



Protective & Marine Coatings

EURONAVY ES301S HIGH EDGE RETENTION SOLVENT-FREE EPOXY

EDGE RETENTIVE VERSION

PART A: N02MIL-S SERIES
PART B: N02CA301S

Revised 8/10

PRODUCT INFORMATION

9.60

PRODUCT DESCRIPTION

EURONAVY ES301S is a solvent-free, surface and humidity tolerant two-pack modified epoxy. It can be applied without dew point restrictions. ES301S provides chemical and abrasion resistance and very good edge-retentive properties. It can be applied over steel prepared by hydroblasting, grit blasting or mechanical tooling.

- Superior impact resistance
- Non-flammable
- Good chemical resistance
- No dew point or relative humidity restrictions
- Excellent anticorrosive properties
- Can be applied on vessels while on the water

PRODUCT CHARACTERISTICS

Color:	Red Oxide, Light Gray, White
Finish:	Semi-gloss
Volume Solids:	97% ± 3%
Weight Solids:	98% ± 2%
VOC (EPA Method 24):	<150 g/L
Mix Ratio:	4:1, by volume

Theoretical Spreading Rate per coat:

	Minimum	Maximum
Wet mils (microns)	4.0 (100)	6.0 (150)
Dry mils (microns)	4.0 (100)	6.0 (150)
~Coverage sq ft/gal (m²/L)	267 (6.7)	401 (10)
Theoretical coverage sq ft/gal (m²/L) @ 1 mil / 25 microns dft	1604 (39.3)	

NOTE: Brush or roll application may require multiple coats to achieve maximum film thickness and uniformity of appearance.

Drying Schedule @ 4.0 mils wet (100 microns):

@ 40°F/4.4°C @ 59°F/15°C @ 77°F/25°C @ 104°F/40°C

50% RH

To touch:	24 hours	16 hours	6 hours	2 hours
To recoat:				
minimum	48 hours	24 hours	16 hours	6 hours
maximum	16 days	10 days	7 days	4 days
To cure:	-	10 days	4 days	36 hours
Pot Life	3 hours	60 minutes	35 minutes	10 minutes

Drying time is temperature, humidity, and film thickness dependent.

Shelf Life:	12 months, unopened Store indoors at 40°F (4.5°C) to 100°F (38°C)
Flash Point:	>212°F (>102°C), mixed (ASTM D56)
Clean Up:	R6K10 (MEK) or R7K104

RECOMMENDED USES

EURONAVY ES301S is an anticorrosive coating for long service life steel protection, normally used as an intermediate or topcoat as part of a ES301 based coating system when very high edge retentive is required (assuring high film thickness over welds and at sharp edges). It can be used for both immersion and above waterline service in marine, offshore, construction and industrial applications.

It is suitable for new building, conversion, repair or maintenance applications. It provides superior performance protecting areas such as ballast tanks, void tanks, crude oil tanks, slop tanks, mud pits, wet spaces, bilges, decks, external hull and steel bridges.

Suitable for use in USDA Inspected Facilities.

PERFORMANCE CHARACTERISTICS

Test Name	Test Method	Results
Adhesion (pull-off)	After 1,000 hrs salt fog	1,350 - 1,550 psi (9,3 - 10,8 MPa) (ES301K+ES301S)
	After 700 hrs salt fog	1,450 psi (10,0 MPa) (ES301L + ES301S + PU14) NF EN 24624
	After 1,000 hrs condensation	1,670 - 2,000 psi (11,5 - 13,8 MPa) (ES301K + ES301S)
Salt Fog Resistance	ASTM B117, 1,000 hours	D1654: Rating: 10
Humidity Resistance	ASTM D4585, 1,000 hours	ASTM D1654, Rating: 10
Fire Resistance	ASTM E84-01	Rating A
Cathodic Disbonding	MIL-P-24647, 90 days	Passes
Atmospheric Exposure	2.5 years	Rust rating: 10 Blistering rating: 10 Scribe undercut: .5mm
Edge-retention	MIL-PRF-23236	Ratio of 74 - 101%, for edge radius from 0.1 mm to 2.4 mm, respectively. ES301K + ES301S system



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RECOMMENDED SYSTEMS

		Dry Film Thickness / ct.	
		Mils	(Microns)
Immersion or Atmospheric			
1-2 cts.	EURONAVY ES301L or K	4-6	(100-150)
1 ct.	EURONAVY ES301S	4-6	(100-150)

The systems listed above are representative of the product's use, other systems may be appropriate.

CERTIFICATES AND APPROVALS

IMO PSPC: Type Approved as part of a coating system compliant with IMO MSC.215(82) (Performance Standard for Protective Coatings for Dedicated Seawater Ballast Tanks and Double Side Skin Spaces). ABS Type Approval Certificate Number: 08-HS314072-PDA. Germanischer Lloyd Type Approval Certificate GL-KORR 1159HH. Lloyds Register Type Approval Certificate No. MNDE/2008/2847.

MIL-PRF-23236: Approved under MIL-PRF-23236, Type VII, Classes 7, 15b, 17, Grade B and C.

SNCF: Approved by Soci t  National de Chemins de Fer (France) as a part of a coating system for steel bridges protection using Ultra High Pressure hydroblasting (livret IN 0036)

NFPA: part of a system recognizable as Class A rated by National Fire Protection Agency (USA) regarding Flame Spread and Smoke Developed Index accordingly to NFPA standard 101. Systems have been tested using the ASTM E84 standard by the NGC Fire Testing Laboratory (File FH 1525, Project H330).

APPLICATION CONDITIONS

Temperature (Air and Substrate):
Minimum: 41°F (5°C)
Maximum: 122°F (50°C)

Relative humidity: No restrictions

Refer to product Application Bulletin for detailed application information.

TINTING

Do not tint.

WARRANTY

The Sherwin-Williams Company warrants our products to be free of manufacturing defects in accord with applicable Sherwin-Williams quality control procedures. Liability for products proven defective, if any, is limited to replacement of the defective product or the refund of the purchase price paid for the defective product as determined by Sherwin-Williams. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY SHERWIN-WILLIAMS, EXPRESSED OR IMPLIED, STATUTORY, BY OPERATION OF LAW OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

SURFACE PREPARATION

Surface must be clean, dry, and in sound condition. Remove all oil, dust, grease, dirt, loose rust, and other foreign material to ensure adequate adhesion.

***Abrasive blasting:** SSPC SP6 or NACE 3 (ISO 8501-1:1988)

Hydroblasting: WJ-2M (SSPC SP12 – VIS4(I) / NACE N⁰⁵ - N⁰⁷)

***Mechanical Treated:** SSPC SP3 (ISO 8501 -1:1988)

*Recommended surface profile 2-3 mils (50-75 microns)

Additional Advantages: Independently of the type of surface preparation, ES301 moisture tolerance allows for a clean water surface washing before coating to reduce salt contamination. This procedure allowance means that SC2 non-visual standards (NACE 5 / SSPC-SP12) can easily be reached. ES301 iron oxides tolerance allows to proceed with the coating application even over a considerably flash rusted surface (equivalent to M degree as described at SSPC VIS4 (I) / NACE N⁰⁷ standard).

Recoating over old paints in good condition: ES301L or K in most cases can be applied over existing sound coating systems. Adhesion with existing coatings should be tested in a small area, before painting. Also, the adhesion of the old material should be verified. All loose materials should be removed. Please contact our Technical Support team to evaluate surface preparation alternatives. Acceptable cleaning and degreasing the surface is required. Abrading the old coating surface, to promote adhesion, is also recommended.

Surface Preparation Standards

Condition of Surface	ISO 8501-1 BS7079:A1	Swedish Std. SIS055900	SSPC	NACE
White Metal	Sa 3	Sa 3	SP 5	1
Near White Metal	Sa 2.5	Sa 2.5	SP 10	2
Commercial Blast	Sa 2	Sa 2	SP 6	3
Brush-Off Blast	Sa 1	Sa 1	SP 7	4
Hand Tool Cleaning	C St 2	C St 2	SP 2	-
Pitted & Rusted	D St 2	D St 2	SP 2	-
Power Tool Cleaning	C St 3	C St 3	SP 3	-
Pitted & Rusted	D St 3	D St 3	SP 3	-

ORDERING INFORMATION

Packaging and Weight:

5 Gal kit: Part A: 4 US gal in a 5 US gal container
Part B: 1 US gal in a 1 US gal container
Weight: 54.54 ± 0.2 lbs (24.79 K/g)

1 Gal kit: Part A: 0.8 US gal in a 1 US gal container
Part B: 0.2 US gal in a 1 US gal container
Weight: 10.91 ± 0.2 lbs (4.96 K/g)

20 Liter kit: Part A: 16 Liters in a 20 Liter container
Part B: 4 Liters in a 5 Liter container
Weight: 57.10 ± 0.2 lbs (25.9 K/g)

5 Liter kit: Part A: 4 Liters in a 5 Liter container
Part B: 1 Liter in a 1 Liter container
Weight: 14.33 ± 0.2 lbs (6.5 K/g)

DISCLAIMER

The information and recommendations set forth in this Product Data Sheet are based upon tests conducted by or on behalf of The Sherwin-Williams Company. Such information and recommendations set forth herein are subject to change and pertain to the product offered at the time of publication. Consult your Sherwin-Williams representative to obtain the most recent Product Data Information and Application Bulletin.



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Hydroblasting: WJ-2M (SSPC SP12 – VIS4(I) / NACE N^o5 - N^o7)

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APPLICATION CONDITIONS

Temperature (Air and Substrate):
Minimum: 41°F (5°C)
Maximum: 122°F (50°C)

Relative humidity: No restrictions

Refer to product Application Bulletin for detailed application information.

APPLICATION EQUIPMENT

The following is a guide. Changes in pressures and tip sizes may be needed for proper spray characteristics. Always purge spray equipment before use with listed reducer. Any reduction must be compliant with existing VOC regulations and compatible with the existing environmental and application conditions.

Clean UpR6K10 (MEK) or R7K104

Airless Spray

Pressure.....3625 - 4350 psi (250-300 bar)

Tip0.019" - .023"

Reduction.....None

Brush (for stripe coating and repair only)

Brush.....Nylon/polyester or natural bristle

Roller (for stripe coating and repair only)

Cover3/8" woven with solvent resistant core

If specific application equipment is not listed above, equivalent equipment may be substituted.

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Hand Tool Cleaning	OC St 2	OC St 2	SP 2	-
Pitted & Rusted	DC St 2	DC St 2	SP 2	-
Rusted	OC St 3	OC St 3	SP 3	-
Power Tool Cleaning	DC St 3	DC St 3	SP 3	-



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APPLICATION PROCEDURES

Surface preparation must be completed as indicated.

Mixing Instructions: Mix paint thoroughly to a uniform consistency with low speed power agitation prior to use.

Apply paint at the recommended film thickness and spreading rate as indicated below:

Theoretical Spreading Rate per coat:

	Minimum	Maximum
Wet mils (microns)	4.0 (100)	6.0 (150)
Dry mils (microns)	4.0 (100)	6.0 (150)
~Coverage sq ft/gal (m ² /L)	267 (6.7)	401 (10)
Theoretical coverage sq ft/gal (m ² /L) @ 1 mil / 25 microns dft	1604 (39.3)	

NOTE: Brush or roll application may require multiple coats to achieve maximum film thickness and uniformity of appearance.

Drying Schedule @ 4.0 mils wet (100 microns):

@ 40°F/4.4°C @ 59°F/15°C @ 77°F/25°C @ 104°F/40°C
50% RH

To touch:	24 hours	16 hours	6 hours	2 hours
To recoat:				
minimum	48 hours	24 hours	16 hours	6 hours
maximum	16 days	10 days	7 days	4 days
To cure:	-	10 days	4 days	36 hours
Pot Life	3 hours	60 minutes	35 minutes	10 minutes

Drying time is temperature, humidity, and film thickness dependent.

Application of coating above maximum or below minimum recommended spreading rate may adversely affect coating performance.

CLEAN UP INSTRUCTIONS

Clean spills and spatters immediately with R6K10 (MEK) or R7K104. Clean tools immediately after use with R6K10 (MEK) or R7K104. After cleaning, flush spray equipment with R6K10 (MEK) or R7K104 to prevent rusting of the equipment. Follow manufacturer's safety recommendations when using R6K10 (MEK) or R7K104.

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PERFORMANCE TIPS

Stripe coat all crevices, welds, and sharp angles to prevent early failure in these areas.

When using spray application, use a 50% overlap with each pass of the gun to avoid holidays, bare areas, and pinholes. If necessary, cross spray at a right angle.

Spreading rates are calculated on volume solids and do not include an application loss factor due to surface profile, roughness or porosity of the surface, skill and technique of the applicator, method of application, various surface irregularities, material lost during mixing, spillage, overthinning, climatic conditions, and excessive film build.

Reduction of material will affect film build, appearance, and adhesion.

Do not mix previously catalyzed material with new.

Do not apply the material beyond recommended pot life.

In order to avoid blockage of spray equipment, clean equipment before use or before periods of extended downtime with reducer R6K10 (MEK) or R7K104.

Holiday Detection (if required): Prior to immersion service, test coating with appropriate holiday detection equipment. Refer to NACE RPO188-0 for specific procedures.

Refer to Product Information sheet for additional performance characteristics and properties.

SAFETY PRECAUTIONS

Refer to the MSDS sheet before use.

Published technical data and instructions are subject to change without notice. Contact your Sherwin-Williams representative for additional technical data and instructions.

WARRANTY

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