Intertherm® 228HS

Epoxy Phenolic

PRODUCT DESCRIPTION

A highly crosslinked, two component, high build epoxy phenolic coating which combines properties of corrosion and chemical resistance when used in high temperature service. Intertherm 228HS is a next generation epoxy phenolic coating based upon novolac resin technology.

INTENDED USES

Intertherm 228HS has been specifically designed to provide a corrosion resistant barrier when used to protect steelwork beneath thermal insulation in areas subjected to wet and dry cycling.

Suitable for exposure in a wide range of highly corrosive environments, including insulated and uninsulated carbon and stainless steel for use on the exterior of pipework, process vessels etc., operating at temperatures up to 230°C (446°F).

Intertherm 228HS has excellent resistance to "thermal shock" experienced during rapid temperature cycling.

PRACTICAL INFORMATION FOR INTERTHERM 228HS

Colour	Limited range
Gloss Level	Eggshell
Volume Solids	70%
Typical Thickness	100-150 microns (4-6 mils) dry equivalent to 143-214 microns (5.7-8.6 mils) wet
Theoretical Coverage	4.67 m²/litre at 150 microns d.f.t and stated volume solids 187 sq.ft/US gallon at 6 mils d.f.t and stated volume solids
Practical Coverage	Allow appropriate loss factors
Method of Application	Airless Spray, Air spray, Brush, Roller

Drying Time

			Overcoating interval with self	
Temperature	**Touch Dry**	**Hard Dry**	*Minimum*	*Maximum*
10°C (50°F)	8 hours	28 hours	36 hours	5 days
15°C (59°F)	7 hours	16 hours	24 hours	4 days
25°C (77°F)	5 hours	8 hours	16 hours	3 days
40°C (104°F)	2 hours	4 hours	16 hours	3 days

REGULATORY DATA

Flash Point (Typical)	Part A 28°C (82°F); Part B 55°C (131°F); Mixed 30°C (86°F)	
Product Weight	1.86 kg/l (15.5 lb/gal)	
VOC	2.21 lb/gal (265 g/lt)	EPA Method 24
	167 g/kg	EU Solvent Emissions Directive (Council Directive 2010/75/EU)
	275 g/lt	Chinese National Standard GB23985

Coating hazard marker GB 30981.2-S-Pb≤1000-NC Qualified for GB 30981.2-2025

See Product Characteristics section for further details

Epoxy Phenolic

SURFACE PREPARATION

All surfaces to be coated should be clean, dry and free from contamination. Prior to paint application all surfaces should be assessed and treated in accordance with ISO 8504-1. 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.

Abrasive Blast Cleaning

This product must only be applied to surfaces prepared by abrasive blast cleaning to Sa2½ (ISO 8501-1:2007) or SSPC-SP10. A sharp, angular surface profile of 50-75 microns (2-3 mils) is recommended. Intertherm 228HS 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.

Power Tool Cleaning (Small Areas Only)

Intertherm 228HS is suitable for application over power tool cleaned surfaces prepared to a minimum of SSPC-SP11. Note, all scale must be removed and all areas which cannot be prepared adequately should be spot blasted to a minimum standard of Sa2 (ISO 8501-1:2007) or SSPC-SP6.

Stainless Steel

Ensure surface is clean, dry and free from metal corrosion products prior to coating. Light sweep with non-metallic and chloride free abrasive (e.g. aluminium oxide or garnet) to obtain anchor profile of approximately 50 microns (2 mils).

APPLICATION

Mixing

Material is supplied in two containers as a unit. 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) Combine entire contents of Curing Agent (Part B) with Base (Part A) and mix thoroughly with power agitator.

Avoid mixing for prolonged periods as heat generated will significantly reduce pot life.

Mix Ratio

6 part(s) : 1 part(s) by volume

Working Pot Life

10°C (50°F)	15°C (59°F)	25°C (77°F)	40°C (104°F)
5 hours	4 hours	90 minutes	45 minutes

Airless Spray	Recommended	Tip Range 0.43-0.53 mm (17-21 thou) Total output fluid pressure at spray tip not less than 176 kg/cm² (2503 p.s.i.)	
Air Spray (Pressure Pot)	Recommended	Gun Air Cap Fluid Tip	DeVilbiss MBC or JGA 62 AC
Brush	Suitable - Small areas	Typically 50-75 microns (2.0-3.0 mils) can be achieved	
Roller	Suitable - Small areas	Typically 50-75 microns (2.0-3.0 mils) can be achieved	
Thinner	International GTA220 (or GTA415)	Thinning is not normally required. Consult the local representative for advice during application in extreme conditions. Do not thin more than allowed by local environmental legislation.	
Cleaner	International GTA822 (or GTA415)	Choice of cleaner maybe subject to local legislation. Please consult your local representative for specific advice.	

Work Stoppages

Do not allow material to remain in hoses, gun or spray equipment. Thoroughly flush all equipment with International GTA822. 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.

Clean Up

Clean all equipment immediately after use with International GTA822. It is good working practice to periodically clean equipment during the course of the working day. Frequency of cleaning will depend upon amount used, temperature and elapsed time, including any delays.

All surplus materials and empty containers should be disposed of in accordance with appropriate regional regulations/legislation.

PRODUCT CHARACTERISTICS

Intertherm 228HS is typically applied as a two coat system at 100-150 microns (4-6 mils) per coat to give a total coating system dry film thickness of 200-300 microns (8-12 mils).

Care should be taken to avoid over application which can lead to cracking when the full coating system is exposed to elevated temperatures. The total coating system thickness applied should not exceed 350µm (13.8 mils).

Maximum film build in one coat is best attained by airless spray. When applying by methods other than airless spray, the required film build is unlikely to be achieved. Application by air spray may require a multiple cross spray pattern to attain optimum film build. The use of other methods, e.g. brush or roller, may require more than one coat and are suggested only for small areas and initial stripe coating.

When applying Intertherm 228HS by brush or roller, it may be necessary to apply multiple coats to achieve the total specified system dry film thickness.

If Intertherm 228HS is to be applied by brush to coat small areas for maintenance purposes, it is recommended that Intertherm 228HS is applied as a three coat system at 65 microns (2.5 mils) per coat to give a total coating system dry film thickness of 195 microns (7.5 mils).

Steel surface temperature must always be a minimum of 3°C (5°F) above dew point. Application at temperatures below 10°C (50°F) will result in extended drying times. The relative humidity during application and curing should not exceed 80%. When applying Intertherm 228HS in confined spaces ensure adequate ventilation.

After the last coat has cured hard, the coating system dry film thickness should be measured using a suitable non-destructive magnetic gauge to verify the average total 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 curing times will vary depending upon dry film thickness and conditions that exist during application and throughout curing periods.

Maximum performance is not attained until the film has completely cured. Cure is a function of temperature, humidity and film thickness. Normally Intertherm 228HS coating systems at 300 microns (12 mils) dry film thickness will exhibit full and complete cure for optimal temperature resistance in 7-10 days at 25°C (77°F). Curing times are proportionately shorter at elevated temperatures and longer at lower temperatures.

In common with all epoxies Intertherm 228HS will chalk and "yellow" on exterior exposure. Intertherm 228HS will also show a marked colour change when exposed to higher temperatures. However, these phenomena are not detrimental to anti-corrosive performance provided recommended temperature limits are not exceeded.
Intertherm 228HS is suitable for protection of insulated steelwork, which may cycle between wet and dry conditions, and is operating at continuous in-service temperatures ranging from ambient up to 200°C (392°F), with intermittent surges up to 230°C (446°F).

Intertherm 228HS is an immersion grade epoxy phenolic coating, and is suitable for use in situations of continuous intimate contact with wet insulation.

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.

SYSTEMS COMPATIBILITY

This system is self-priming and is not suitable for application over other primers.

Intertherm 228HS is normally topcoated with itself, for other suitable topcoats please consult International Protective Coatings.

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:

- 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 in accordance with the advice given on this sheet, the Safety Data Sheet and the container(s), and should not be used without reference to the Safety Data Sheet (SDS).

All work involving the application and use of this product should be performed in compliance with all relevant national, Health, Safety & Environmental standards and regulations.

In the event 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.

If in doubt regarding the suitability of use of this product, consult AkzoNobel for further advice.

PACK SIZE

Unit Size	Part A		Part B	
	Vol	Pack	Vol	Pack
20 litre	17.14 litre	20 litre	2.86 litre	5 litre
5 US gal	4.29 US gal	5 US gal	0.71 US gal	1 US gal

For availability of other pack sizes, contact AkzoNobel.

SHIPPING WEIGHT (TYPICAL)

Unit Size	Part A	Part B
20 litre	35.11 kg	2.75 kg
5 US gal	77.1 lb	6.5 lb

STORAGE

Shelf Life	12 months (Part A) and 18 months (Part B) minimum 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 or 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.

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