Ceilcote® 232 Flakeline

Novolac Vinyl Ester

PRODUCT DESCRIPTION

Ceilcote 232 Flakeline is a flake filled novolac vinyl ester coating which exhibits excellent resistance to both aliphatic and aromatic organic solvents and to concentrated organic and inorganic acids.

It offers outstanding chemical resistance with quick turn around for service and also high temperature resistance.

INTENDED USES

For use on tanks or other steel structures, trenches, pits, secondary containment and floors, where chemical resistance is the primary concern.

Ability to apply by brush and roller as well as airless spray make Ceilcote 232 Flakeline ideal for complex geometries and difficult to access areas.

Resistant to different renewable/bio feedstocks and refine products (fuels) including animal/vegetable oils and fats, biodiesel, ethanol etc. Resistant to unlimited fatty acid content and higher temperature service.

PRACTICAL INFORMATION FOR CEILCOTE 232 FLAKELINE

Color Gray, Off White

Gloss Level Not applicable

Volume Solids 100% reactive

Typical Thickness 15-25 mils (375-625 microns) dry equivalent to 17.6-29.4 mils (441-735 microns) wet per coat

Practical Coverage 76 sq.ft/US gallon at 18 mils d.f.t and 85% volume solids
1.89 m²/litre at 450 microns d.f.t and 85% volume solids
(see Page 3 Product Characteristics)

Method of Application Airless Spray, Roller, Brush

Drying Time

			Overcoating interval with self	
Temperature	**Touch Dry**	**Hard Dry**	*Minimum*	*Maximum*
50°F (10°C)	4 hours	24 hours	12 hours[1]	28 days
59°F (15°C)	4 hours	16 hours	8 hours[1]	28 days
77°F (25°C)	2 hours	4.5 hours	4 hours[1]	28 days
95°F (35°C)	90 minutes	3 hours	3 hours[1]	28 days

[1] When surface temperatures exceed 95ºF (35ºC) or are exposed to direct sunlight, overcoating should take place as soon as the coating may be walked on, in order to avoid intercoat adhesion issues.

REGULATORY DATA

Flash Point (Typical) Part A 93°F (34°C); Part B 171°F (77°C); Mixed 90°F (32°C)

Product Weight 10.4 lb/gal (1.25 kg/l)

VOC 1.92 lb/gal (231 g/lt) EPA Method 24

122 g/kg EU Solvent Emissions Directive (Council Directive 2010/75/EC)

0.81 lb/gal (97 g/lt) ASTM D2369

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

See Product Characteristics section for further details

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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.

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

Steel Substrates

For immersion service or service in humid conditions or elevated temperatures, this product should be applied to surfaces which have been prepared by abrasive blast cleaning to Sa3 (ISO 8501-1:2007), SSPC SP5 or NACE #1. For dry environments, abrasive blast cleaning to Sa2½ (ISO 8501-1:2007), SSPC SP10 or NACE #2 will be suitable. A sharp, angular surface profile of 3 mils (75 microns) is recommended.

Concrete Substrates

Concrete should be well cured prior to priming with the appropriate primer. The concrete surface should be dry and pass the plastic sheet test (ASTM D4263). All surfaces should be clean, dry and free from curing compounds, release agents, trowelling compounds, surface hardeners, efflorescence, grease, oil, dirt, old coatings and loose or disintegrating concrete. All concrete surfaces must also be abrasive blast cleaned to provide a roughened surface and remove laitance. The surface tensile strength (ASTM 4541) as prepared should be at least 300 psi (2MPa). Refer to the Concrete Surface Preparation Guidelines for more information.

Surfaces must be primed using Ceilcote 380 Primer at 2-5 mils WFT (50-125 microns WFT).

APPLICATION

Mixing

Ceilcote 232 Flakeline must always be mixed and applied in accordance with the detailed Application Guidelines for the subsequent system.
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.

Do not mix more material than can be applied within the recommended pot life.

Mix Ratio

1 gallon Part A : 2½oz Part B (1 litre Part A : 20ml Part B)

Working Pot Life

50°F (10°C)	59°F (15°C)	77°F (25°C)	95°F (35°C)
60 minutes	50 minutes	45 minutes	30 minutes

Airless Spray	Recommended	Tip Range 25-33 thou (0.64-0.84 mm) Total output fluid pressure at spray tip not less than 2204 psi (155 kg/cm²)
Brush	Suitable	Multiple coats may be required to achieve specified film thickness.
Roller	Suitable	Multiple coats may be required to achieve specified film thickness.

Thinner

DO NOT THIN

Cleaner

Ceilcote T-410 Solvent N.B. Clean all equipment immediately after use.

Work Stoppages

Do not allow material to remain in hoses, gun or spray equipment. Thoroughly flush all equipment with T-410 Solvent. 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.

Once units have been mixed, work should continue until all mixed material has been used.

Clean Up

Clean all equipment immediately after use with T-410 Solvent. It is good working practice to periodically flush out spray equipment during the course of the working day. Frequency of cleaning will depend upon amount sprayed, temperature and elapsed time, including any delays.

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

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PRODUCT CHARACTERISTICS

The detailed Application Guidelines for the relevant Ceilcote system should always be consulted prior to use.

The Ceilcote 232 Flakeline application shall be conducted by the Applicator Company using employees trained in the appropriate application procedures. It is strongly advised that both application and application supervision is only carried out by professional personnel who have been trained in the correct use of the products.

The exact specification with regards to dry film thickness and number of coats will be provided by International Protective Coatings prior to application start up.

Although Ceilcote 232 Flakeline is 100% reactive, depending upon the application conditions, the practical volume solids may be lower and International Protective Coatings suggest a value of 85% for estimating spreading rate.

Surface temperature must always be a minimum of 5°F (3°C) above dew point. Ensure adequate ventilation is provided throughout application and curing. Dehumidification (DH), air conditioning and/or heating equipment may be necessary to control environmental conditions.

For all application steps, the surface temperature, air temperature and material temperature should be between 50ºF (10ºC) and 110ºF (43ºC)

When working outside or in direct sunlight, concrete "gassing" or "breathing" may occur when the surface temperature is rising due to sunlight or increasing ambient temperature. This can cause bubbles or holes in the applied floor, lining or coating. When this problem occurs it is necessary to shade the surface from sunlight and/or apply the material in the cooler evening or at night so that initial cure can take place without air escaping from the concrete. Consult International Protective Coatings for more detailed recommendation.

Where the overcoating interval is exceeded, confirm recoatability by wiping with styrene monomer. If the surface becomes 'tacky', adhesion is acceptable. If not softened by styrene, the surface must be sweep blasted or mechanically abraded to provide a non-glossy, abraded surface. Primed surface must be dry and free of foreign matter at time of lining, coating or flooring application.

Following correct installation, Ceilcote 232 Flakeline may be returned to service after the following intervals:

50ºF (10ºC): 48 hours
70ºF (20ºC): 24 hours
90ºF (35ºC): 16 hours

Ceilcote 232 Flakeline is not intended to be used as a cosmetic finish and color stability will not be achievable.

Maximum continuous dry temperature resistance for Ceilcote 232 Flakeline is 350°F (177ºC).

Ceilcote 232 Flakeline can be used as part of the following systems:
MR System
Prime using Ceilcote 380 or 370HT primer followed by a basecoat of Ceilcote 6650 Ceilcrete including the mat reinforcement layer. Complete using one or more layers of Ceilcote 232 Flakeline.
CeilLine System
Prime using Ceilcote 680 or 680M primer followed by an elastomeric basecoat layer of Ceilcote CeilLine including the mat reinforcement. Complete using one or more layers of Ceilcote 232 Flakeline.

Further application details may be found on the data sheets of the individual products mentioned.

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 color 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

Ceilcote 232 Flakeline should be applied to correctly prepared substrates. However, it is suitable for application to the following primers:

Ceilcote 380 Primer Ceilcote 370HT Primer

Ceilcote 232 Flakeline may also form a constituent part of other systems such as

Ceilcote 232 Ceilline Ceilcote 232MR

Ceilcote 232 Flakeline is usually overcoated with itself.

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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:

- Definitions & Abbreviations
- Surface Preparation
- Paint Application
- Theoretical & Practical Coverage
- Ceilcote 232 Flakeline Application Guidelines

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 (Base and Curing Agent 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.

PACK SIZE

Unit Size	Part A		Part B	
	Vol	Pack	Vol	Pack
15 liter	14.71 liter	20 liter	0.29 liter	0.7 liter
4 US gal	4 US gal	5 US gal	10 fl oz	1 US pint

For availability of other pack sizes, contact AkzoNobel.

SHIPPING WEIGHT (TYPICAL)

Unit Size	Part A	Part B
15 liter	20.3 kg	0.39 kg
4 US gal	44.3 lb	1 lb

STORAGE

Shelf Life	6 months at 68ºF (20°C). Subject to re-inspection thereafter. Store in dry, shaded conditions away from sources of heat and ignition. During storage and shipment, Ceilcote 232 Flakeline initiator must not be exposed to temperatures exceeding 30°C (90°F). Refrigeration recommended. Best practice would be to hold Parts A and B in separate stores.

Disclaimer

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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