WENCON®

Wencon Coating S

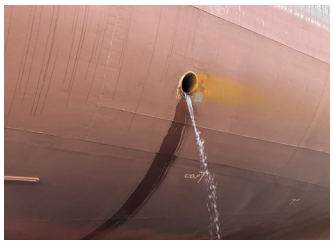
Extreme high build, abrasion and chemical resistant, coating.

For surface protection in the marine-, offshore-, petrochemical- and process Industries.

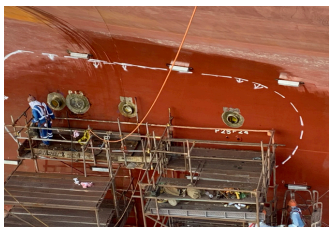
- Extreme high build
- Abrasion, heat and chemical resistance
- Strong adhesion to all steel and metal surfaces
- Single and double coat system
- High coverage rate
- Non-electrical leading
- 100% solid, no shrinkage

GENERAL DESCRIPTION

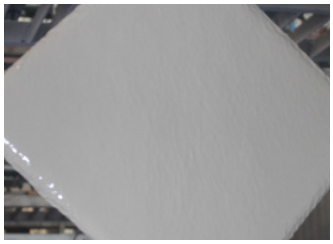
Wencon Coating S is a solvent free, extreme high build coating, that provides a smooth non-porous surface, resistant to abrasion, high temperatures, chemical aggression, corrosion and erosion as well as impingement.



Wencon Coating S has been developed primarily for the marine, offshore oil and gas industry but can also be used in industries such as petrochemical, pulp and paper, metal processing, power generation and sugar plants etc.



Wencon Coating S offers excellent corrosion protection at operating temperature fluctuations from -50°C (-58° F) up to 160°C (320°F). The resistance to peak temperature is as high as 250°C (482°F). Resistance to chemicals and solvents depends on type, concentration and temperature. The coating is resistant to aqueous solutions, acids and alkalis as well as several aggressive acids and caustics.



Application areas

Typical applications are repairs or pre-production protection of steel and concrete storage tanks, separators, evaporators, scrubbers, absorbers, heat exchangers, turbines, pipelines and pumps, vessel propulsion areas, rudder and hull.

Mixing

Wencon Coating S is developed for application using two component hot airless application spray equipment. Easy mixing ratios (1:2 by volume)
The Coating is supplied in 2 containers as a unit.

Volume: 27,75 Litre (Component A: 18,5 Litre, Component B 9,25 Litre)

Product details:

No. 1080	Colour: RAL 9001	Wencon Coating S, White	35 Kg (Component A: 23,4 Kg / B: 11,6 Kg)
No. 1081	Colour: RAL 7035	Wencon Coating S Grey	35 Kg (Component A: 23,4 Kg / B: 11,6 Kg)

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SURFACE PREPARATION

The specific type and degree of surface preparation depends on type and condition of the actual substrate and on desired performance. The better the surface preparation the better the performance, but it will not always be economic feasible to go for the highest degree within a given type of surface preparation. Therefore, Individually but shall always meet requirements for Codes and Standards for the particular task.

Recommendations.

- Cut-outs, rat holes and welds shall be rounded to a radius of at least 2 mm, weld splatter removed.
- Weld seams, burned, and rusty areas blast cleaned to min ISO-Sa 2½.
- Salts and other contaminants are removed by high-pressure rinsing with fresh water. (Pre-treatment grades according to ISO 8501-1)
- Rough to an angular profile between 75 – 100 microns (in accordance with ISO 8503 parts 1 and 2)
- Abrasive blasting to a cleanliness of near-white metal (Sa 2½ /SP10) followed by removal of all abrasive residues.
- The purity of the sandblasting is visual checked.
- Bristle Sampler test for measuring soluble salts / chlorides in the steel surface (ISO 8502-6) reccomended limit value <20 mg / m^2.
- Distance to Dew Point of minimum 3 degrees Celsius throughout the application process.
- Optionally Measurement of any acid contamination of the steel surface is measured (iron sulfate) with KTA Scat test kit, limit value is <10 micrograms / cm^2.

MIXING RATIO 2:1

Weigth:	66,85 A (Base) to 33,15 B (Activator) (parts by weight)
Volume:	2 x A (Base) to 1 x B (Activator) (parts by volume)

We recomend each component is stirred before mixing

APPLICATION

Wencon Coating S is to be applied by two component Hot Airless Spray equipment, conveyed in separate heat hoses and blended immediately prior to spray nozzle.

Applied by Hot Airless as per “project specification” according to client’s requirements to standards, procedures and guidelines in a double or single-layer coat.

Stripe coating: may either be applied by airless spray, (relatively small, narrow-angled nozzles) or by hand-tools. Apply the stripe coat as a uniform, regular film without excessive brush or roller marks in order to avoid air entrapments.

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RECCEOMENDED EQUIPMENT

- We reccomend preheating component A (Base) to 40˚C
- Proportioner pump 2K with remote mix manifold
- Heated hoses
- Airless application
- Nozzle sizes 13 to 21, test for best result depending on temperature.
- Approximately pressure 180 - 250 bar Depending on temperature and nozzle size
- Suitable K2 equipment mixing-block at the end of the (heated) hoses to have a very short “staying” in the equipment of mixed product.

COATING SYSTEMS

COATING SYSTEM: Applied by hot airles spray	THICKNESS
Solvent free or high solids epoxy (1 layer system)	100 - 1000 micron
Solvent free or high solids epoxy, abrasion resistant (2-3 layer system)	200 - 3000 micron
High solids epoxy, abrasion resistant in 2 layers	200+ micron
Epoxy, friction reducing, 1-layer system	200+ micron

POT LIFE

Spray Hot Airless , preheated separated component A & B	
Consistency, mixed	Fluid
Pot life @20˚C	20-40 minutes
Pot life @25˚C	20-35 minutes
Pot life @30˚C	15-30 minutes
Pot life @35˚C	10-20 minutes
Pot life @40˚C	5-15 minutes
Pot life @45˚C	5-10 minutes
Pot life @50˚C	1- 5 minutes
Pot life @55˚C	* minutes

Pot Life @20˚C mixed for application by hand

Depending on amount mixed product and temperature.

Mixed in small amounts, the pot life is approximately 30 minutes at 20°C.

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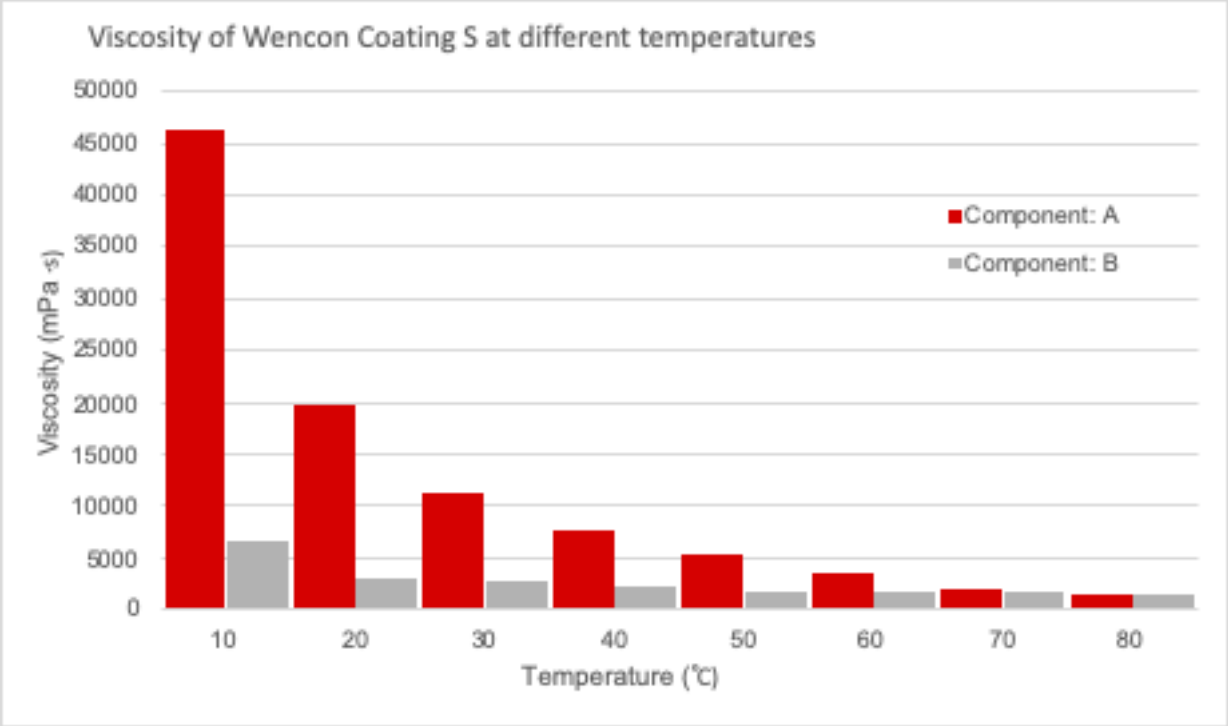
CURING TIME

	@ 20°C / 65% RH	@ 30°C / 60% RH
Dust dry	2 hours	45 min
Tack-free	3 hours	2 hours
Full cure	7 days	5 days

REDUCED CURING TIME WITH INFRARED

This product is tested with and suitable for infrared curing. Curing with infrared radiation can reduce curing time significantly. Result can vary, depending on circumstances and equipment used.

VISCOSITY CURVE



Base Temperature (°C)	Viscosity (mPa·s)	Activator Temperature °C	Viscosity(mPa·s)
10	46248	10	6624
20	19828	20	2995
30	11263	30	2680
40	7625	40	2269
50	5326	50	1842
60	3559	60	1701

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HARDENING					
	16 hrs	24 hrs	48 hrs	72 hrs	1 week
Shore D @ 20 °C	65	82	82	82	82
Shore D @ 5 °C	-	5	70	77	77

Over Coating Guide	TACK FREE		CURED
20°C / 65% RH	16 hrs	> within <	24 hrs
25°C / 65% RH	8 hrs	> within <	18 hrs
30°C / 65% RH	6 hrs	> within <	12 hrs
35°C / 65% RH	4 hrs	> within <	8 hrs

OVER COATING is optimally performed in the time between tack free and cured.

Higher temperatures are not recommendable for application circumstances (substrate and surrounding temperatures).

Compressive Strength						
SO (mm^2)	E (N/mm^2)	Fcrack (N)	Rcrack (N/mm^2)	Fmax (N)	Rmax (N/mm^2)	Compression (%)
161,39	2517,0	14684,7	91,0	14694,7	91,1	6,1221

Tensile Strength						
SO (mm^2)	E (N/mm^2)	Fcrack (N)	Rcrack (N/mm^2)	Fmax (N)	Rmax (N/mm^2)	Compression (%)
39,78	369,4	819,0	20,6	824,5	20,7	2,94

Adhesion			
Adhesion to steel	(Dynapull) (N/mm^2)	6,8	30% A/B 70% B
Adhesion to concrete	(Dynapull) (N/mm^2)	5,6	100% A (= internal strength of the concrete)

NEN-ISO 4624

A	Cohesive failure of substrate
A/B	Adhesive failure between substrate and first coat
B	Cohesive failure of first coat
B/C	Adhesive failure between first and second coats
C	Cohesive failure of second coat
-/Y	Adhesive failure between final coat and adhesive
Y	Cohesive failure of adhesive
Y/Z	Adhesive failure between adhesive and test cylinder

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Elasticity and dielectric strentgh		
Modulus of elasticity	2392.6 N/mm^2	DIN 53454
Dielectric strength	10.0 kV/mm	DIN 53483

Heat resistance ˚C	
Corrosion	Minus 50 to plus 160˚C
Light or no load	Minus 50 to plus 220˚C
For filling only	Minus 50 to plus 250˚C

Density	
Mixed product	1.27 g/cm^3
Means specific volume	0,79 cm^3/g

Coverage rate	
Theoretical	0,76kg/0,6 l per m^2. at 600 microns

TABER TEST Wencon Coating S

Wencon Coating S	Start weight (g)	End weight (g)	Weightloss (g)	Average
Test 1	75,7290	75,6375	0,0915	90,05
Test 2	75,6425	75,5539	0,0886	

Wear Index (Taber) according to ISO 7784-2 performed on a Taber Digital Abraser model 5130.

Test conditions:

Loading: 1000 grams

Cycles: 1000

Temperature: 17˚C

Substrate: Taber S-16 steel specimen plate

Wheels used:
H10- Calibrate: A non-resilient, vitrified wheel designed to evaluate steel and ferrous alloys for resistance to abrasion. It has also been used to test the effect of hardening and tempering treatment on steel and other ferrous materials.

Storage & Shelf life

Only use containers specifically approved for the substance/product. Keep/Store only in original container. Shelf life 3 years @ 20 °C

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CHEMICAL RESISTANCE

The coating is resistant to a wide range of aqueous solutions, acids and alkalis as well as several aggressive acids and caustics. See chemical resistance list or consult relevant contact for lab test.

Handling precautions

Read the instructions for use and the Material Safety Data Sheet

Reccomended Inspection and QC

The inspection shall cover the complete application process, i.e. surface preparation and paint application. Supervision of the coating work recommended to be conducted and comply with ISO 12944-7:" Paints and Varnishes", part 7 and ISO 12944-8: "Paints and Varnishes", part 8.

A daily log shall be maintained by the certified inspector and Contractor, which as a minimum contains:

- Air temperature, relative humidity and dew point
- Identification of area(s) to be coated
- Surface temperature at work start and stop
- Coating progress/time lapse between coats
- Coverage and general appearance
- Thickness measurement
- High voltage porosity testing
- Results of all tests

The results from the inspection shall always be continuously up-dated and available.

Inspection and Quality Control	
Inspection of steel	All edges, including cut-outs, rat holes and welds shall be rounded to a radius of at least 2mm, weld splatter removed.
Purity the sandblasting	Visual inspection, minimum requirements are SA 2.5. (ISO 8501 - 1: 1998) or SSPC -SP 10. (Very thorough blast-cleaning)
Roughness of the sand-blasting	(R -max) is measured in accordance with ISO 8503 parts 1 and 2. Wencon requirement is 75 – 125 microns.
Bresle Sampler Test	Measuring soluble salts / chlorides in the steel surface (ISO 8502-6) Wencon's limit value <50 mg / m^2.
Optional measurement of acid contamination of steel	Measured (iron sulfate) with KTA Scat test kit, where Wencon's limit value is <10 micro-grams / cm^2.
Temperature and Relative Humidity (RH)	measurements are performed on the surroundings and the steel surface. Relative humid-ity (RH) and dew point are checked (determined) and approved before Wencon coating begins.
Measurement of Dry Film Coating Thickness (dft)	Measurements are performed using Magnetic Gages according to the most commonly used Guideline : SSPC-PA2.
Testing of pinholes and other discontinuities.	The continuity of the coating shall be checked, to comply with NACE RP-01-88: "Discon-tinuity Testing of Protective Coatings". Pinholes and other discontinuities shall not be permitted. Coatings above 500 microns dft, should be tested using a high voltage tester. Commonly the high voltage tester should be set at 100 volts per 25 microns of coating as a standard test method.

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