Interbond 1202UPC
Application Guidelines

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The International Paint Application Guidelines have been produced and revised in line with the Worldwide Protective Coatings Product Range. The purpose of the guidelines is to ensure that the product, as applied, provides the required level of durability.

Successful in-service performance of a coating system depends upon both the correct choice of product(s) and the adoption of the correct guidelines for surface preparation and paint application.

The responsibilities for achieving the specific standards outlined, and for carrying out surface preparation and paint 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 Interbond 1202UPC to correctly prepared surfaces.

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1. INTRODUCTION

Interbond 1202UPC (Universal Pipe Coating) is a two-component ambient cure coating that is intended as a two-coat system to provide long term corrosion protection to carbon or stainless steel piping and pipe accessories such as valves, instrumentation, etc., that operate between -196ºC (-321ºF) and +650ºC (1202ºF).

Interbond 1202UPC is an inert multi-polymeric matrix coating which demonstrates the flexibility required to provide corrosion protection across a wide temperature range. Interbond 1202UPC does not require any special application equipment or skills. Coatings can experience severe stresses when used across a wide temperature range, particularly under cyclic temperature conditions; Interbond 1202UPC has been specifically formulated to withstand these stresses and for this reason some of the conventional coating inspection methods are not relevant.

This document gives detailed guidance on the use and application of Interbond 1202UPC and should be read in conjunction with the Interbond 1202UPC data sheet and respective material safety data sheets.

2. WHERE TO APPLY INTERBOND 1202UPC

Interbond 1202UPC is a single system specification for the protection of piping and accessories for new construction process plant. It provides high performance protection and dramatically reduces complexity during process plant projects where large amounts of above ground piping and associated piping accessories need to be coated.

Interbond 1202UPC is suitable for use on surfaces either un-insulated or under thermal insulation operating at cyclic or constant temperatures between -196ºC (-321ºF) and +650ºC (1202ºF).

Interbond 1202UPC can be used to protect cryogenic equipment down to -196ºC (-321ºF).

Interbond 1202UPC is normally applied directly over carbon or stainless steel as a two coat system but a one coat application can be achieved in certain situations using a multi-pass application technique.

Interbond 1202UPC may also be applied in one or two coats over a zinc silicate primer to provide improved corrosion protection to uninsulated steelwork, depending on operating temperature.

Typically applied in fabrication shops, Interbond 1202UPC can also be used on site as a touch up coating to small areas after erection.

EXAMPLE END USES

Piping and Pipe Spools

Valves

3. STORAGE OF MATERIAL

Interbond 1202UPC should be stored in covered, dry conditions and kept in the temperature range of 0ºC-40ºC (32ºF-104ºF).

4. ENVIRONMENTAL CONDITIONS FOR APPLICATION

Interbond 1202UPC is moisture-sensitive during both mixing and application and as such environmental monitoring is important for UPC application. The following parameters apply and should be measured and recorded;

- The surface onto which Interbond 1202UPC is to be applied must be clean, dry and free from contaminants.
- Steel temperatures must always be 3ºC (5ºF) above the dew point.
- Relative humidity during application and curing should ideally be between 40% and 85%.
- Minimum air temperature for application and cure is 5°C (41°F)
- Recommended application and cure temperature is between 5ºC (41ºF) and 40ºC (104ºF)
- Rate of cure will be affected at low relative humidity (<25%).
- Moisture contamination may result in increased surface skinning of the mixed material and a reduction of pot-life.

5. SURFACE PREPARATION

The performance level of Interbond 1202UPC is ultimately determined by the degree of surface preparation achieved prior to application. The higher the degree of surface preparation achieved, the greater the long-term performance.

For optimum performance, all surfaces to be coated should be clean, dry and free from contamination. Where high levels of surface contamination are present, thorough cleaning will be necessary prior to application. If in doubt consult International Protective Coatings for further guidance. Prior to application all surfaces should be assessed and treated in accordance with ISO 8504:1992 or an appropriate alternative standard as specified.

Abrasive Blast Cleaning

All steel surfaces to be coated should be correctly prepared prior to application of the anti-corrosive system, the preferred method of preparation being abrasive grit blast cleaning to Sa2½ (ISO 8501-1:2007) or a minimum of SSPC-SP10. A sharp, angular surface profile of minimum 50µm (2 mils) is recommended.

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

Power Tool Cleaning (small areas only)

Dependent upon service conditions and performance level expectations, Interbond 1202UPC can be applied to areas prepared using power tools, provided that surfaces are prepared to a minimum surface preparation level of SSPC-SP11 with a 50µm (2mils) irregular profile.

Please consult International Paint for the latest technical advice regarding this situation prior to commencing application of Interbond 1202UPC.

Austenitic Stainless Steel

Ensure surface is clean, dry and free from metal corrosion products prior to commencing material application. The surface should be blasted with non-metallic and chloride free abrasive (e.g. aluminium oxide or garnet), to obtain an anchor profile of 37.5 to 50 µm (1.5 to 2 mils).

Primed Surfaces

Interbond 1202UPC is suitable for application to steelwork freshly coated with zinc silicate primers.

If the zinc silicate primer shows extensive or widely scattered breakdown, or excessive zinc corrosion products, overall sweep blasting will be necessary. Other types of shop primer are not suitable for overcoating and will require complete removal by abrasive blast cleaning.

Weld seams and damaged areas should be blast cleaned to Sa2½ (ISO 8501-1:2007) or SSPC-SP10.

Note: Interbond 1202UPC performs best with a minimum 50µm (2 mils) anchor profile when used under high temperature and cycling temperature conditions.

6. MIXING

Note: Interbond 1202UPC reacts with atmospheric moisture and will form a layer of skin on the surface if left exposed for a prolonged period. Once the containers have been opened, it is recommended that the material be mixed and used as soon as possible. If a skin does form it should be scraped to one side and not re-incorporated into the unused material.

Due to the highly pigmented nature of Interbond 1202UPC, soft sedimentation of the base component can occur over time and as a consequence of transportation, particularly where long distances are involved. This product must be thoroughly mixed prior to application; ensure the base is mixed first until homogeneous and any settled material is fully reincorporated. This requires a minimum of 10 minutes but may take longer depending on standard of equipment used. Add the Part B and mix thoroughly for a further 2-3 minutes.

Note: The importance of correct mixing is essential to ensure correct performance and cannot be over-emphasised.

Site experience has shown that an air driven reversible drill, fitted with a suitable mixing blade (e.g. 3 inches (7.6cm) Epimixer Blade, Ref. MR280B), will prove satisfactory for this purpose.

The main points to remember when mixing Interbond 1202UPC are: -

- Do not mix more material than can be used within the pot life of the material.
- Where soft sedimentation exists, open the base tin and pour off approximately two thirds of the supernatant liquid to an empty, clean container.
- Thoroughly mix the remainder of the base component until it is fully reincorporated.
- Slowly add the supernatant liquid back into the base component with efficient mixing, ensuring that material does not overflow the container during this operation.
- When the material is totally reincorporated and free from lumps, add the accelerator component slowly, making sure that it is thoroughly incorporated.
- Ensure that during the mixing of the material the sides of the containers are scraped to incorporate any unmixed material from the sides. This should be done several times during the mixing operation.

7. PRIMERS AND OVERCOATING

Primers

Interbond 1202UPC may be applied over approved zinc silicate primers, which are listed on the datasheet.

The maximum subsequent single coat thickness of Interbond 1202UPC should be 150 microns (6 mils) with a maximum total system dry film thickness of 300 microns (12 mils).

When applying Interbond 1202UPC over a primer, the minimum and maximum overcoating intervals of the primer should be observed. If necessary, ensure the primer is adequately cured prior to overcoating, using a solvent rub test as described in ASTM D4752. Best results have been achieved by first applying a mist coat of Interbond 1202UPC over the primer, followed by a full coat. It may be necessary to thin the Interbond 1202UPC to improve wetting out of the primer. If this is the case, a maximum of 3% by volume of recommended International thinners should be used.

Overcoating

Interbond 1202UPC does not require topcoating for anti-corrosive performance. Topcoating may be required for identification purposes, such as safety colours. In these cases, Interthane 990 or 870 can be used for exposure up to 120ºC (248ºF) and Intertherm 875 or Intertherm 1875 up to 260ºC (500ºF). For best results, apply by conventional or air spray methods. Use of thinning solvents and topcoat over-application should be avoided.

8. POT LIFE

With Interbond 1202UPC no significant increase in viscosity is observed after mixing, even after long periods. However, if the stated pot life is exceeded, then the final applied film will have inferior properties and will not give the specified level of performance.

Interbond 1202UPC must not be applied after the stated pot life has been exceeded.

9. AIRLESS SPRAY APPLICATION

The most commonly recommended system is two coats of Interbond 1202UPC at 100µm (4 mils) nominal dry film thickness (DFT) per coat.

Two coat systems usually allow the risk of under thickness (lower DFT than the recommended nominal) to be minimised and may provide better control to avoid over-thickness (higher DFT than the recommended nominal). For appropriate surfaces and experienced applicators, the complete 200µm (8 mils) system can be built up in one coat using a multi-pass application technique

Selection of the correct type of airless spray gun is important to achieving problem-free application. The gun used should have the minimum amount of constrictions to material flow, and preferably feed material close to the airless spray tip.

The airless spray equipment should be in good working order. Pump ratios of 32:1 up to 60:1 can be used or any pump capable of producing an output pressure of 141kg/cm^2 (2,005psi). A typical line length of 30m (100ft) should be used with a minimum internal diameter of 9.5mm (3/8 of an inch). Flush the pump thoroughly with the solvent detailed on the product data sheet. Remove all filters from the spray unit and airless spray guns and solvent flush again. Tips should be the size range stated on the product data sheet and be in good condition. These pump recommendations may be altered depending on the length and size of paint lines, ambient conditions, pump condition, etc.

The preferred gun is a Silver Gun, Model 235-463, Series D (Graco), or an equivalent design where the product is fed direct to the tip; alternative designs where material is fed through the gun handle may result in dead spots developing, with consequent 'blockages' and 'packing' of the pigment occurring.

Tip size can be from a minimum of 0.58mm (23 thou) up to 0.69mm (27 thou), depending on application requirements.

Tip angles will depend on the profile and area of the steelwork to be sprayed but are preferable to be low, i.e. less than 50º, to assist better wet film formation and reduced potential overspray.

For optimum surface finish and film build control it is recommend the spray gun be held approximately 22cm (9 inches) from the substrate when applying by airless spray.

Although this product is designed for application "as supplied" and should not require thinning in temperate conditions, under cold conditions (typically less than 10°C (50°F)) it may be advisable to add thinners – up to a maximum of 3% by volume of recommended International thinners.

10. AIR SPRAY APPLICATION

Conventional air spray with attached pressure pot is best achieved when using a DeVilbiss JGA gun, or an equivalent design with a 704 or 765 air cap and an E fluid tip with a minimum of 1.4mm (55 thou) diameter, but preferably a 1.8mm (70 thou) tip diameter.

A 12.5mm (½ an inch) internal diameter fluid line is recommended with all in-line filters removed. The pot pressure should be kept as low as possible.

When starting to apply, keep the fluid tip fully open at the commencement and adjust until optimum settings are obtained.

For optimum surface finish and film build control it is recommended the spray gun be held approximately 15cm (6 inches) from the substrate when applying by conventional air spray application.

Thinning requirements are as for airless spray with up to 3% by volume of recommended International thinners.

11. BRUSH AND ROLLER APPLICATION

When touch up is required for small areas, brush and roller are suitable application methods for Interbond 1202UPC. They are best utilised for areas where local site access prevents spray application. When using brush and roller, it may be necessary to apply multiple coats to achieve the specified system dry film thickness. Typically 50-100µm (2.0-4.0 mils) dry film thickness per coat can be achieved by roller, 40-75µm (1.6-3.0 mils) by brush.

Wet film thickness readings should be taken periodically during application, using a wet film comb or similar. Wet film thickness readings are a guide to the applicator, to enable him to judge his application technique. They should be taken as frequently as necessary to enable a 'feel' for the material to be established.

12. APPLICATION TO VALVES

Interbond 1202UPC can be applied in a single coat, at a DFT of 200µm (8 mils) to valves by using the multi-pass application method.

The recommended nominal DFT for Interbond 1202UPC on valves is 200µm and should never be applied at a DFT below 150µm or at a DFT greater than 350µm.

Stripe coating shall be carried out for each coat of the system and prior to the subsequent spray application on all surfaces inaccessible to spray (i.e. bolting, mounting flanges, body gaps, etc.).

Interbond 1202UPC shall be sprayed, by means of conventional or airless spray equipment to achieve a continuous film free from sagging or pinholes.

13. STANDARD OF COSMETIC FINISH

Interbond 1202UPC is a functional coating. Freshly applied, Interbond 1202UPC will have a bright glossy aluminium appearance. After curing, the appearance will lose gloss and be of an aluminium-grey nature.

Polishing may occur due to the aluminium pigmentation; however, this is not detrimental to anti-corrosive performance (see example pictures below).

Examples of surface after movement using slings.

Interbond 1202UPC does not need to be overcoated for corrosion performance.

14. POSSIBLE FILM DEFECTS

The function of Interbond 1202UPC is to provide corrosion protection to structures operating over a range of temperatures up to 650°C (1202°F). As these structures are often large and complex in design, the practicalities of site working make it inevitable that film defects can occur. The manner of application should be such that these are avoided or minimised.

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

- **"Orange Peel"**

  Difficult to avoid but can be minimised by good spray technique, thinning of the material and ensuring that the material is at a working temperature of 15ºC-25ºC (59ºF-77ºF).

- **Over-application**

  This is the result of excessive film thickness and poor spray technique.

  Although Interbond 1202UPC is tolerant to over-application, excessive film thickness may lead to extended cure times and potential cracking when operating at elevated temperatures.

  It is advised that Interbond 1202UPC should not be specified at a dry film thickness in excess of 200µm (8 mils) per coat, and the total applied system dry film thickness should not exceed 350µm (14 mils).

- **Overspray / Dry Spray**

  Can be minimised by work planning and good spray technique, thinning, reduction of air pressure, increasing tip size and using less "passes" to achieve a wet film may assist. If the effect is severe, the surface must be cleaned by dry brushing prior to application to adjacent areas.

- **Pinholes**

  This phenomenon may appear when overcoating zinc silicates and can be reduced or eliminated by applying a mist coat of Interbond 1202UPC before full coat application. Thinning up to 3% with recommended thinners will aid wetting of the zinc primer.

- **Polishing**

  Due to the aluminium pigmentation of Interbond 1202UPC, the final film may be subject to a degree of surface polishing. While this does not cause any problems in terms of performance, cosmetic appearance may not prove acceptable if such films are to be permanently exposed.

- **Ripples**

  Can often be unavoidable on complex sections, but can always be minimised by good spray technique.

- **Sagging**

  Sagging is the result of excessive film thickness and poor spray technique. If the areas are greater than 100mm (4 inches) equivalent diameter, the incorrectly applied material should be removed and re-applied.

- **Excessively Soft Films**

  Films, which show signs of being mobile after hard dry time, are indicative of lack of cure. This may be as a result of poor mixing, or even omission of the accelerator component. If this is suspected, the affected areas will require removal, and re-application of Interbond 1202UPC.

15. MEASUREMENT OF DRY FILM THICKNESS

An electronic DFT gauge, capable of storing statistical data, is strongly recommended, to enable a meaningful DFT survey to be conducted. Gauges should be calibrated on smooth plate.

- **Tolerances**

  Interbond 1202UPC is typically specified with a total film build of 200µm (8 mils) DFT.

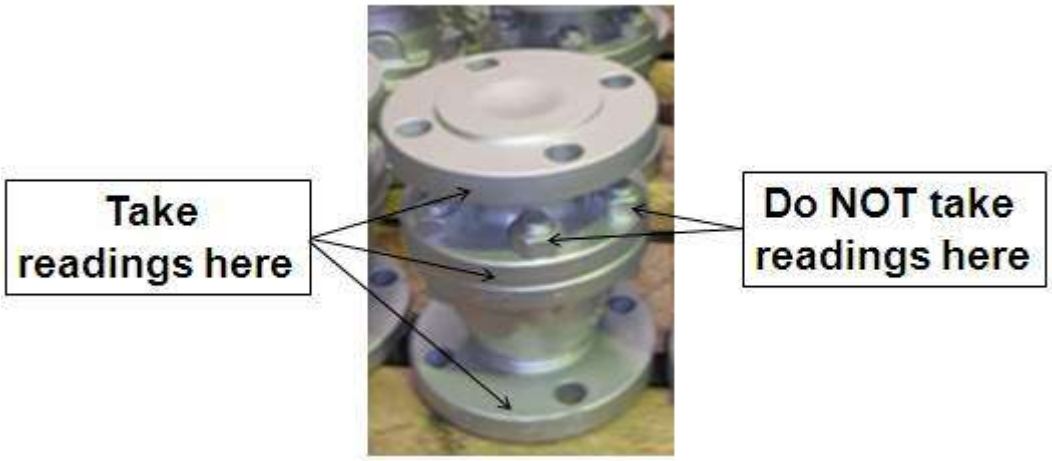
  Specified thicknesses for Interbond 1202UPC are nominal, rather than minimum and maximum, values. According to both SSPC PA-2 and ISO19840: 2004, the following tolerances are recommended:

  Individual dry film thicknesses of less than 80% of the nominal dry film thickness are not acceptable. Individual values between 80% and 100% of the nominal dry film thickness are acceptable, provided that the overall average (mean) is equal to or greater than the nominal dry film thickness.

  In all cases there should be never be any area with a film build of less than 150µm (6 mils) DFT.

Care shall be taken to achieve the nominal dry film thickness and to avoid areas of excessive thickness. It is recommended that the maximum dry film thickness is not greater than 350µm (14 mils).

When coating valves, DFT readings should be taken on valve bodies, bonnets and exposed flanges and not on bolt rows, bolt and nut faces and holes, actuators, hand wheels, levers and similar hard to coat areas.



Where to take DFT readings on a valve

16. ADHESION MEASUREMENT

Interbond 1202UPC is based upon a unique coating technology: Its low internal stress allows it to operate across a wide range of temperature conditions. Consequently, adhesion tests carried out on traditional coating chemistries (such as zinc silicates and epoxy phenolics) do not give representative results when performed on Interbond 1202UPC.

The preferred method of adhesion assessment is via ASTM D3359, method A cross cut:

Thickness Classification	**ASTM Standard Ref**	**Rating**
>125µm	D3359 Method A (X-cut)	≥3A

The preferred cutting tool is a single blade with a 20^0 to 30^0 edge with a blade thickness of 0.43 +/-0.03mm. When the blade has worn to 0.1mm thickness it should be reground or replaced

Pictorial examples of Interbond 1202UPC rating 4A is shown below.

Result interpretation: Adhesion of Interbond 1202UPC is acceptable if the rating is ≥ 3A (ASTM D3359).

17. INSPECTION AND REPAIR

Damage down to steel
Prepare substrate as per initial surface preparation i.e. spot blast to a minimum of Sa2½ (SSPC-SP10) or prepare by power tooling to SSPC-SP11, followed by Interbond 1202UPC application to the required DFT. If in doubt, consult International Paint.

Damage to surface coating
If the surface coating has been damaged but the damage is not down to the steel substrate then the repair procedure is to lightly abrade the surface and then apply Interbond 1202UPC to the required DFT.

18. HANDLING

As with all coated surfaces, care should be taken during transport. It is recommended that nylon slings are used when moving piping coated with Interbond 1202UPC

Interbond 1202UPC coated pipe being moved with nylon slings.

19. HEALTH AND SAFETY

Interbond 1202UPC is intended for use only by professional applicators in industrial situations in accordance with the advice given in this leaflet 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 & Safety Data Sheets (MSDS) is not immediately available the user should obtain a copy before using the product.

Minimum safety precautions in dealing with all paints are:

- Take precautions to avoid skin and eye contact (i.e. use overalls, gloves, goggles, face mask, barrier creams etc.).
- Where possible provide adequate ventilation. In confined spaces with poor or no ventilation, use airfed hoods.
- If product comes in 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.
- These coatings contain flammable materials and should be kept away from sparks and open flames. Smoking should be prohibited in the area.

Observe all precautionary notices on containers.