

ENDOPRENE® 870 EN

Data Sheet

DESCRIPTION

Solvent free, non toxic polyurethane coating, applied by twin feed hot airless spray suitable for products with short reaction times.

Its chemical inertness and high resistance to cathodic disbondment make it an anticorrosion coating well adapted to external protection of buried or submerged metal structures conforming, for example, to the requirements of the EN 10290 Standard. ENDOPRENE® 870 EN is designed for protecting steel pipes (new pipes, rehabilitation) and associated parts (bends, fittings).

ENDOPRENE® 870 EN is suitable for over-coating adjacent coatings such as hydrocarbon, epoxy, polyurethane and polyolefin materials, providing the surface is suitably prepared, for protecting girth welds.

APPLICATION AREAS

Thick anticorrosion coating for the protection of buried pipes and accessories.

Its rapid polymerisation makes it an ideal product for both shop and on-site application for rehabilitation or renewal work. The standard heat resistance range of ENDOPRENE® 870 EN is between - 30°C and + 80°C in dry environments.

An accelerated curing version is available under the reference ENDOPRENE® 870 EN – FAST.

APPROVALS

ENDOPRENE® 870 EN is approved by companies such as GRT Gaz, SONATRACH, NIGC, KOC, EXXON MOBIL.

CHARACTERISTICS

Number of components	: 2
Colour of dry film	: Grey (Please consult us for other colours)
Appearance of dry film	: Satin
Density at 23°C	: Around 1.3 g/ml
Calculated dry solids (by volume)	: 100 %

NOMINAL DRY FILM THICKNESS

ENDOPRENE® 870 EN is designed to be applied in a single coat at a nominal dry film thickness range between 750 and 2000 µm. The final choice of the thickness will be determined by the end use specification.

THEORETICAL COVERAGE

Airless spray	: 0.76 m ² /kg, i.e. 1 m ² /l for 1000 µm DFT
	: 0.38 m ² /kg, i.e. 0.50 m ² /l for 2000 µm DFT

DRYING TIME (for 1500 µm dry film)

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	At 10°C	At 20°C	At 40°C
Dust free	1.5 hours	60 minutes	40 minutes
Hard dry	7.5 hours	4 hours	2 hours
Fully dry *	10 days	7 days	4 days
Handleable		90 minutes	

* Depending on the application parameters and the environment



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	At 10°C	At 20°C	At 40°C
Dust free	25 minutes	15 minutes	10 minutes
Hard dry	1.5 hours	1 hour	30 minutes
Fully dry *	10 days	7 days	4 days

* Depending on the application parameters and the environment

CLEANING SOLVENT

DILUANT 014.09

STANDARD PACKAGING

Grey colour: 924 kg doses (A+B) in 4 separate 200 litre drums.
Please consult us for other types of packaging.

STORAGE

Use by date: For standard packaging, 12 months under shelter at a temperature between + 5°C and + 35°C in the original unopened packaging.

HEALTH AND SAFETY

Flash point: Part A (polyol): > 100°C - Part B (isocyanate): > 100°C

Always consult the legal labelling on the packaging and the material safety data sheet before use.

SUBSTRATES

- Steel
- Other substrates: please consult us.

PROPERTIES OF THE CURED COATING

Physical and mechanical properties	Standard	Substrate	Thickness	Result
Electrical non porosity at 20°C (10 V/ μ m)	EN 10290	Steel Sa 2.5	1500 μ m	No porosity
Pull off resistance at 20°C	ISO 4624	Steel Sa 2.5	1500 μ m	\geq 12 MPa
Shore D hardness at 20°C	ISO 868	Steel Sa 2.5	1500 μ m	\geq 65
Pull off resistance at 23°C	EN 10290	Steel Sa 2.5	1500 μ m	Rating 1
Elongation at break at 23°C	ISO 527	Free film	1500 μ m	\geq 10 %
Tensile strength at 23°C	ISO 527	Free film	1500 μ m	\geq 15 N/mm ²
Bendability at 23°C and 0°C	EN 10290	Steel Sa 2.5	1500 μ m	Compliant
Impact resistance	EN 10290	Steel Sa 2.5	1500 μ m	\geq 8 J/mm
Resistance to indentation (24 h at 70°C)	EN 10290	Steel Sa 2.5	1500 μ m	\leq 15 %
Examples of chemical resistance*				
Cathodic disbondment after 28 days at 23°C	EN 10290	Steel Sa 2.5	1500 μ m	\leq 5 mm
Cathodic disbondment after 2 days at 65°C	EN 10290	Steel Sa 2.5	1500 μ m	\leq 5 mm
Specific electrical insulation resistance after 100 days at 23°C	EN 10290	Steel Sa 2.5	1500 μ m	\geq 10 ⁸ Ω .m ²
Specific electrical insulation resistance after 30 days at 80°C	EN 10290	Steel Sa 2.5	1500 μ m	\geq 10 ⁵ Ω .m ²
Resistance to hydrocarbons	NFE 86-900	Steel Sa 2.5	1500 μ m	Compliant

*Please consult us for other chemical substances and temperatures.

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INSTRUCTIONS FOR USING ENDOPRENE® 870 EN

1. Preparation of the metal surface

Surface preparation is a very important phase and must be carried out with particular care. The quality of the stripping and dust removal phases has a considerable influence on the adhesion performance of the coating.

Before applying the coating, the surface to be coated must be dry and free of any soiling (such as existing coatings, paints and non-adherent particles, grease, oil, etc.) that can adversely affect surface preparation. Contaminants should be eliminated by any appropriate means and products that are compatible with the coating to be applied.

The substrates to be coated should be blast cleaned by projection of abrasives so as to obtain a Sa 2.5 surface finish (ISO 8501-1). The abrasive should be chosen to obtain an ideally angular surface roughness profile and must not contain more than 0.05% of water soluble materials. The compressed air must be dry and oil-free.

The abrasive cleaned surface must have a roughness Rz (ISO 8503-4) of around 70 µm and it must be coated in as short a time as possible. It is recommended that the following times are not exceeded:

- 3 hours for a relative humidity above 70%
- 4 hours for a relative humidity below 70%.

After abrasive cleaning, the surface must be inspected. Any slivers, scale, weld splatter and imperfections made visible by the abrasive cleaning must be eliminated.

If after preparing the surface to be coated, it becomes contaminated or covered with rust, it must be partially or totally abrasive cleaned once again in order to enable application of the coating in accordance with all of the previous instructions.

Before applying the coating, any abrasive remaining on the surface must be eliminated by an appropriate procedure.

If an adjacent coating is to be over-coated, the area in question should be roughened or finely abrasive blasted to promote inter-coat adhesion. In the case of a very thick coating, the edge should be chamfered. In the case of a polyolefin coating (polyethylene or polypropylene), the chamfered area should be flame treated at a temperature between 120°C and 160°C for 5 to 10 seconds.

Carefully remove all traces of dust before application.

2. Application

ENDOPRENE® 870 EN is applied by two component hot airless spray in accordance with the following mixing ratio:

MIXING RATIO	VOLUME	BY WEIGHT
Part A (polyol)	2.6 parts	74 %
Part B (isocyanate)	1 part	26 %

The temperature of the substrate should be between + 10°C and + 60°C and maintained at least 3°C above the dew point during the application and drying of ENDOPRENE® 870 EN in order to avoid any condensation. The ambient temperature should be between + 5°C and + 40°C and the relative humidity should not exceed 80 %.

To accelerate the hardening of the coating, the substrate may be preheated to between 30 and 65°C. The time the substrate is heated should not lead to any surface oxidation, which can adversely affect the good quality and resistance of the coating.

Before use, carefully mix part A with a slow continuous mechanical mixer until fully homogeneous. Do not dilute.



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ENDOPRENE® 870 EN is applied by airless spray (minimum 160 bars pressure, 24 to 43/1000" nozzle) in two or three passes, with spray equipment that enables automatic and controlled metering and mixing of the two components (by volume: 2.6 part A, 1 part B - by weight: 74 % part A, 26 % part B) and also enable the temperature of both components to be maintained:

- Part A: 50°C to 70°C

- Part B: 20°C to 40°C

from the supply tanks to the spray gun.

During application, the wet film thickness should be measured using, for example, method n° 6 of the ISO 2808 Standard.

The compressed air used in the application equipment must be dry and oil-free.

While in use, the drums should be stored sealed and under shelter.

Since the pot life of the mixture on 100 g is only several seconds at 60°C, the application equipment should be immediately rinsed and cleaned after use with DILUANT 014.09.

To accelerate hardening, post-curing at 80°C is possible.

In the case of pipes, in order not to adversely affect the good quality of the weld or coating, the length of the uncoated ends should be around 50 to 100 mm.

The film attains a sufficient level of hardness to be handled after around 40 to 60 minutes (around 10 to 15 minutes for the FAST version). This time depends on the ambient temperature, the weight and the shape of the coated parts.

3. Control of the coating

When the film has attained a sufficient level of drying (at least 6 h at 20°C for ENDOPRENE® 870 EN, at least 4 h at 20°C for ENDOPRENE® 870 EN-FAST), the following controls must be carried out:

- The appearance and the continuity of the entire coating should be visually inspected. The coating should have a uniform colour and appearance, exempt of any defects that could adversely affect the quality of the coating.
- The thickness of the coating measured according to the EN10290 Standard, Appendix A should comply in every respect with the contract or the specification.
- The non porosity of the coating should be checked according to the EN 10290 Standard, Appendix B. The voltage applied should be 8 volts per micron dry film thickness, with a maximum of 20 kV.
- The Shore D hardness (ISO 868 Standard) of the coating should be measured and must be at least 50.

4. Repairs

All defects should be repaired with ENDOPRENE® 880 two component touch-up polyurethane paste.

The defect area should be stripped bare. All non-adherent elements should be removed. The area of overlap with the adjacent coating should be roughened. In the case of a very thick coating, the edge should be chamfered. These operations should be followed by careful removal of dust.

All repairs should be controlled again for porosity and thickness as described above.

5. SPECIFIC RECOMMENDATIONS

Parts A and B of ENDOPRENE® 870 EN must be protected from humidity.

After prolonged exposure to ultra violet rays, ENDOPRENE® 870 EN may undergo surface chalking. This does not alter the characteristics of the polymerised film.