

## Hybrid Epoxy

### PRODUCT DESCRIPTION

An ultra high solids, two component polycyclamine cured lining system utilising advanced epoxy technology, designed for single-leg application.

### INTENDED USES

Intended to provide high corrosion protection, with a rapid cure in a single coat scheme, for the internals of steel storage tanks, pipes and vessels for service in crude oil up to 150°C (302°F). Its low surface energy of 36 Dynes/cm allows enhanced cargo release properties.

For use under other aggressive service conditions, including high temperature produced water, consult the Product Characteristics.

Enviroline 2405 is compliant with the requirements of United States' FDA regulations and is suitable for use in rail cars intended to store and transport liquid and dry foodstuffs.

### PRACTICAL INFORMATION FOR ENVIROLINE 2405

<b>Colour</b>	Green, Light Grey			
<b>Gloss Level</b>	Not applicable			
<b>Volume Solids</b>	96% (measured according to ISO 3233 and ICF Method)			
<b>Typical Thickness</b>	400-750 microns (16-30 mils) dry equivalent to 417-781 microns (16.7-31.2 mils) wet			
<b>Theoretical Coverage</b>	1.92 m <sup>2</sup> /litre at 500 microns d.f.t and stated volume solids 77 sq.ft/US gallon at 20 mils d.f.t and stated volume solids			
<b>Practical Coverage</b>	Allow appropriate loss factors			
<b>Method of Application</b>	Airless Spray, Plural Component Airless Spray			
<b>Drying Time</b>	Overcoating interval with self			
<b>Temperature</b>	<b>Touch Dry</b>	<b>Hard Dry</b>	<i>Minimum</i>	<i>Maximum</i>
5°C (41°F)	30 hours	40 hours <sup>2</sup>	42 hours	14 days <sup>1</sup>
10°C (50°F)	7 hours	17 hours <sup>2</sup>	22 hours	14 days <sup>1</sup>
25°C (77°F)	2.5 hours	5 hours <sup>2</sup>	6 hours	14 days <sup>1</sup>
40°C (104°F)	1.5 hours	3 hours <sup>2</sup>	5 hours	7 days <sup>1</sup>

<sup>1</sup> If the maximum overcoating interval is exceeded it will be necessary to thoroughly abrade the surface of the lining with coarse emery paper.

<sup>2</sup> Sufficient coating film strength has developed to permit the handling and movement of coated steelwork. A Shore D hardness reading of 75-80 is a recommended guideline to indicate suitability for return to service.

### REGULATORY DATA

<b>Flash Point (Typical)</b>	Part A >101°C (>214°F); Part B >101°C (>214°F); Mixed >101°C (>214°F)		
<b>Product Weight</b>	1.57 kg/l (13.1 lb/gal)		
<b>VOC</b>	0.37 lb/gal (45 g/l)	EPA Method 24	
See Product Characteristics section for further details			

## Protective Coatings

## Hybrid Epoxy

### SURFACE PREPARATION

All surfaces to be coated should be clean, dry and free from contamination. Prior to application all surfaces should be assessed and treated in accordance with ISO 8504:2000

Where necessary, remove weld spatter and where required smooth weld seams and sharp edges.

Oil or grease should be removed in accordance with SSPC-SP1 solvent cleaning.

### Steel

Best performance will always be achieved when Enviroline 2405 is applied to surfaces prepared by abrasive blast cleaning to Sa3 (ISO 8501-1:2007) or SSPC-SP5. Where Enviroline 2405 is not to be used in high heat and/or aggressive service, preparation to an absolute minimum of Sa2½ (ISO 8501-1:2007) or SSPC-SP10 at time of coating application may be acceptable. Contact International Protective Coatings for further information.

A sharp, angular surface profile of 75-125 microns (3-5 mils) is recommended.

Enviroline 2405 must be applied before oxidation of the steel occurs. If oxidation does occur the entire oxidised area should be reblasted to the standard specified above. Surface defects revealed by the blast cleaning process should be ground, filled or treated in the appropriate manner.

The preferred method of holding the blast standard is by dehumidification. Alternatively, an approved holding primer may be used.

### APPLICATION

<b>Mixing</b>	Material is supplied in two containers as a unit. Complete units should be stored, mixed and applied in accordance with the Enviroline Application Guidelines. Always mix a complete unit in the proportions supplied. Once the unit has been mixed it must be used within the working pot life specified. (1) Agitate Base (Part A) with a power agitator. (2) Agitate Curing Agent (Part B) with a power agitator. (3) Combine entire contents of the Curing Agent (Part B) with the Base (Part A) and mix thoroughly with the power agitator.		
<b>Mix Ratio</b>	2 part(s) : 1 part(s) by volume		
<b>Working Pot Life</b>	10°C (50°F) 2 hours	25°C (77°F) 60 minutes	40°C (104°F) 30 minutes
<b>Plural Component Airless Spray</b>	Recommended	Use suitable proprietary equipment	
<b>Airless Spray</b>	Recommended	Tip Range 0.48-0.73 mm (19-29 thou) Total output fluid pressure at spray tip not less than 211 kg/cm <sup>2</sup> (3000 p.s.i.)	
<b>Brush</b>	Suitable - small areas only	Typically 150-200 microns (6.0-8.0 mils) can be achieved	
<b>Roller</b>	Suitable - small areas only	Typically 150-200 microns (6.0-8.0 mils) can be achieved	
<b>Thinner</b>	DO NOT THIN		
<b>Cleaner</b>	Enviroline 71C (or International GTA203)		
<b>Work Stoppages</b>	Thoroughly clean all equipment with Enviroline 71C. Once units of paint have been mixed they should not be resealed and it is advised that after prolonged stoppages work recommences with freshly mixed units.		
<b>Clean Up</b>	Clean all equipment immediately after use with Enviroline 71C.  All surplus materials and empty containers should be disposed of in accordance with appropriate regional regulations/legislation.		

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### PRODUCT CHARACTERISTICS

The detailed Enviroline Application Guidelines should be consulted prior to use.

Enviroline 2405 may be suitable for use in storage tanks and pressure vessels with continuous operating up to 135°C (275°F), subject to approval by an International Paint Technical Representative.

Enviroline 2405 may also be used under continuous dry temperatures of up to 200°C (392°F).

This datasheet provides general guidance on the use of Enviroline 2405. Specific project requirements will be dependent upon the service end use and operating conditions of the tank or vessel. Always consult International Protective Coatings to confirm that Enviroline 2405 is suitable for contact with the product to be stored.

The detailed project coating specification provided by International Protective Coatings must be followed at all times.

Stripe coating is an essential part of good working practice and as such should form part of any lining specification.

For heavily pitted or porous steel, spray apply approximately 50% of the required film thickness and follow immediately with a short nap roller or squeegee to work material into the bottom of pitted areas.

Surface temperature must always be a minimum of 3°C (5°F) above dew point. The minimum mixed paint temperature for airless spray application is 20°C (68°F).

Use the following chart for preferred temperature conditions. These conditions plus adequate ventilation must be maintained throughout the curing cycle.

	<u>Substrate Temperature</u>	<u>Air Temperature</u>
<b>Preferred</b>	21-49°C (70-120°F)	21-38°C (70-100°F)
<b>Minimum</b>	10°C (50°F)	5°C (40°F)

After the coating system has cured hard, the dry film thickness should be measured using a suitable non-destructive magnetic gauge to verify the minimum applied system thickness. The coating system should be free of all pinholes or other holidays. The cured film should be essentially free of runs, sags, drips, inclusions or other defects. All deficiencies and defects should be corrected. The repaired areas shall be retested and allowed to cure as specified before placing the finished lining into service.

For post cure conditions specific to rail car application, see the relevant Enviroline 2405 Application Guidelines.

Enviroline 2405 is compliant with the requirements of United States' FDA regulations and is suitable for use in rail cars intended to store and transport liquid and dry foodstuffs. Consult International Protective Coatings for further details.

Note: VOC values are typical and are provided for guidance purpose only. These may be subject to variation depending on factors such as differences in colour and normal manufacturing tolerances.

Low molecular weight reactive additives, which will form part of the film during normal ambient cure conditions, will also affect VOC values determined using EPA Method 24.

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### SYSTEMS COMPATIBILITY

This product is normally applied directly to correctly prepared steel substrates and is not normally topcoated.

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### ADDITIONAL INFORMATION

Further information regarding industry standards, terms and abbreviations used in this data sheet can be found in the following documents available at [www.international-pc.com](http://www.international-pc.com):

- Definitions & Abbreviations
- Surface Preparation
- Paint Application
- Theoretical & Practical Coverage

Individual copies of these information sections are available upon request.

### SAFETY PRECAUTIONS

This product is intended for use only by professional applicators in industrial situations. All work involving the application and use of this product should be performed in compliance with all relevant national Health, Safety and Environmental standards, regulations and legislation.

Proper ventilation must be provided during application and afterwards during curing (refer to product datasheets for typical curing times) to ensure safe limits and prevent fires and explosions. Forced extraction will be required in confined spaces. Ventilation and/or respiratory personal protective equipment (airfed hoods or appropriate cartridge masks) must be provided during application and curing. Take precautions to avoid skin and eye contact (overalls, gloves, goggles, masks, barrier cream, etc).

Before use, obtain, read and then follow the advice given on the Material Safety Data Sheets (Parts A and B if two-pack) and the Health and Safety section of the Coatings Applications Procedures for this product.

In the event that welding or flame cutting is performed on metal coated with this product, dust and fumes will be emitted which will require the use of appropriate personal protective equipment and adequate local exhaust ventilation.

The detailed safety measures are dependent on application methods and the work environment. If you do not fully understand these warnings and instructions or if you cannot strictly comply with them, do not use the product and consult International Protective Coatings.

Warning: This product contains liquid epoxies and modified polyamines and may cause skin sensitisation if not used correctly.

PACK SIZE	Unit Size	Part A		Part B	
		Vol	Pack	Vol	Pack
	4.5 US gal	3 US gal	5 US gal	1.5 US gal	2 US gal
	18 litre	12 litre	20 litre	6 litre	10 litre

Part A and Part B also available in 50 US Gallons supplied in a 55 US Gallon drum.  
For availability of other pack sizes, contact AkzoNobel.

SHIPPING WEIGHT (TYPICAL)	Unit Size	Part A	Part B
	4.5 US gal	60.9 lb	26.2 lb
	18 litre	20.96 kg	9.81 kg

STORAGE	Shelf Life
	12 months at 25°C (77°F). Subject to re-inspection thereafter. Store in dry, shaded conditions away from sources of heat and ignition.

### Important Note

*The information in this data sheet is not intended to be exhaustive; any person using the product for any purpose other than that specifically recommended in this data sheet without first obtaining written confirmation from us as to the suitability of the product for the intended purpose does so at their own risk. All advice given or statements made about the product (whether in this data sheet or otherwise) is correct to the best of our knowledge but we have no control over the quality or the condition of the substrate or the many factors affecting the use and application of the product. Therefore, unless we specifically agree in writing to do so, we do not accept any liability at all for the performance of the product or for (subject to the maximum extent permitted by law) any loss or damage arising out of the use of the product. We hereby disclaim any warranties or representations, express or implied, by operation of law or otherwise, including, without limitation, any implied warranty of merchantability or fitness for a particular purpose. All products supplied and technical advice given are subject to our Conditions of Sale. You should request a copy of this document and review it carefully. The information contained in this data sheet is liable to modification from time to time in the light of experience and our policy of continuous development. It is the user's responsibility to check with their local representative that this data sheet is current prior to using the product.*

*This Technical Data Sheet is available on our website at [www.international-marine.com](http://www.international-marine.com) or [www.international-pc.com](http://www.international-pc.com), and should be the same as this document. Should there be any discrepancies between this document and the version of the Technical Data Sheet that appears on the website, then the version on the website will take precedence.*