Halar®

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Halar® ECTFE

Innovative Waterborne Coating System

SPECIALTY POLYMERS

Halar® ECTFE
Innovative Waterborne Coating System

The Best Choice for Over 40 Years

Halar® ECTFE powder coatings have been used since 1975 as the ideal corrosion protection material in a wide variety of industries. Halar® ECTFE has a unique combination of properties that delivers long-lasting performance and includes excellent chemical resistance, outstanding permeation resistance, exceptional surface properties, good adhesion and high purity.

Waterborne Coating for Corrosion Protection

As a complement to this powder system, Solvay, world leader in high performing polymers, has developed an innovative waterborne Halar® ECTFE coating system.

Composed of a high adhesion liquid primer and a liquid topcoat, the system can be applied using a conventional liquid spray application.

The developed coating system combines the well-known superior performance properties of Halar® ECTFE, with a high level of adhesion to various substrates and high permeation resistance.

Halar® Liquid Coating System exhibits the same performance as the very well known and appreciated Halar® 6014 powder coating system.

Halar® ECTFE typical properties

Properties	Value
Melting point	220 – 245 °C
Maximum continuous service temperature (according to UL)	150 °C
Density	1.68 g/L
Broad chemical resistance	pH 1 – 14

Halar® Liquid Coating System is not a replacement for powder coatings, but offers advantages with respect to the Halar® ECTFE powder coating system:

- An ambient temperature spray extends Halar® ECTFE coatings into new areas of the anticorrosion market not currently covered
- Build coating thickness on parts with low heat capacity
- More precise spray control and better leveling → better coverage with complicated parts and tighter thickness tolerances
- No Faraday cage effect → ability to coat objects with hollows, cavities, recessed areas
- Reduced need for masking → no overspray; will stick irreversibly to areas that must remain uncoated
- Smooth coating at low thickness
- Potential for liquid dip coating

The coating shows very good surface finish.

Well Designed for Complex Parts and Inaccessible Surfaces

The new Waterborne Halar® ECTFE coating system has been developed to open the range of applications for corrosion protection of:

- Complex parts
- ID pipe coating – long pipes (up to 12 m) – good alternative to CRA pipes and PTFE sleeved pipes[1]
- Internal tank and container coating

Chemical Resistance

Halar® ECTFE demonstrates excellent overall chemical resistance thanks to the fact that:

- It is virtually unaffected by most harsh chemicals commonly encountered in the industry
- It is a hydrophobic material with exceptional resistance to strong acids and bases (pH 1 – 14)
- It is not dissolved by any known solvent up to 150 °C

[1] Most stainless steel grades will be subject to attack, because their chromium content is not sufficient in forming a protective passive layer. Duplex & SuperDuplex are known to be limited by 30 % H_2SO_4 at 85 °C.

Halar® ECTFE properties variation
after 30 days continuous exposure

Chemical	Conc. [% by weight]	Test Temp. [°C]	Weight	Mechanical Properties
H_2SO_4	98	121	< 1 %	Insignificant
HCl	37	121	< 1 %	Insignificant
HF	50	121	< 1 %	Insignificant
HNO_3	50	50	< 1 %	Insignificant
H_2O_2	30	88	< 1 %	Insignificant
Chlorine water	Saturated solution	40	< 1 %	Insignificant
NaClO	15	100	< 1 %	Insignificant
NaOH	30	121	< 1 %	Insignificant
TMAH	25	100	< 1 %	Insignificant
Methanol	100	65	< 1 %	Insignificant

Data obtained at atmospheric pressure by immersion of compression molded specimens according to ASTM D543

The Coating Systems

The new Waterborne Halar® ECTFE coating system offers the possibility to work in primer and top coat but also in primerless.

All grades are applied by standard liquid spray equipment and shows:

- Easy and fast application
- Seamless protection reducing risk of failures
- Uniform coating thickness
- Flexibility of final thickness depending on service conditions
- Possibility of coating interior and exterior surfaces
- ID pipe coating

Characteristics	Typical Value
Adhesion (500 µm-thick coating)	25 kg/mm (film rupture)
Resistance to H_2SO_4 at 120 °C (500 µm-thick coating on carbon steel)	Adhesion maintained
Resistance to $V_2(SO_4)_3$ & H_2SO_4 at 40 °C (500 µm-thick coating on carbon steel)	Adhesion maintained
Resistance to wet abrasive wear as per ASTM D2486 and ASTM D3450	No significant thickness reduction

Photo courtesy of Hüni GmbH + Co. KG

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