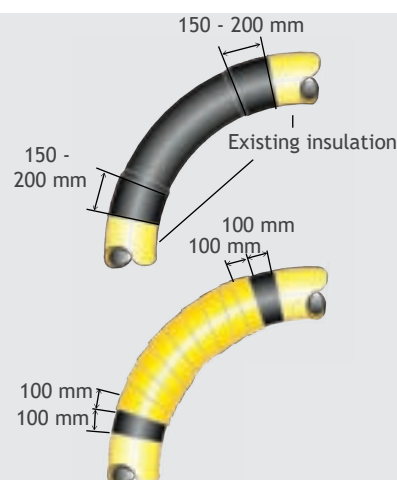
1. Prepare the surface for the application of the tape coating in accordance with the technology (page 6).
2. If the face of the joint is too convex, smooth the transition between the joint and the pipe with BUTYLMASTIK (after primer application).
3. Apply a layer of basic anti-corrosion protection by winding the tape in a spiral, manually or with a hand wrapping machine, according to the requirements of a given insulation class (table: Coating systems page 5), with the overlap approx. 100 mm over existing insulation. The minimum overlap should not be less than 50%. Apply the tape under tension preliminary. With the correct tension, the belt width is reduced by approximately 1 to 2%. Control the tape tension. Greater force is required to tension the tape at low temperatures.
4. Create a mechanical protection layer, extending approx. 150 mm over the existing pipe insulation. Overlaps should not overlap with the main protection layer.
5. Check the tightness of the coating with a spark flaw detector (in accordance with the instructions of the compact flaw detector). Test voltage: 5 kV / mm of coating thickness, but not more than 15 kV - according to EN 12068.

Roughen the insulation and chamfer the edges



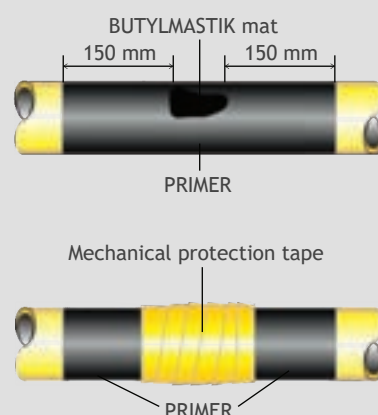
Insulation of bends and elbows

1. Prepare the surface for the application of the tape coating in accordance with the technology (page 6).
2. If the face of the joint is too convex, smooth the transition between the joint and the pipe with BUTYLMASTIK (after primer application).
3. Apply a layer of basic anti-corrosion protection by winding the tape in a spiral, manually or with a hand wrapping machine, according to the requirements of a given insulation class (table: Coating systems page 5), with the overlap approx. 100 mm over existing insulation. The minimum overlap should not be less than 50%. Apply the tape under tension preliminary. With the correct tension, the belt width is reduced by approximately 1 to 2%. Control the tape tension. Greater force is required to tension the tape at low temperatures.
4. Create a mechanical protection layer, extending approx. 150 mm over the existing pipe insulation. Overlaps should not overlap with the main protection layer.
5. Check the tightness of the coating with a spark flaw detector (in accordance with the instructions of the compact flaw detector). Test voltage: 5 kV / mm of coating thickness, but not more than 15 kV - according to EN 12068.



Repair of a damaged coating

1. Prepare the surface for the application of the tape coating in accordance with the technology (page 6).
2. Make a repair plaster/mat using BUTYLMASTIK of the size necessary to cover the damage area plus approx. 50 mm in each direction from the edges of the damage, keeping an allowance of up to 2 mm above the coating. The repair mat should be 2-3 mm thick. The plaster should be thicker than the damaged insulation. Apply the mat to the damaged area.
3. Apply a layer of basic anti-corrosion protection by winding the tape in a spiral, manually or with a hand wrapping machine, according to the requirements of a given insulation class (table: Coating systems page 5), with the overlap approx. 100 mm over existing insulation. The minimum overlap should not be less than 50%. Apply the tape under tension preliminary. With the correct tension, the belt width is reduced by approximately 1 to 2%. Control the tape tension. Greater force is required to tension the tape at low temperatures.
4. Check the tightness of the coating with a spark flaw detector (in accordance with the instructions of the compact flaw detector). Test voltage: 5 kV / mm of coating thickness, but not more than 15 kV - according to EN 12068.



NOTE: materials for making insulation coatings should be conditioned at the temperature of 10 ÷ 25°C directly before use.

Corrosion protection coatings

ANTICOR Plast System

The anticorrosion ANTICOR Plast system A30 class coating meets EN 12068 standard, used for fittings for pipelines, socket and flange connections, and underground metal installations (e.g. connections for underground earth electrodes), etc.

System components

- ANTICOR Plast 745 corrosion protection mastic.
- ANTICOR Plast 701-40 corrosion protection plastic tape.
- ANTICOR Plast 732-08 mechanical and corrosion protection tape.

ANTICOR Plast products contain corrosion inhibitors. They are resistant to moisture and fit perfectly to various shapes of surfaces. They provide minimal vapor permeability, they are also easy to use at low temperatures. The ANTICOR Plast system has a DVGW certificate.



Examples of the use of the ANTICOR Plast system

Insulating flange connections and steel pipes

The technology is based on anti-corrosive protection of flanges, fittings, connections and steel pipes with the ANTICOR Plast system in class A30.

Surface preparation

Remove dust and soil from the surface to be protected and degrease it with a non-grease solvent (e.g. gasoline).

Steel surfaces should be cleaned with a hand brush to the St2 degree of cleanliness in accordance with EN ISO 8501.

Application of the ANTICOR Plast coating

ANTICOR Plast 701-40 tape should be applied with the thick layer of the plastic compound to the protected surface (Fig. 1).

Securing the flange connection

1. Apply ANTICOR Plast 745 corrosion protection mastic on the surface of the flange connection, covering with the appropriate additional material of the heads and nuts of the bolts so that no air pockets are created after the tape is wound up. Put the mass also into the space between the flanges. In the case of insulation of tees, smooth the angular transitions of the pipes and weld seams (diagram of the tee insulation).
2. Wrap the ANTICOR Plast 701-40 tape with a slight pretension, apply the plastic mass (the thick layer) of the tape for the protected surface twice with an overlap of 50%, going approx. 50 mm over the existing insulation (Fig. 2).
3. Smooth the surface of the applied coating with the palm of your hand by applying pressure in order to adjust the coating to any unevenness of the secured element.
4. Apply the ANTICOR Plast 732-08 mechanical protection tape with a 50% overlap under tension to the entire surface of the previously created coating of ANTICOR Plast 701-40 tape. Tension of this tape should ensure that it adheres to the previously applied coating, without wrinkles and air pockets (Fig. 3).

Protection of the steel pipe

1. Wrap the ANTICOR Plast 701-40 tape with a slight pretension, apply the plastic mass (thick layer) of the tape for the protected surface twice with an overlap of 50%, going approx. 50 mm over the existing insulation with the first wrap and approx. 100 mm with the second (Fig. 4).
2. Smooth the surface of the applied coating with the palm of your hand by applying pressure in order to adjust the coating to any unevenness of the secured element.
3. Apply the ANTICOR Plast 732-08 mechanical protection tape with a 50% overlap under tension to the entire surface of the previously created coating of ANTICOR Plast 701-40 tape. Tension of this tape should ensure that it adheres to the previously applied coating, without wrinkling the air pockets (Fig. 4).

Notes:

- Condition the insulating materials before use at the temperature: $10 \div 25^{\circ}\text{C}$.

Acceptance of the ANTICOR Plast coating

4. Check the tightness of the coating with a spark flaw detector. Test voltage: 5 kV / mm of coating thickness, but not more than 15 kV - according to EN 12068.

Strictly follow the rules for spark flow detector operation

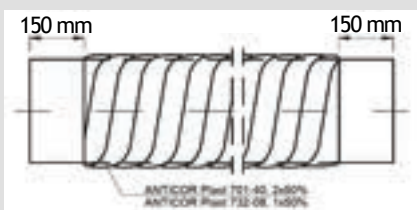


Fig. 4

The tape must be applied with the thick layer to the surface. Wrap the tape putting the plastic mass of the tape for the protected surface

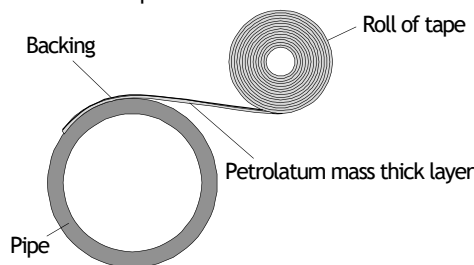


Fig. 1

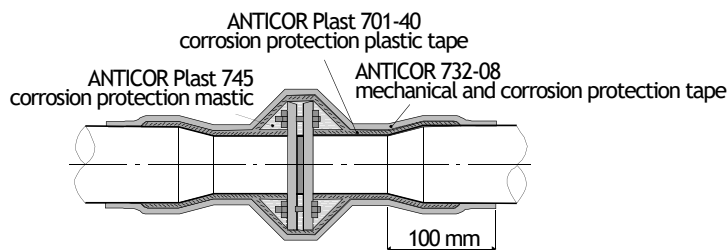


Fig. 2

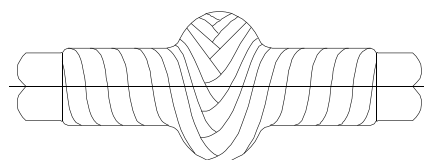
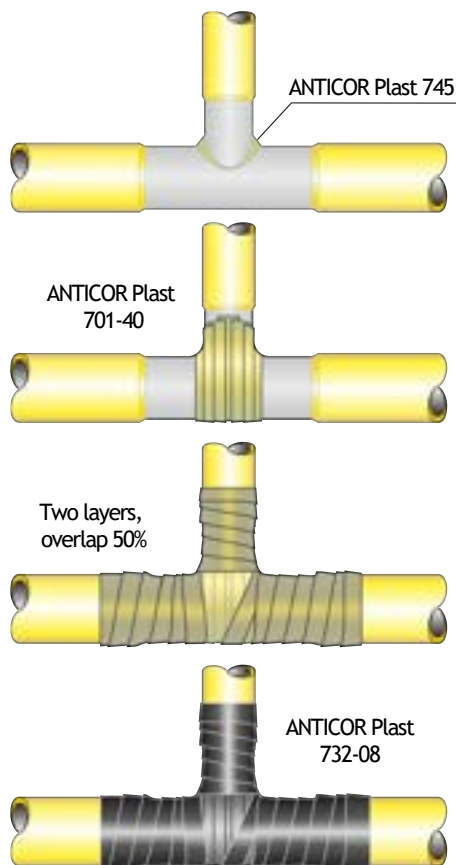


Fig. 3

Diagram of the tee insulation



Heat shrink materials - ANTICORRay®

System ANTICORRay® WSS60

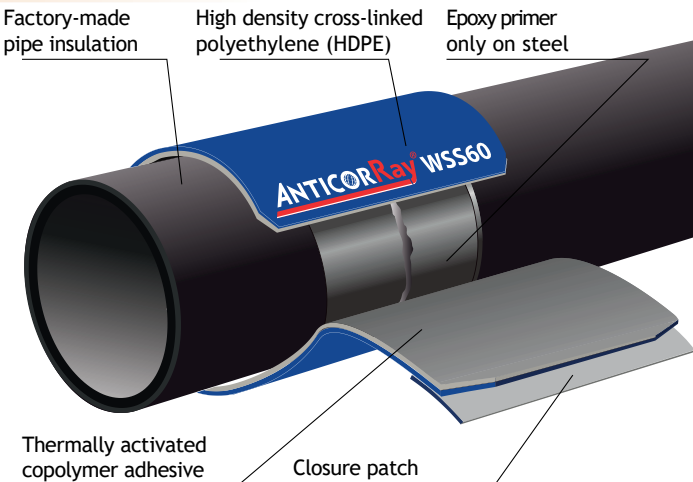
Corrosion protection for buried and above-ground steel pipelines. The system meets EN 12068 standard in class C HT60 (high temperature).

System components

- ANTICORRay® Epoxy Primer 801 is applied directly onto prepared steel surface and as such it constitutes the main corrosion protection.
- ANTICORRay® WSS60 heat shrink sleeve applied in the center of the welded joint shows perfect adherence properties to the epoxy primer and creates a passive corrosion protection coating.
- ANTICORRay® WSS-CP closure patch for bonding ANTICORRay® WSS60 sleeve.

System features & advantages

- Resistant to shear forces caused by soil and thermal changes.
- Hard and very durable, resistant to mechanical damage (e.g. during ditch backfilling).
- Applied onto wet epoxide; therefore, no extra heating and hardening is required.
- Creates the three-layer factory-made insulation.
- Very low vapor permeability.
- High dielectric strength.



ANTICORRay® WSS60 heat shrink sleeve reinforced laminate



Pipeline DN 700 isolated by ANTICORRay® WSS60 heat shrink sleeve



Adhesion test of ANTICORRay® WSS60 heat shrink sleeve



Insulation of welded joint on pipe with 3LPP insulation



Insulation of welded joints on the valve DN 1000



Monoblock on pipeline DN 800

System properties of ANTICORRay® WSS60

Test	Standard	Result
Shrinkability	—	> 25%
Thickness	—	min. 2.5 mm
HDPE thickness	—	min. 1.1 mm
Thickness of adhesive layer	—	min. 1.4 mm
Maximum continuous working temperature	EN 12068	60°C
Compatibility with factory-made coatings	—	PE, PP, FBE
Pipe pre-heating temperature	—	70 ÷ 80°C
Required surface cleanliness grade	PN ISO-851	Sa 2½
Limitations related to soil stresses	—	none
Coating class	EN 12068	C HT60
Peel strength	EN 12068	> 65 N/cm at 23°C
Impact resistance	EN 12068	> 15 J
Penetration resistance	EN 12068	> 2.13 mm at 60°C
Cathodic disbondment	EN 12068	23°C 5 mm 60°C 12 mm
Resistance to thermal aging	EN 12068	after 100 days up to 80°C
Tensile strength factor (after 100 days in 80°C)	EN 12068	0.9
Elongation factor (after 100 days in 80°C)	EN 12068	0.9

ANTICORRay® WSS60 system is DVGW-certified for its compliance with standard EN 12068 in class C HT60 (high temperature).

Repair system ANTICORRay® REP

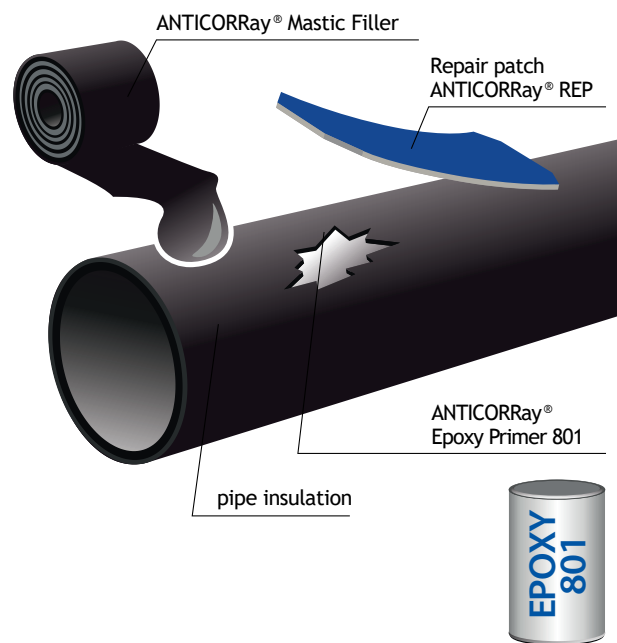
A repair kit for reconstruction of damages on corrosion protection to corrosion damage in insulation of steel pipelines. The system complies with EN 12068 standard in class C HT50 (high temperature).

System components

- ANTICORRay® Epoxy Primer 801.
- ANTICORRay® Mastic Filler deep damage filling material.
- ANTICORRay® REP finish repair patch.

Features and advantages

- The entire repair system complies with requirements regarding complete insulation and allows for reproducing three-layer factory-coating.
- The ANTICORRay® RE" is made of cross-linked HDPE, covered with thermoactivated adhesive, characterized by its adherence to roughened PE and PP. It is also very resistant to shear forces occurring in the ground.
- The strong adhesion to the steel end between all 3 elements of ANTICORRay® REP creates durable monolithic corrosion coating.



Properties of System ANTICORRay® REP

Test	Standard	Result
Backing thickness	—	0.80 mm
Adhesive thickness	—	0.45 mm
Working temperature	EN 12068	> 60°C
Tensile strength	EN 12068	280 N/cm
Elongation	EN 12068	600%
Lap shear to factory coating	EN 12068	23°C 1,0 N/mm 50°C 0,27 N/mm
Adhesive to factory coating	EN 12068	23°C 10,0 N/mm 50°C 1,5 N/mm
Impact resistance	EN 12068	> 16 J
Indentation resistance thickness of residual coating	EN 12068	0.8 mm
Specific electrical insulation resistance	EN 12068	$\geq 1 \times 10^{10} \Omega \cdot m^2$
Catodic disbondment (30 days)	EN 12068	3 mm
Resistance to thermal ageing ratio of	EN 12068	after 100 days up to 70°C
Tape strength (100d 70°C)	EN 12068	≥ 0.9
Elongation at break (100d 70°C)	EN 12068	≥ 0.9

The system has been tested and certified by the Oil and Gas Institute for its compliance with standard EN 12068 in class C HT60 (high temperature).



Damaged insulation



Reconstruction of damages
by ANTICORRay® REP

Application

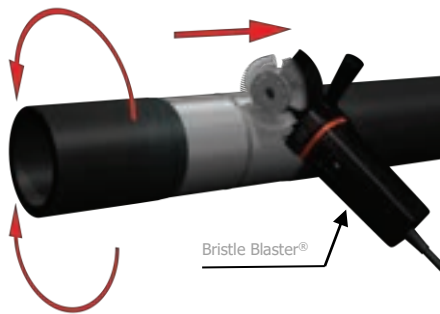
The repair system ANTICORRay® REP is used in a wide range of pipe diameters with coated PE and PP (continuous use temperature to 50°C).

Depending on the type of damage to the anti-corrosion coating, the following system variants should be used:

- To repair deep damage to the surface of a pipe (metal) smaller than 10 cm²:
 - ANTICORRay Epoxy Primer 801
 - ANTICORRay Mastic Filler
 - ANTICORRay REP Closure Patch
- To repair damage to the surface of a pipe (metal) higher than 10 cm²:
 - ANTICORRay WSS60 Heat Shrink Sleeve
- To repair surface damage, the so-called "scratch" - 3LPE insulation, with an area of less than 10 cm²:
 - ANTICORRay Melt Stick
- To repair damage to the deep non-penetrating surface of a pipe (metal) smaller than 10 cm²: ANTICORRay® Epoxy Primer 801.
 - ANTICORRay Mastic Filler
 - ANTICORRay REP Closure Patch
- To repair damage to the deep non-penetrating surface of a pipe (metal) higher than 10 cm²:
 - ANTICORRay WSS60 Heat Shrink Sleeve

The detailed technology of repairing coatings for individual variants of damage is presented in: The technology of repairing damage to the insulation 3LPE, 3LPP with ANTICORRay REP materials, in accordance with the EN-ISO 21809 standard number: DMTA-AN-21.

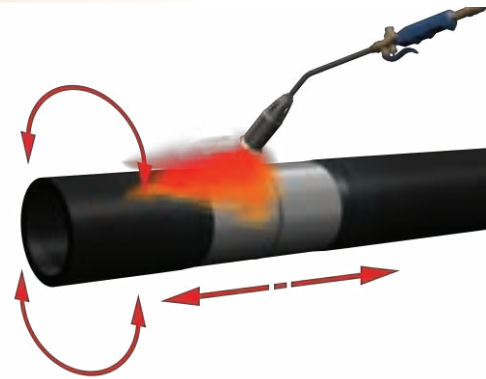
Application technology ANTICORRay®



Step 1

Surface cleaning

- 1) At first, clean the surface to be insulated from impurities and degrease with fat-free solvent (e.g. petroleum ether, acetone).
- 2) Clean steel surface up to cleanliness degree of Sa 2½ according to the ISO 8501 standard. Use, for instance, the Bristle Blaster® mechanical brush.
- 3) Using sandpaper, roughen the ends of factory insulation at the length of about 10 cm.
- 4) Bevel the ends of factory insulation at an angle of about 15°.

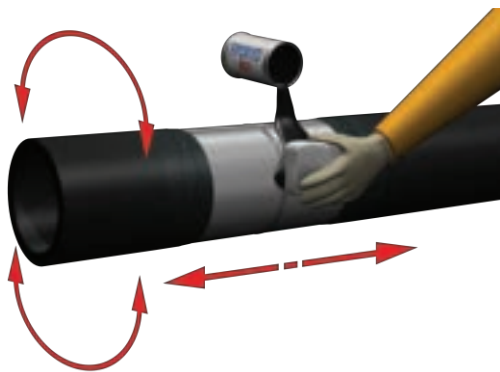


Step 2

Preheating

- 1) Using burner, evenly heat the surface prepared for insulating up to the temperature min. 70°C.
- 2) Control the temperature during heating by using thermometer.
- 3) Simultaneously with surface preheating, mix both components of epoxy primer ANTICORRay Epoxy Primer 801 well in right proportion.

Note: It is not necessary to apply epoxy resin on factory insulation.



Step 3

Application of primer

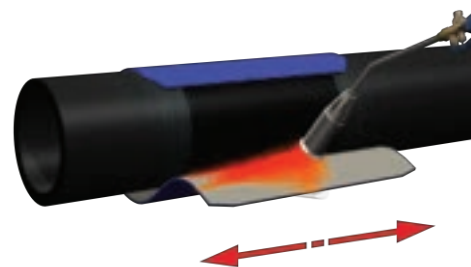
- 1) Apply the well mixed primer on steel surface using sponge delivered with the system kit.

Notes:

The layer should be at least 100µm thick.

Well applied primer should be uniformly black (with no steel showed through and without sagging).

Protect hands by wearing gloves delivered with the system kit.



Step 4

Application of a sleeve

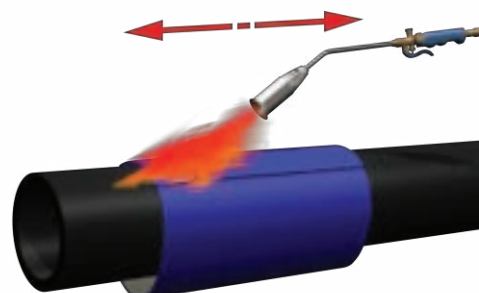
- 1) Remove silicone-coated paper.
- 2) Heat the glue/adhesive with soft flame at the end of sleeve from the side of sharp corners.
- 3) Place the heated end centrally on welded joint at the "eleven o'clock" position pressing it against the pipe surface.
- 4) Wrap the sleeve loosely around the pipe, leaving clearance of about 2-4 cm under the sleeve.
- 5) With soft flame, heat up the glue on the other end of sleeve.
- 5) Place the heated end on the glued-in sleeve, while maintaining the recommended overlap.



Step 5

Gluing-in of the closing strip

- 1) Heat up the inner side of closing strip with soft flame to make the glue/adhesive soft.
- 2) Apply the strip symmetrically along the sleeve edge.

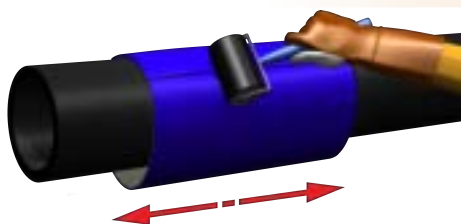


Step 6

Heating the closing strip

- 1) Heat the outer surface of strip with strong flame until it becomes plastic.

Application technology ANTICORRay®

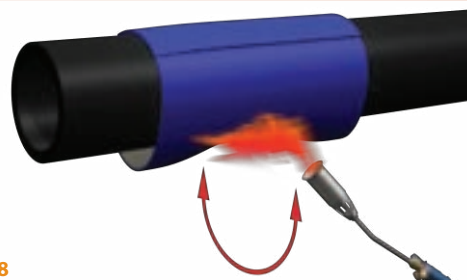


Step 7

Final gluing of sleeve

- 1) Press the heated closing strip very firmly against the sleeve with a silicone roller or with hand wearing a protective glove.

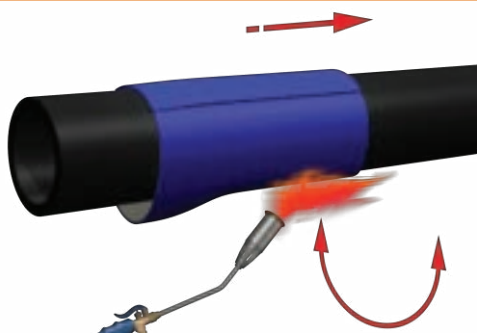
Note: The properly glued strip shows no wrinkles and closed „air pockets“.



Step 8

Shrinking of sleeve I

- 1) Heat up the sleeve with strong flame, starting from underneath, centrally at the height of welded joint. Move the flame alternately along the entire circumference.

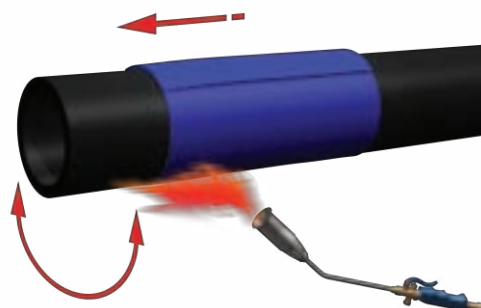


Step 9

Shrinking of sleeve II

- 1) Continue to heat the sleeve up going from welded joint in one direction, then in the other, moving the flame along the circumference.

Notes: Heating should be done uniformly and evenly to avoid trapping of air under the sleeve. The sleeve should adhere tightly to the pipe. The sleeve on pipelines with diameter above DN300 should be shrunk using two burners placed symmetrically on both sides of a pipeline.



Step 10

Shrinking of sleeve III

- 1) Finally, heat up the whole surface of sleeve by slow, longitudinal passes of the burner along the entire circumference in order to obtain uniform melting of the glue and even shrinking of the coating.

Note: Shrinking operation is finished when glue begins to flow out from under the edges of sleeve.

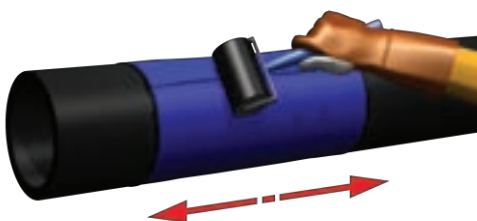


Step 11

Check if the sleeve was heated properly

- 1) Press the sleeve with a finger in several points, trying to move it slightly.

Note: If the sleeve is heated well, then after pressing and moving the finger a wrinkle appears which upon completion of the test disappears by itself.



Step 12

Smoothing of sleeve

- 1) Smoothen the sleeve using a silicone roller, especially around the welded joint and near the closing strip, to remove possible air pockets.

Note: If air pockets were formed, remove them by moving the roller from the centre of the sleeve towards the edges. The sleeve can be re-heated if necessary.



Step 13

Finishing works

- 1) Using write, UV and water resistant marker, write the following information on the sleeve surface:
 - Company name, name and surname of the person who performed the installation.
 - Date and time of installation completion.

Note: The above information written on the sleeve serves as the certificate of the installed coating.

ANTICOR Syntetix® CF (Casing Filler)

Corrosion protection technology of product pipes and casing pipes

Casing Filler technology fully fills the space between the product pipe and the casing pipe with ANTICOR Syntetix® CF material. After being pumped into the space between both pipes, it prevents water and oxygen from accessing the surface of the pipes and start corrosion process.

ANTICOR Syntetix® CF – it is a material of exceptional anticorrosive properties. It protects against both chemical and electrochemical corrosion. Include inhibitors against stress corrosion cracking (SCC). The special formulation of synthetic products allowed us to obtain exceptional adhesion to steel and plastic surfaces. Due to its and oxidative properties ANTICOR Syntetix® CF extends the lifetime of factory applied insulation. Slowing down the deterioration occurs in the whole temperature range of use. It does not contain hazardous substances to the health and the environment.

Features and advantages

- Provides the most effective and least expensive means to repair electrolytic joints and those within the casing pipe.
- Tightly fills the space between the pipes, displacing accumulated water, oxygen, and moisture.
- Makes an excellent protection against stray currents effects.
- Contains additives that improve functional properties, e.g., corrosion inhibitors, antioxidants etc.
- Does not contain components hazardous to health and the environment.
- Prevents corrosion inside casing pipe.
- Is an entirely synthetic, chemically stable product.
- Reduces the cost associated with cathodic protection of pipelines.
- Stable properties upon operation over many years.



Properties of ANTICOR Syntetix® CF*

Test	Unit	Value
Operating temperature	°C	-15 ÷ 40
Application temperature	°C	55 ÷ 90
Density	kg/dm ³	0.82 ÷ 0.90
Electrical contact resistance	Ωm	≥ 1 x 10 ⁸
Water absorption	% _{mas}	≤ 0.1
Drop point	°C	+50 ÷ +55
Flash point	°C	> 200
Salt Test Spray		Positive
Cathodic disbondment	mm	0
Adhesion to steel and plastics		Cohesive fracture (tearing in the layer 5 mm/min)

* Based on testing at Oil and Gas Institute (INiG).

ANTICOR CC (Casing Closure)

Sealing technology of the ends of protective pipelines

The Casing Closure system is based on caulking the ends of protective pipes. It seals both ends of casing pipe against ground water, mud, etc.

System components

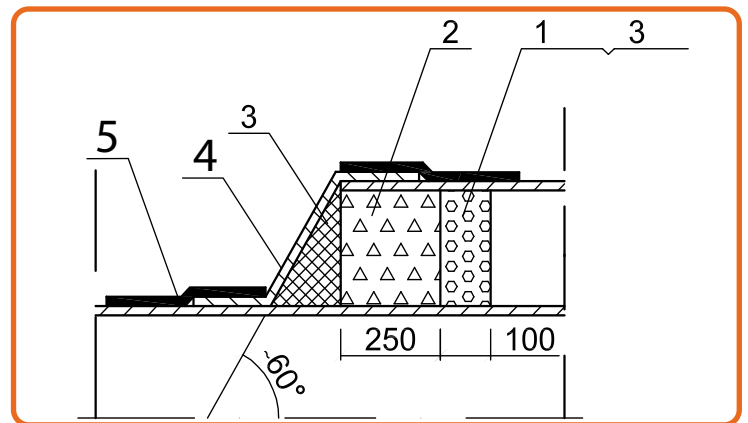
- ANTICOR Syntetix® Mastic is a synthetic material with excellent sealing and anti-corrosion properties. It is characterized by high adhesion to steel and plastic surfaces. Due to its antioxidant properties, ANTICOR Syntetix® Mastic does not change its properties over the entire period and does not harden. It does not contain substances harmful to health and the environment.
- 2-component PUR foam and XPS extruded polystyrene board (Styrodur), 100 mm thick.
- Heat shrink sleeve.
- Corrosion protection tape.

Features and advantages of ANTICOR Syntetix® Mastic

- Synthetic product of exceptional sealing and anti-corrosion properties.
- Easy to apply.
- Exceptional adhesion to steel and plastics.
- Does not contain components hazardous to health and the environment.
- Compatible to use with all products of anticorrosion protection.
- Stable properties upon operation over many years.
- Tightly fills the space between the pipes, preventing water, oxygen, and moisture from accessing the pipes.

Technology of casing sealing ends closure

1. Make a ring around the carrier pipe with polyurethane foam spray and XPS plate inside space between the pipes.
2. Put ANTICOR Syntetix® Mastic to fill tightly the space between pipes.
3. Make the finishing ring with foam 2K PUR.
4. After making (1, 2, 3) prepare the surface of the existing insulation (clean, degrease and tarnish) install the new heat shrinkable sleeve over the end of the casing pipe.
5. In order to obtain additional tightness, the heat shrink sleeve should be secured with corrosion protection tapes.



Schematic diagram of a sealing the casing pipe ANTICOR CC (Casing Closure)

1. „XPS” insulation board, 100 mm thick; 2. Viscoelastic putty ANTICOR Syntetix® Mastic; 3. 2-component PUR foam; 4. Heat shrink sleeve; 5. Corrosion protection tape.

Properties of ANTICOR Syntetix® Mastic *

Test	Unit	Value
Operating temperature	°C	-15 ÷ 35
Density	kg/dm ³	1.35 ÷ 1.45
Electrical contact resistance	Ωm	> 3.9 x 10 ⁸
Cathodic disbondment in electrolytic media	mm	0
Water absorption	% _{mas}	< 0.0665
Salt Test Spray		Positive
Adhesion to steel and plastics		Cohesive fracture (tearing in the layer)

* Based on testing at Oil and Gas Institute (INiG).

Polyurethane spray coating – PUR

Polyurethane spray coating

ANTICOR has a many years of experience and skilled staff necessary to apply double-component polyurethane coatings. The coatings are applied using the airless spraying method.

The coatings are made in accordance with the requirements of the following standards: EN 10290, DIN 30671 and DIN 30677.

We provide spray polyurethane coatings at our own premises, at the customer's premises or directly on the construction site.



DN 500 valve



20m³, DN 1000 tank



DN 500, DN 100 monoblocks



Fitting DN 1400



Spraying works on site



DN 500 bends

Features and advantages

- May be applied in factory conditions or on site.
- Compatible with other coatings.
- Applied during a single operation.
- Characterized by a short curing period.
- Very resistant to mechanical (abrasion, impact, indentation) and chemical damages.
- May be applied on equipment that remains in continuous contact with potable water.
- Perfectly support cathodic protection – the degree of cathodic disbondment is very low.

All coatings made from PROTEGOL conform to: EN 10290, DIN 30671, DIN 30677.

The coatings are suitable for a number of applications as anticorrosion protection of external and internal surfaces:

- steel pipes,
- sewer pipes made from steel or cast iron,
- fittings,
- valves,
- tanks.

Due to their excellent mechanical properties (resistance to indentation and abrasion), the coatings are applied as an additional layer on pipes used for HDD-controlled drilling.

Properties of Protegol® UR-Coating 32-55

Test		Unit	Value
Density	A	g/cm ³	1.7
	B	g/cm ³	1.2
A/B ratio	by weight		82 : 18
	by volume		3.5 : 1
Max. thickness of a single layer on a vertical surface		mm	1.0
Application temperature	of the surface	°C	> 10
	of the mixture	°C	50 ÷ 80
Curing time at 20°C (condition)	dust dryness	min	10
	storage	h	8
	full strength	godz.	120
Continuous operation temperature	normal operation	°C	-30 ÷ 80
	short-time	°C	110
Hardness		Shore'a D scale	74 ± 3

Polyurethane spray coating – PUR

PROTEGOL® UR 32-60 - cartridge system, two-component polyurethane protective coating supplied in cartridges, solvent-free.

Application is made by air-assisted pneumatic dispenser.

Application

As an outer protective coating:

- steel pipes, elbows,
- fittings,
- welded joints,
- tanks, containers.

Consumption, theoretically

Approx. 1.20 kg / m² in 1500 µm DFT (Dry Film Thickness).

Features and advantages

- Outstanding corrosion protection.
- Very short reaction time and fast curing.
- Fast mechanical resistance.
- Easy application.
- Applied with a pneumatic gun - not necessary rinsing with solvent.

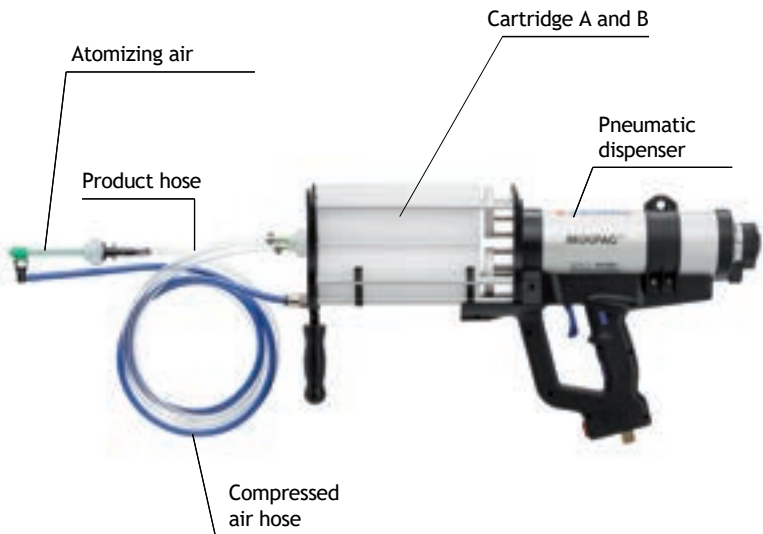
Packaging

Cartridge with the product - Component A and B (cartridge 2 x 750 ml), mixer 180°.

Set contains: pneumatic gun, shoulder strap, fastening clips of container (cartridge), piston plate, atomizing air hose, connector plug for atomizing air hose, manual (instruction).



Overview of dispenser



Properties of Protegol® UR-Coating 32-60

Test		Unit	Value
Density	Component A	g/cm ³	1.2
	Component B	g/cm ³	1.2
	Component A+B	g/cm ³	1.2
Mixing ratio A : B	Gravimetric		50 : 50
	Volumetric		1.0 : 1.0
Service temperature		°C	-20 ÷ 80
Hardness (±5)		Shore D	75
Recommended dry film thickness (DFT). Actual required DFT may vary in certain applications.		µm	1.500
T min substrate	(min. +3 °C above dew point)	°C	5
Temp. application min / max	Component A	°C	25/45
	Component B	°C	25/45
Max. relative air humidity		%	80
Potlife at 35°C		s	25

Special cover coatings

Aluminium laminate - Aluminio 374

Adhesive coatings made from aluminium laminate effectively protect against UV radiation, ozone, and other weather conditions. The coatings are characterized by excellent resistance to mechanical damages. They are suitable used as protective linings to cover anticorrosion insulation of overhead steel pipelines and as sealing jackets protecting thermal insulation of district heating, air-conditioning and ventilation pipes.

Protective coating completion process

1. Complete corrosion protection coating according to the process (page 6-7 of this catalogue).
2. Check the tightness of the completed coating. Test voltage of the spark flaw detector should be 5 kV/mm of coating thickness.
3. Apply a protective coating made from aluminium laminate on the prepared anticorrosion coating.

Use a laminate 600 mm wide to protect straight sections of a pipeline. Apply the laminate using “cigar” method with lateral and longitudinal overlaps 75 mm wide (Fig. 1).

Use a tape 50 or 100 mm wide to protect bends and elbows, apply the tape spirally with a 50% overlap.

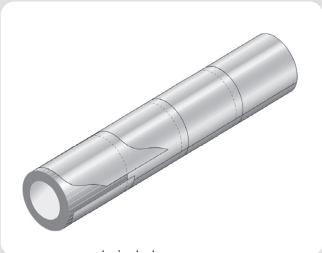


Fig. 1
Insulation of straight pipe sections

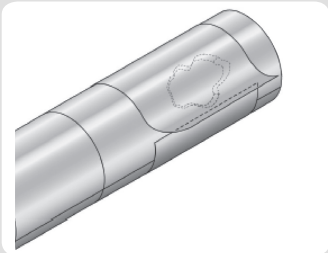


Fig. 2
Coating repair

Coating repairs

If any damage is detected, ensure that the surface is clean and apply a sheet of coating onto the damaged surface with an overlap of at least 75 mm beyond the damaged area (Fig. 2).



Technical data

Test	Unit	Value
Total thickness	mm	0.145
Operating temperature	°C	-35 ÷ 100
Tensile strength	N/cm	120
Adhesion to steel	N/cm	8.0
Elongation	%	25
Backing	Aluminium laminate	

ANTICOR Syntetix® Magnum

ANTICOR Syntetix® Magnum is a synthetic, permanently flexible material with sealing and anti-corrosive properties. It is used to seal free spaces in bolted flange connections. It contains stress corrosion cracking inhibitors (SCC), prevents corrosion of protected components.

The material is characterized by high adhesion to steel, plastic, and paint surfaces. ANTICOR Syntetix® Magnum does not change its properties in the entire temperature range from -25°C to 45°C (ANTICOR Syntetix® Magnum HT from -25°C to 85°C). It does not contain substances harmful to health and the natural environment.

Application with a gun, which allows dosing the material into the inter-pipe spaces.

In the case of above ground insulation of flange connections apply aluminum laminate - Aluminio 374 with light tension to ensure mechanical protection and protection against UV rays. Right made technology guarantees corrosion protection of the surface inside the flange joint.

Features and advantages

- A synthetic product with anti-corrosion properties.
- Easy to apply.
- High adhesion to steel, plastics, and painted surfaces.
- Tightly fills coated spaces and prevents access of water, oxygen, and moisture inside of flange.
- Compatible to use with all coatings of anti-corrosion protection of steel pipelines.
- Does not contain any hazardous components for human health and the environment.
- Preserves stable properties during long periods of use.
- The mastic may be reused.

Technology of sealing flange connections

1. Degrease and clean the flange surfaces using a solvent and a cloth.
2. Protect the side surfaces of the flange with masking tape 621 (Fig. 1).
3. After securing the flange, apply ANTICOR Syntetix® Magnum to the space between the flange using the applicator (Figs. 2 & 3).
4. Remove surplus of the material from the flange surfaces (Figs. 4 & 5).
5. Remove the masking tape.
6. Apply aluminum laminate - Aluminio 374 to provide mechanical and UV protection (Figs. 6 & 7).

Properly made technology guarantees corrosion protection of the surface inside the flange joint.

Note:

At low temperatures right before application the material should be conditioned as below:

- ANTICOR Syntetix® Magnum above 15°C.
- ANTICOR Syntetix® Magnum HT above 35°C.



Insulation of a flange joint



Fig. 1



Fig. 2



Fig. 3



Fig. 4



Fig. 5



Fig. 6



Fig. 7

Technical data

Test	Unit	ANTICOR Syntetix® Magnum	ANTICOR Syntetix® Magnum HT
Operating temperature	°C	-25 ÷ 45	-25 ÷ 85
Application temperature	°C	10 ÷ 35	25 ÷ 55
Density	kg/dm ³	1.35 ÷ 1.45	1.35 ÷ 1.45
Resistivity	Ωm	> 3.9 * 10 ⁸	> 4.2 * 10 ⁸
Water absorption	% _{mas}	< 0.0663	< 0.0642
Brine test		Positive	Positive
Resistance of the material to cathodic disbondment in an electrolytic environment	mm	0	0
Adhesion to steel and plastics		Cohesive to substrate (tearing test)	Cohesive to substrate (tearing test)

Devices, tools, and accessories

„Green” surface preparation systems - Bristle Blaster®

What is the Bristle Blasting Process?

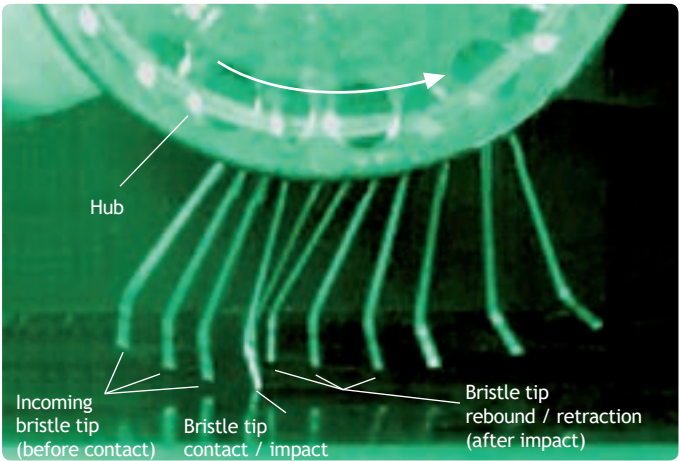
Bristle Blaster® is a device for the treatment of metal surfaces. It provides preparation of the surface comparable to blasting, obtaining the required roughness (surface development) and the degree of cleanliness Sa 2½ ÷ Sa 3 (EN ISO 8501).

How does the tool perform blasting operations?

The working elements (spring wires with hardened ends) rotate dynamically to the power tool. Before contact with the surface those wires are mechanically tighten by the accelerator bar, as a result they dynamically hit the corroded surface and immediately retract, causing micro-cavities as in grit blasting.

How is this process similar to the abrasive grit blasting process?

The bristle tips are designed to strike the corroded surface with kinetic energy that is equivalent to grit blast media, thereby generating a texture and visual cleanliness that mimics the grit blasting process.



Time-exposed high-speed photography of single bristle illustrating the approach, impact and retraction of bristle tip from steelsurface.

Frame rate: 30 000 frames/sec. Hub speed: 2 500 rpm.
Impact duration: 0.0003 sec.

Construction of Bristle Blaster® Industrial Pneumatic



„Green” surface preparation systems Bristle Blaster®

Bristle Blaster's performance :

- **Corrosion, Mill Scale, and Coating Removal.**
Restores surface to near white/white metal visual standard (Sa 2½ ÷ Sa 3).
- **Improved Integrity of Treated Surfaces.**
Generates compressive residual stress along treated surface for crack growth resistance, improved fatigue life, and improved corrosion resistance.
- **Surface Texture/Anchor Profile...**
Roughness capability from 40-120 microns.
- **Negligible Heat Generation...**
Surfaces free of thermal damage/heat marking.
- **Eco-friendly.**
"Green" surface treatment, does not use/produce hazardous materials.
- **Simple/Economical.**
Eliminate the need for complex and costly abrasive blast equipment.



Bristle Blaster® sets

- **Bristle Blaster® Cordless Set:** Bristle Blaster® Cordless, battery drive, incl. Dead man's switch, protection cover, vibration absorbing handle, safety hook, extra internal thread for alternative handle position, Accelerator bar, steel, for 23mm-belts, 1 MONTI Adaptor System, 5 Bristle Blaster® belts, steel, 23mm, packed in a solid PE tool case, without Battery and Charger or Bristle Blaster® Cordless Set with 1 Battery LiHD 18 V, 5.5 Ah, 1 Battery Fast Charger, 12 – 36 V, air-cooled.
- **Bristle Blaster® Electric Set:** Bristle Blaster® Drive Unit Electric; Adaptor System 23mm; Accelerator Bar, Steel, 23mm; 10 Bristle Blaster® Belts 23mm; packed in a blow mould storage case.
- **Bristle Blaster® Pneumatic Set:** Bristle Blaster® Drive Unit incl. Air Cooling System and Noise Reduction; Adaptor Systems 23 and 11mm; Accelerator Bars Steel, 23 and 11mm; 5 Bristle Blaster® Belts, Steel, 23mm; 5 Bristle Blaster® Belts, Steel, 11mm; Air Pressure Regulators 23mm (silver) and 11mm (blue); Dust Exhaust Attachment, packed in a blow mould storage case.



Bristle Blaster® Industrial Pneumatic is ATEX approved for use in Zone 1 (potentially explosive) atmospheres in accordance with Ex II 2G c IIA T4 X.

Bristle Blaster®

Spring Wire Diameter 0.7 mm, specially hardened shaped, D: 115 mm.
Width: 11 mm, 23 mm.



Adaptor System

Aluminum mold.
Width: 11 mm, 23 mm.



Quick Add

Width: 11 mm, 23 mm.



Bristle Blaster® Industrial Pneumatic

Test	Unit	Value
Free speed	rpm	3 500
Required air pressure	bar	6.3 5.2 bar (75 PSI) > Belt 23/11 mm
Average air consumption	L/min	500
Required interior air hose size	cal	3/8"
Weight	kg	1.2

Bristle Blaster® Cordless

Test	Unit	Value
Battery voltage	V	18
Max output	Watt	700
Free speed	rpm	2 300
Vibration	m/s ²	4
Weight (without battery)	kg	2.2

Bristle Blaster® Industrial Electric

Test	Unit	Value
Free speed	rpm	3 200
Voltage rating	V	240 (±10%)
Amperes	A	2 (±15%)
Weight	kg	2.2

Devices, tools, and accessories

Spark flaw detectors

Compact spark flaw detectors with equipment for testing the tightness of insulating coatings applied to conductive substrates including concrete. Ideal for tightness testing of tank coatings, pipelines, fittings, etc.

Device types: DC15 up to 15 kV, DC30 up to 30 kV and DC60 up to 60 kV.

The product is delivered in two sets:

Universal set:

Detector with clip-on power pack, Mini-Crest Meter, 10hr Charger, Probe handle with neon and 2m lead, 60mm Connector for flat brushes, 7m Earth lead with clamp, Fan Brush, 250mm Flat brass wire brush, 450mm Probe extension, Air-operated earphones, Shoulder & Waist Harness, Kit Case, Operating instructions with conformance certificate.

Pipeline set:

Detector with clip-on power pack, Mini-Crest Meter, Spare clip-on battery pack, 10hr Charger, Probe handle with neon and 2m lead, 7m Earth lead with clamp, Fan brush, Coil joiner with 450mm connector, Air-operated earphones, Shoulder & Waist Harness, Kit Case, Operating instructions with conformance certificate.

The devices comply with the requirements of the following standards:

AS3894.1-1991 and NACE: TM0186-94; TM0384-94; RP0490-2001; RP0274-98 & RP0188-99.



Spark flaw detector



Flat brushes and fan brushes



Spiral brushes



Checking the tightness of the coating with a spark flaw detector

Hand wrapping machines

Devices for the application of corrosion protection coatings.

Application

- Insulation of welded joints.
- Repairing the damages of existing insulation.
- Insulation of pipelines sections.

Features and Benefits

- Quick change of tape, used to insulate pipes with diameters from 50 mm to 2000 mm.
- The wrapping machine has a roll for winding the tape spacer.
- Once set, the tape overlap does not require re-adjustment at changing the rolls of tapes.
- Can be used on vertical pipes.
- Accelerates the process of anti-corrosion insulation.
- Ensures appropriate belt tension.
- Easy and safe operation.
- Possibility to work for right and left-handed people.

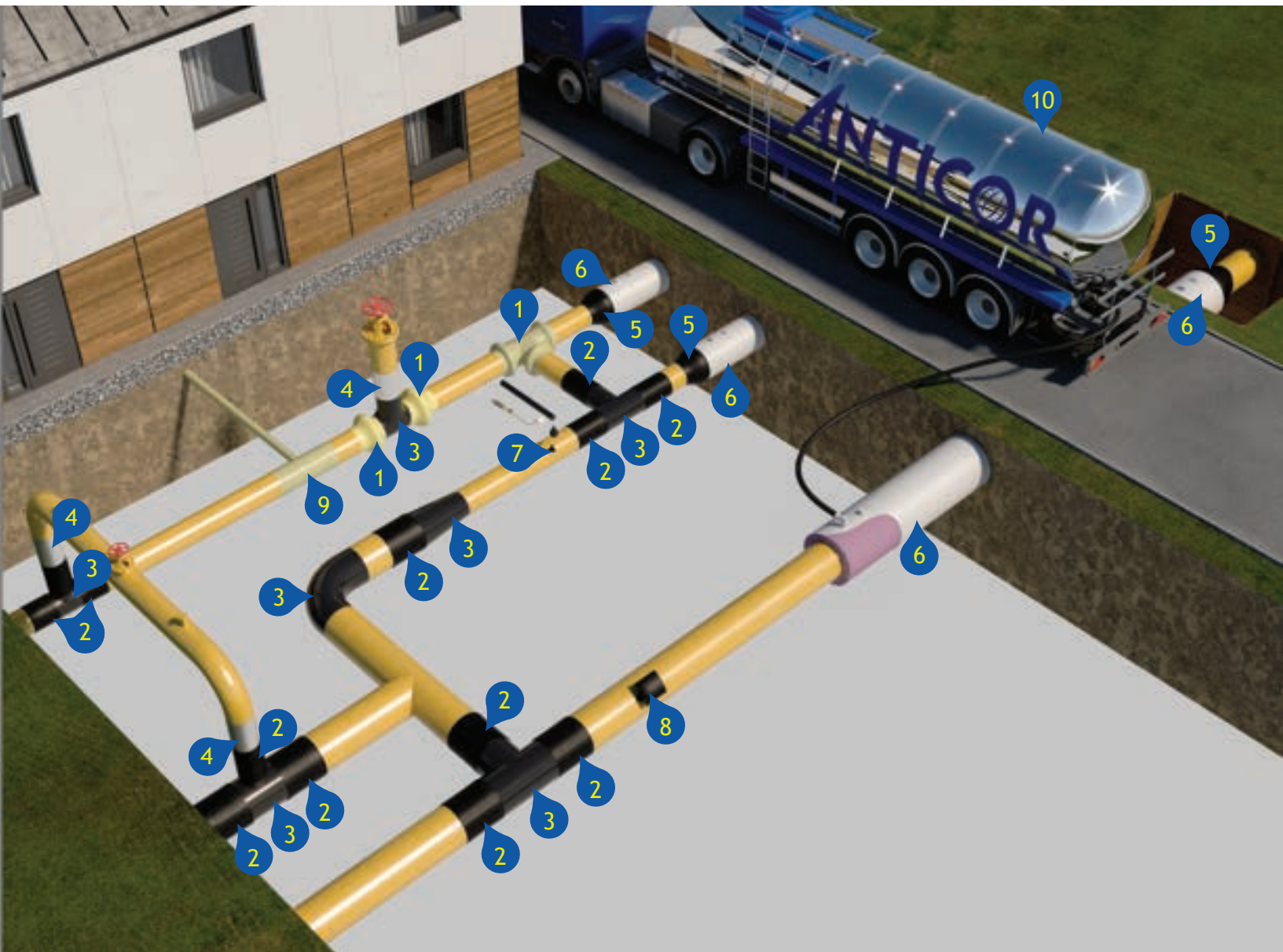


OWR-2



Application of corrosion protection coatings on pipelines

Application of corrosion protection coating - examples



1. ANTICOR Plast - corrosion protection of pipeline fittings, e.g. flange connections, valves, etc. in class A30.
2. ANTICORRay® WSS60 - corrosion protection of welded joints on newly built sections of steel pipelines.
3. Protegol® (spray coating) - corrosion protection of steel pipelines, gas pipeline fittings, fittings, and tanks.
4. Aluminum laminate Aluminio 347 - UV and mechanical protection of corrosion protection coatings in overhead steel pipelines (e.g. ground-air transitions)
5. ANTICOR CC (Casing Closure) - technology for sealing the ends of protective tubes.
6. ANTICOR Syntetix® CF (Casing Filler) - a technology of corrosion protection of steel pipelines embedded in protective pipes.
7. ANTICORRay® REP - repair system for the surface defects of factory coatings (PE, PP) of steel pipelines.
8. ANTICORRay® REP - repair system for deep damage of damaged factory coatings (PE, PP) of steel pipelines.
9. ANTICORWrap - tape systems (PE) for corrosion protection of steel pipelines.
10. Tanker with ANTICOR Syntetix® CF material.

The logo features the word "ANTICOR" in white, bold, sans-serif capital letters. A registered trademark symbol (®) is positioned at the top right of the "R". The letter "O" is replaced by a white globe icon with latitude and longitude lines. The text is set against a solid blue rectangular background. A thick yellow horizontal bar is located directly beneath the blue rectangle.

ANTICOR[®]

We are united by professionalism

**ANTICOR Sp. z o.o.
PL 32-020 Wieliczka, ul. Wygoda 28
Tel.: +48 12 288 33 33, Fax: +48 12 289 53 26
e-mail: anticor@anticor.pl**

www.anticor.pl

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