

Intertherm 3350

Application Guidelines

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These guidance notes are intended to assist applicators and are for guidance only; Akzo Nobel accepts no liability for the acts or omissions of any applicators.

Applicators must make direct contact with International Protective Coatings to discuss any training requirements for the application of the Intertherm 3350 product PRIOR to any commencement of a project.

The information in this guideline is not intended to be exhaustive; any person using the product for any purpose other than that specifically recommended in this guideline 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 guideline 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 guideline 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 International Paint representative that this guideline is current prior to using the product. factors can vary significantly, due care should be exercised in the selection, verification of performance, and use of the coating(s).

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1.0 SCOPE AND PURPOSE

This document provides general guidance on the use of Intertherm 3350. Specific project requirements will be dependent upon the substrate type, substrate condition, service end use and environmental conditions. Always consult International Protective Coatings to confirm that Intertherm 3350 is suitable for the intended end use. The detailed project specification provided by International Protective Coatings must be followed at all times.

Intertherm 3350 is typically specified as a multicoat system at 500µm (20mils) dry film thickness per coat. The number of coats applied is completely dependent on the insulation properties required by the client.

The responsibilities for achieving the specific standards outlined, and for carrying out surface preparation and product application, rest with the Contracting Company. Under no circumstances do these responsibilities rest with International Paint. We will generally provide for the presence of a Technical Service Representative at key stages during the performance of the contract. The role of the International Paint Technical Service Representative is advisory only unless otherwise specified in the terms and conditions of the contract. The information contained herein presents guidelines for the application of Intertherm 3350 to suitably primed ferrous and non-ferrous substrates.

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2.0 Introduction

Intertherm 3350 is a single pack water-borne acrylic insulation coating designed to provide insulation in order to conserve energy and protect personnel from burn injuries.

Specification of thickness for Intertherm 3350 is carried out on a case by case basis following discussion of desired aims with the end user.

This document gives detailed guidance on the use and application of Intertherm 3350 and should be read in conjunction with the relevant technical datasheet and material safety datasheet (MSDS).

3.0 Where to Apply

Intertherm 3350 is a versatile insulation coating and can be used effectively for a number of different end uses where insulation is required including:

Personnel Protection: Where there is a need to reduce the touch temperature of a surface to within a safe level. It is essential in such areas that adequate coating thickness is applied to achieve the desired touch temperature for the specified duration

Insulation of Elevated Temperature Tanks and Vessels: Applied to minimize heat loss from a tank or vessel.

Minimize Radiant Heat Gain: Applied to keep storage tanks and vessel cool, where protection against radiant solar heat gain is required.

Intertherm 3350 may be applied in both the fabrication/painting shop and/or on a job site depending upon a specific projects requirement. However it is essential that the guidance relating to environmental conditions during application is adhered to and that minimum over coating and dry times are strictly followed.

Intertherm 3350 can be used over a range of approved primer systems which are listed on the datasheet. It is essential that the primer specified is suitable for the maximum service temperature the Intertherm 3350 is likely to encounter. Acceptable maximum operating temperatures for recommended primers are listed in section 7.0 of this document. Over coating time guidance as given on the relevant datasheet for a specific primer must be followed. For advice on suitable topcoats see section 8.0.

Intertherm 3350 is also suitable for application direct to correctly prepared stainless steel.

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4.0 Storage of Materials

Intertherm 3350 should be stored in dry, shaded conditions and must be protected from freezing at all times during storage and transport. **Frozen Intertherm 3350 material shall be discarded.** The recommended storage temperature is between 4°C (39°F) and 25°C (77°F). To facilitate optimum airless spray application characteristics, Intertherm 3350 should be stored in a warm environment (15°C (59°F) to 25°C (77°F)) for at least 16 hours prior to commencement of spraying.

The shelf life of Intertherm 3350 at 25°C is 18 months from date of manufacture, subject to re-inspection thereafter. Containers should remain sealed and unopened until needed and used in date order. Shelf life may be reduced at higher storage temperatures. Regular inverting (turning upside down) of pails will help prolong shelf life and make mixing easier when opened.

5.0 Environmental Conditions for Application

Intertherm 3350 is a water-borne coating and as such is sensitive to environmental conditions during application and should be applied at air and substrate temperatures between 10°C and 40°C (50–104°F). The surface must be dry and the surface temperature must always be a minimum of 3°C (5°F) above the dew point. In line with good painting practice, application should not take place in conditions which are deteriorating, e.g. where the temperature is falling and is likely to go below 10°C (50°F) or where there is a risk of condensation forming on the substrate.

For optimum application and drying, the air and substrate temperature should be greater than 10°C (50°F) and relative humidity less than 80%. Application at temperatures below 10° (50°F) and at higher humidities will retard drying and could compromise the ultimate coating performance. Consult table 7.1 for detailed information on over coating intervals and dry times at different temperatures and humidities. Engineering controls to maintain conditions within the designated ranges such as electric powered heaters or dehumidifiers are recommended. Fuel fired heaters can create moisture and will be detrimental to the drying and curing of the Intertherm 3350.

Air movement is the most significant factor affecting the drying of water-borne paints. Good air flow and ventilation are always recommended to ensure there are no areas around the structure without ventilation. With little air movement, it is possible that an increase in the local relative humidity will soon reach unacceptable levels, resulting in extended drying/overcoating times and poor performance. Forced ventilation such as the use of portable fans in direct contact with freshly applied Intertherm 3350 is not recommended as it can lead to surface defects, for example skinning or wrinkling. The recommended air speed is a minimum of 0.1m/s (4inches/sec) and a maximum of 0.5m/sec (20inches/sec). Intertherm 3350 must be protected from condensation and water during application and drying.

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6.0 Surface Preparation

Correct surface preparation is the foundation for success of any coating application and Intertherm 3350 systems are no exception.

All surfaces to be coated should be clean, dry and free from contamination including dirt, salts, oil and grease and should be assessed and treated in accordance with ISO 8504:1992. Where necessary, remove weld spatter and smooth weld seams and sharp edges.

Steel preparation before priming should be done in accordance with the recommended primers' product data sheet. The minimum recommended surface preparation is Sa 2½ (ISO 8501-1:2007) or SSPC SP6/NACE 3

Primed Surfaces

The primer surface should be dry and free from all contamination and Intertherm 3350 must be applied within the over coating intervals specified (consult the relevant primer product data sheet). The primer must have been applied to a properly cleaned substrate as detailed above.

Areas of breakdown, damage etc., should be prepared to the specified standard (e.g. Sa2½ (ISO 8501-1:2007) or SSPC SP6, Abrasive Blasting, or SSPC SP11, Power Tool Cleaning (for small areas) and patch primed prior to the application of the Intertherm 3350 product.

Should the primer's suitability for overcoating be in doubt in any way, for example, primer type unknown, primer not approved, excessive dry film thickness, surface contamination, surface glossiness etc, International Protective Coatings MUST be consulted prior to the application of Intertherm 3350.

Stainless Steel

Ensure surface is clean, dry and free from metal corrosion products prior to application. Abrasive blast with non-metallic and chloride-free abrasive (e.g. aluminium oxide or garnet), to obtain anchor profile of 25 to 32.5 microns (1.0 to 1.5 mils). Intertherm 3350 should be applied direct to metal.

Intertherm 3350 can be applied to composites such as GRP or fibreglass. The surface should be first abraded with 80 mesh abrasive paper until no sheen is left on the surface. A further water/soap wash will then be required to ensure all residual powder is removed from the surface. Fresh water rinse to remove any detergent residues. The substrate should then be allowed to dry before application of Intertherm 3350.

7.0 Primers and Overcoating

When used on carbon steel equipment Intertherm 3350 must **ALWAYS** be applied over an approved priming system which will provide the required anti-corrosive protection to the steelwork over the lifetime of the structure. Intertherm 3350 is not designed to give anti-corrosive protection alone and is therefore **NEVER** applied directly to carbon steel substrates.

The minimum overcoating times advised upon the respective primer datasheets must always be observed.

The maximum operating temperature of the approved primers is given below:

Primer	Maximum Operating Temperature
Intertherm 228	230°C (446°F)
Intertherm 228HS	230°C (446°F)
Interseal 670HS	120°C (248°F)
Interzinc 52	150°C (302°F)

The minimum overcoating time for Intertherm 3350 with itself varies with temperature and humidity. The following table provides additional guidance on minimum self/self over coating times for differing temperatures and humidities.

RH Temperature	10-30%	30-50%	50-70%	70-80%
10°C(50°F)	6.5 hours	8.5 hours	10.5 hours	13 hours
15°C(59°F)	5.5 hours	7.5 hours	9.5 hours	12 hours
25°C(77°F)	2 hours	3 hours	3.5 hours	4 hours
40°C(104°F)	1 hour	1.25 hours	1.5 hours	1.75 hours

Table 7.1 Self/Self Over coating Times

8.0 Topcoats

Only topcoats approved by International Protective Coatings should be applied over Intertherm 3350. Typically water-based acrylic topcoats will be suitable such as Intercryl 530 and Intercryl 700. For further information on suitable topcoats contact International Protective Coatings.

Prior to the application of the topcoat, the applicator must ensure that the specified dry film thickness of Intertherm 3350 has been achieved. Intertherm 3350 must be allowed to harden sufficiently so that accurate thickness readings can be taken.

The minimum recommended overcoating times for Intertherm 3350 with approved topcoat are given below. These are for guidance and may differ depending upon total scheme dft:

Temperature	Minimum Overcoating
10°C (50°F)	3 days
15°C (59°F)	2.5 days
25°C (77°F)	1.5 days
40°C (104°F)	18hrs

The surface of the Intertherm 3350 must be clean, dry and free from contamination before overcoating with the topcoat.

Depending on the choice of topcoat colour, two or more coats may be necessary to achieve full opacity. The dry film thickness of topcoat required to give a uniform finish will also be influenced by the unevenness of the surface of the Intertherm 3350.

Even when the Intertherm 3350 system is correctly topcoated, any contact with ponding, standing or running water must be avoided.

9.0 Mixing

Separation of Intertherm 3350 may occur on storage and is common with such coatings. A mixing paddle set slow speed should be used to incorporate material to a homogeneous consistency. A paddle similar to that shown below is preferred.

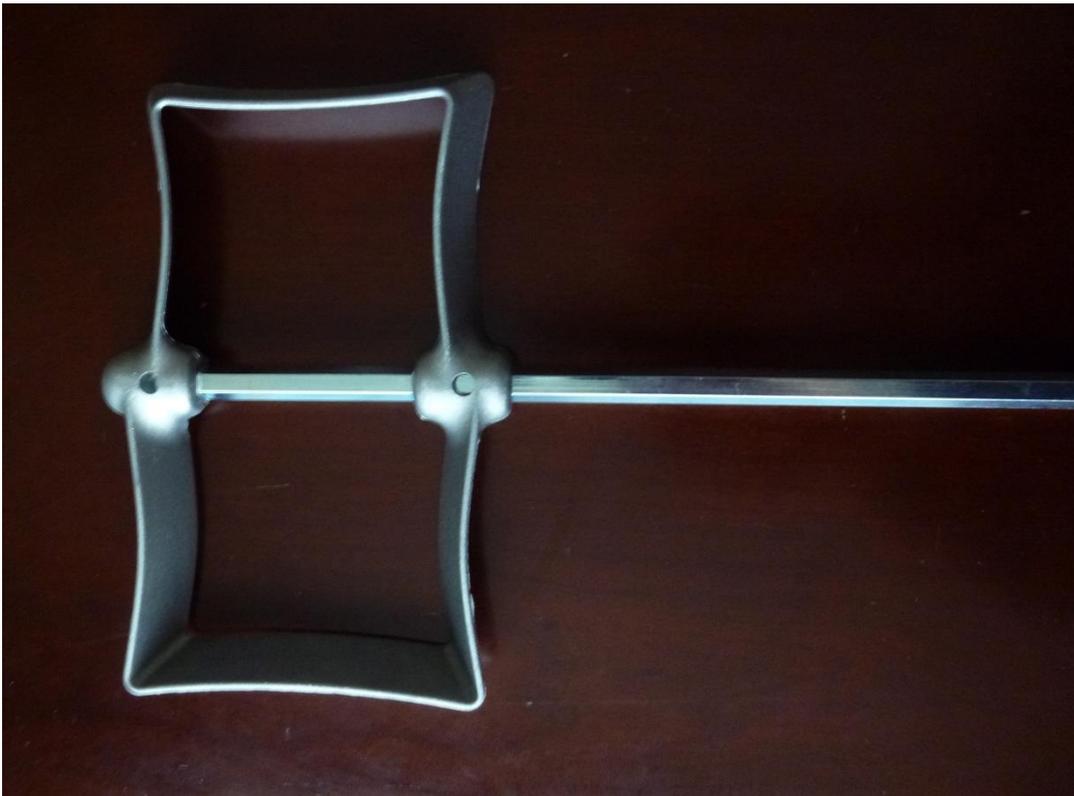


Fig 8.1 Mixing Paddle

Normally this will take about 30 seconds. Avoid contact of mixing blade and edge of plastic buckets to avoid shearing plastic pieces into coating. If other types of blades or high powered mixers are used, avoid high shear or over mixing. Over mixing or high shear mixing may destroy the particles and hence reduce insulating properties. **DO NOT MECHANICALLY SHAKE.**

10.0 Airless Spray Application

Recommended Equipment

- Recommended Airless Spray equipment includes, but not limited to,
 - GRACO KING 33:1/60:1 Ratio
 - GRACO NXT 33:1/60:1 Ratio
- Use only an airless spray system with a minimum of 3.8 litres (1.0 gallon) per minute product delivery rate at 211kg/cm² (3000 psi.) .
- 3/8" spray hose line
- Reversible nozzle with tip size 0.43-0.64mm (17 – 25 thou). Tip size depends upon the area to be sprayed. For smaller areas smaller fan sizes should be used.
- Gun should be a Graco Contractor, FTX or equivalent. Under no circumstances should a Graco Silver Gun be used as the will restrict the flow rate of product.
- 1m (3') length, 6.35mm (¼") whip end
- Paddle and mixer with reverse gear.

Preparation

- Ensure that the pump, lines, gun and nozzles are all clean and blockage free.
- Remove all in-line filters from the pump and gun.
- Use clear, reinforced feed lines to prevent heat build and assist with cleaning.
- Carefully connect all fittings ensuring that clamps and jubilee clips are securely tightened.
- Flush all solvents from the pump with water - around 10-15 gallons
- Prime the pump with product without the gun attached. When the product is consistently thick stop the pump and attach the gun an spray nozzle and tip
- Use a sample area to adjust spray pressure. Make sure pressure is just high enough to alleviate fingering or keep pressure constant. If the pressure is not consistent, either there is a volume problem with the pump or not enough air coming into the pump from the compressed air supply.
- NOTE Slight tip clogging may occur initially as the abrasive nature of the product tends to clean the pump and lines. If old non dedicated lines are used then tip clogging may last longer. For this reason we recommend having a dedicated pump and lines for application of Intertherm 3350.
- The coating should be sprayed in a uniform manner it is very important to have an even coat across the substrate

The initial coat of Intertherm 3350 is described as a 'tack coat' which is applied at 250 – 300 microns (10-12 mils). This should be allowed to touch dry before the application of subsequent coats. This will help to avoid potential slumping of the product due to excessive film thickness in the initial coat. Further coats can be applied to the touch tack coat to build up the desired specification

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Clean up / Work Stoppages

- It is necessary to clean the gun regularly to prevent build- up of dry material and blockages at the nozzle.
- Depending upon the application conditions, it will also be necessary to clean down the pump and lines during the working day, especially before any breaks in application. For longer stoppages, the pump lines and spray gun should be emptied of all material and thoroughly cleaned.
- In very warm conditions cleaning will need to be done more regularly.
- All parts of the pump, lines, gun and nozzles should be thoroughly cleaned with plenty of clean water to prevent future blockages. Use suitably sized sponges to clean the inside of the feed line and bottle brushes for cleaning parts of the gun and nozzle.
- The external surfaces of the pump may be coated with a mould release agent to facilitate ease of cleaning but not the inside of the hopper.

11.0 Possible Film Defects

A number of potential defects are detailed below together with recommended remedial treatment.

Over-Application

Intertherm 3350 displays good resistance to sag and as such can be easily over applied. The risk associated with over application of a multi-coat system is that there is insufficient time for the moisture to leave the coating prior to the application of the following coat. This can lead to blistering upon final drying and when placed in service. As a result this document provides extensive guidance upon minimum self/self over coating times which must be followed. Regular monitoring of film thickness is also encouraged

Overspray / Dry Spray

Overspray will have the appearance of a non-closed film and/or surface roughness.

Any dry overspray of Intertherm 3350 onto adjacent primed steelwork should be removed from the surface prior to application of the Intertherm 3350. Failure to do so may impair adhesion and affect final appearance.

Sometimes this can be dusted off but abrasion using 80 mesh abrasive paper may be required to achieve a satisfactory smooth finish onto which a topcoat can be applied.

Overspray can be minimized by good work planning and good spray technique such as reduction of air pressure, sensible tip size, etc., depending on the structure to be sprayed. The sprayer should be close enough to the work surface at all times to minimize airborne overspray without leading to excessive ripples or other texture in the coating caused by the pressure of the spray. All dry overspray must be removed prior to top coating.

For large areas or areas where overspray may be unavoidable, it is advised that the adjacent steelwork be covered or taped to prevent overspray damaging cosmetic appearance.

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12.0 Measurement of Dry Film Thickness

After sufficient drying time a survey of the dry film thickness should be carried out using a suitable calibrated gauge. An electromagnetic induction instrument with a statistical function to store readings and give an average is most useful. Where dry film readings include a primer and/ or top coat an allowance must be made for these coatings and subtracted from the total reading.

The DFTs applied must be consistent with the recommended DFT in order to meet the expected thermal performance.

13.0 Inspection and Repair

The repair method will depend upon the extent of the damage. Repairs should be carried out at the earliest opportunity using the appropriate procedure from those given below.

Damage Down to Steel

Remove unsound and damaged coatings to a neat firm edge with sound adhesion. Remove all corrosion products. For limited small areas prepare steel surface in accordance with SSPC SP11 without polishing the substrate. For large areas of repair the exposed steel surface should be prepared by abrasive blasting to a minimum standard of Sa2½ (ISO 8501-1:2007) or SSPC-SP6.

Chamfer coating edges by abrading. Reinststate the original or other priming system recommended by International Paint. Avoid overlap of primer onto surrounding Intertherm 3350. Reinststate the Intertherm 3350 within the recommended overcoating limits of the repair primer.

Apply Intertherm 3350 in multiple applications up to the specified dft ensuring minimum overcoating times and maximum dfts per coat are observed. Failure to do this may result in blistering once placed in service. For small areas of repair and touch up it is suitable to apply Intertherm 3350 by conventional air spray equipment.

Damage Not Requiring Primer Repair

Depending on severity of damage, either lightly abrade the damaged area back to a chamfered edge, or cut out a suitable area of Intertherm 3350 and chamfer out the edges. If cutting out, do not damage the priming system, otherwise repair as for damage down to steel will be required.

Reinststate Intertherm 3350 to the required dry film thickness using the method described above.

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14.0 Health and Safety

Intertherm 3350 is intended for use only by professional applicators in industrial situations in accordance with the advice given in this document and on containers and should not be used without reference to the Material Health and Safety Data Sheets (MSDS) which International Protective Coatings has provided to its customers. If for any reason a copy of the relevant Material Health and Safety Data Sheet is not immediately available, the user should obtain a copy before using the product.

- Ensure that all typical personal protective equipment is used, e.g. overalls, gloves, goggles, face mask, barrier creams etc.
- Provide adequate ventilation.
- If product comes into contact with the skin wash thoroughly with lukewarm water and soap or suitable industrial cleaner. Do not wash with solvents. If the eyes are contaminated, flush with water (minimum 10 minutes) and obtain medical attention at once.
- Observe all precautionary notices on containers.

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