

International® Acrylic Polyurethane Technology Application Guidelines

Interthane® 3230M

Interthane® 3230SG

Interthane® 3230G

Interthane® 3230HG

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ID 3230_uk	Rev. 02	Date 14/07/2014	Interthane 3230 Series	Page 1 of 14
---------------	------------	--------------------	-------------------------------	--------------

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 Interthane 3230 Series to correctly prepared surfaces.

Table of Contents

1. Introduction	3
2. Where to Apply Interthane 3230 Series	3
3. Storage of Material	3
4. Environmental Conditions for Application	4
5. Surface Preparation	4
6. Mixing	6
7. Pot Life	6
8. Airless Spray and Airmix Spray Application	6
9. Electrostatic Application	8
10. Brush and Roller Application	8
11. Cure	
12. Use of GMA990 Polyurethane Accelerator	
13. Standard of Cosmetic Finish	9
14. Possible Film Defects	9
15. Inspection and Repair	10
16. General Notes	11
17. Health and Safety	12

APPENDIX 1 – FABRICATION RECTIFICATION

1. INTRODUCTION

Interthane® 3230 Series Acrylic Polyurethane Technology is a high performance coating that is intended as a one coat primer/finish to provide both anti-corrosive and barrier protection in direct-to-metal applications in moderately corrosive environments, designated C1 to C3 by ISO 12944:1998.

It can also be applied as a topcoat over recommended anti-corrosive paint systems to extend its use to corrosive environments designated C3 to C5 by ISO 12944:1998.

It is capable of providing corrosion protection to steel as soon as it is hard dry (please see the relevant Technical Datasheets).

This document gives detailed guidance on the use and application of Interthane® 3230 Series Acrylic Polyurethane Technology and should be read in conjunction with the relevant Technical Datasheet and Material Safety Datasheet (MSDS).

2. WHERE TO APPLY INTERTHANE 3230 SERIES

Interthane® 3230 Series Acrylic Polyurethane Technology is specially designed for use as a single or two coat primer/finish coating system to protect construction and mining heavy machinery, agricultural equipment, railcars, transportation vehicles, material handling and lifting equipment, pumps, valves, gear units and other small motors and machinery.

It is particularly suited for use where fast handling times or minimum number of application layers is required. This contributes to reduced application times and lower costs in OEM fabrication and painting facilities.

The main features of Interthane® 3230 Series Acrylic Polyurethane Technology are:

- Single coat (one layer) application;
- Good adhesion properties over properly prepared substrates;
- High volume solids to minimise paint consumption and reduce solvent emissions;
- Versatility to apply over a suitable anti-corrosive paint system or direct-to-metal over properly prepared substrates.

3. STORAGE OF MATERIAL

Due to its moisture sensitive nature, Interthane® 3230 Series products should always be stored in a dry location. If the outside of the tin becomes wet it should be thoroughly dried before opening to ensure no moisture contamination occurs.

Ideal storage temperature ranges from 5°C- 30°C.

At lower temperatures the base component will become more viscous and may require warming or thinning prior to application. At higher temperatures, materials will flow more easily and dry faster.

ID 3230_uk	Rev. 02	Date 14/07/2014	Interthane 3230 Series	Page 3 of 14
---------------	------------	--------------------	-------------------------------	--------------

4. ENVIRONMENTAL CONDITIONS FOR APPLICATION

Interthane® 3230 Series Acrylic Polyurethane Technology is affected by moisture and both the rate of drying and pot life is affected by humidity. Therefore, environmental monitoring is important. The following parameters apply:-

- Application should ideally be carried out in a controlled environment and the product should not be exposed to external weather conditions until hard dry properties have been achieved.
- Preferred application temperature is between 15°C and 25°C; however, it is feasible to apply at higher and lower ambient temperatures.
- The surface onto which the product is to be applied must be clean, dry and free from contaminants. Steel temperatures must always be 3°C above the dew point.
- The temperature of the surface or the primer onto which the product is to be applied should not be more than 45°C.
- Relative humidity (RH) during application and curing should ideally be between 30% and 70%. The higher the humidity, the faster the rate of cure. However, gloss reduction may accompany higher levels of humidity, especially where the RH exceeds 85%.
- Care should be taken when the relative humidity at the time of application is low (i.e. <25%). Please consult International® Protective Coatings if required. The rate of drying will be affected at low relative humidity (<25%).
- Moisture contamination in the mixed product may result in a reduction in pot life.
- Ambient conditions should be measured at regular intervals, particularly if the conditions are variable.

5. SURFACE PREPARATION

In common with most protective coatings schemes, the performance level of Interthane® 3230 Series Acrylic Polyurethane Technology is ultimately determined by the standard of surface preparation achieved.

All surfaces to be coated should be clean, dry and free from contamination including dirt, salts, oil and grease. Prior to paint application all surfaces should be assessed and treated in accordance with ISO 8504:2000. Where necessary, remove weld spatter and smooth weld seams and sharp edges.

Abrasive Blast Cleaning

All steel surfaces to be coated should be correctly prepared prior to application of the coating system. The preferred method of preparation is abrasive blast cleaning to Sa2.5 (ISO 8501-1:2007) or SSPC-SP6.

- As a general guideline, the blast profile is recommended to be 1/3 of the total specified scheme dry film thickness.
- It is recommended that the blast profile is measured to ensure that it does not exceed half of the total specified scheme dry film thickness applied – e.g. a target blast profile (surface roughness) of 40-60µm, would be suitable for a total scheme dry film thickness of 120-150µm. Failure to achieve this may result in a reduction in gloss measurement readings and/or inferior anti-corrosive properties.

The following table gives a brief guide to typical roughness profiles obtained using various types of abrasive.

Type of Abrasive	Mesh Size	Max. Height of Profile
Very fine sand	80	37 microns (1.5 mils)
Coarse sand	12	70 microns (2.8 mils)
Iron shot	14	90 microns (3.6 mils)
Typical non metallic "copper slag" 1.5-2.0mm grain size	-	75-100 microns (3-4 mils)
Iron grit No. G16	12	200 microns (8.0 mils)

Weld seams and damaged areas should be blast cleaned to Sa2.5 (ISO 8501-1:2007) or SSPC-SP6. Where this is not practical, then prepare to a minimum of SSPC-SP11 ensuring that the steel does not become polished.

6. MIXING

This product is supplied in two components; a pigmented base (Part A) and a curing agent (Part B); both tins should be kept dry until used. On opening the base, it should be slowly mixed with a pallet knife (or similar implement) to reincorporate any liquid that may have separated out to the surface. The sides and bottom of the container should be scraped to ensure all settlement and residue is combined. It should then be mixed with a mechanical agitator (air-powered equipment) for a few minutes to ensure full incorporation.

The curing agent should then be added to the base in its entirety and power mixed with a mechanical agitator for several minutes until a uniform paint is obtained. When power mixing, care should be taken to avoid air entrapment. For tinted colours, a 5 minute induction time is recommended to fully develop colour. Failure to allow induction, particularly at low temperatures, may result in inconsistency of the finished shade.

Note: Interthane® 3230 Series Acrylic Polyurethane Technology reacts with atmospheric moisture and may 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 is mixed and used as soon as possible. If a skin does form it should be scraped to one side and removed, not reincorporated into the paint. A thin layer of solvent added to the surface of the paint after mixing will prevent excessive skinning. International® GTA713 should be used for this.

The importance of thorough and correct mixing cannot be over-emphasised and is essential in order to ensure that the full properties of the coating are achieved. Do not mix more material than can be used within the pot life of the material.

7. POT LIFE

Interthane® 3230 Series Acrylic Polyurethane Technology shows no significant increase in viscosity after mixing, even after long periods of time. However, if the stated pot life is exceeded then the final coating film may have inferior properties and will not give the expected level of performance. Pot life times outlined in the Technical Datasheet are at 50% relative humidity.

Note: Relative humidity as well as temperature can affect the pot life. Generally, the higher the humidity the shorter the pot life. Measurements should therefore be made before and during application.

ID 3230_uk	Rev. 02	Date 14/07/2014	Interthane 3230 Series	Page 5 of 14
---------------	------------	--------------------	------------------------	--------------

8. AIRLESS SPRAY AND AIRMIX SPRAY APPLICATION

Airless or air-assisted airless spray (Airmix) is the preferred method of application recommended to give the optimum cosmetic appearance of the Interthane® 3230 Series.

The airless spray equipment should be in good working order. Pump ratios of 30:1 up to 60:1 which are capable of producing a minimum output pressure of 180 bar (184 kg/cm² or 2611 psi) at the tip are recommended and lines should have an internal minimum diameter of 6.4mm (1/4”).

The following table gives a brief guide to recommended tip size and application pressure, depending on application requirements. Tip angles will depend on the profile and area of the steelwork to be coated but lower tip angles are preferable i.e. less than 50°, to assist in better wet film formation and reduced potential for overspray.

Airless spray pressure at the tip	Tip size	*Recommended Thinner Requirements	Air pressure (only relevant for Airmix)
>180 bar / >184 kg/cm ² / >2611 psi	13-19 thou	1-2% v/v if necessary	≥ 2 bar
180 bar / 184 kg/cm ² / 2611 psi	15-17 thou	1-3% v/v if necessary	≥ 2 bar
150 bar / 153 kg/cm ² / 2176 psi	11-13 thou	Upto 5% v/v if necessary	≥ 2 bar
150 bar / 153 kg/cm ² / 2176 psi	15-17 thou	5% v/v may be needed	≥ 2 bar

*Thinner requirements are not prescriptive and may differ depending upon application method / skill

Airless gun type used should be rated above the maximum working tip pressure anticipated.

The temperature of the substrate or the primer onto which the product is to be applied should not be more than 45°C.

It is essential to flush out all application equipment with International® GTA713 thinner prior to application to ensure that there is no contamination and/or moisture in the lines. Any moisture or alcohols remaining in the lines/pump may react with Interthane® 3230 Series Acrylic Polyurethane Technology and significantly reduce the pot life to the point that the material may gel and block the lines and/or pump. All equipment should be cleaned immediately after use. It should be noted that Interthane® 3230 Series Acrylic Polyurethane Technology is moisture curing and therefore it is good working practice to periodically flush out spray equipment during the course of the working day.

9. ELECTROSTATIC APPLICATION

Use of an electrostatic spray gun enhances edge coverage, reduces paint consumption and minimises overspray.

The electrical resistivity of paint determines the efficiency of atomised paint particles being charged.

Paint resistivity of 750-1000 kilo-Ohms is usually suitable for electrostatic paint application. However, many electrostatic spray guns are designed to cope with a wider range of paint resistivity levels. It is important to ensure that the electric voltage on the spray gun is set at the necessary voltage level.

Balance between specific gravity, viscosity and application pressure of paint determines the efficiency of the electrostatic ‘wrap-around’ effect. It is always recommended that appropriate trials are carried out to optimise product viscosity and equipment settings to ensure satisfactory product performance.

Viscosity & “Wrap-Around”

The application properties will be improved by pre-conditioning Interthane® 3230 at 30°C overnight prior to use. This would help to reduce the viscosity further therefore improving the electrostatic wrap-around properties.

ID 3230_uk	Rev. 02	Date 14/07/2014	Interthane 3230 Series	Page 6 of 14
---------------	------------	--------------------	-------------------------------	--------------

It is recommended to set the temperature on the spray pump at 30°C when using a plural component application pump with a temperature control. Again, this will help to reduce the viscosity.

The lower the viscosity, the better the atomisation at low application pressures.

Application Pressure & “Particle Velocity”

The lower the application pressure, the lower the velocity of atomised paint particles as they move towards the substrate to be coated.

At lower velocity, there is increased control of charged paint particles as they move towards the substrate. At higher velocities (increased application pressure) there is an increased chance that particles will be forced away from the substrate. This has a negative effect on efficiency.

Therefore it is recommended to spray at the lowest application pressure that would give the best atomised particles and spray fan. Trials are important to get the right balance of viscosity and application pressure to give the required results.

General Guidelines for Electrostatic Spray – Always consult equipment manufacture instructions

Before electrostatic application, make sure that the substrate to be coated is earthed properly and clean metal-metal contact is achieved. Sometimes earthing clips or the part of substrate where the earthing clip is attached to becomes covered with paint which stops off the electrostatic attraction between the substrate and the charged paint particles.

For electrostatic equipment where the air turbine and generator is in the spray gun, the electrostatic spray gun trigger needs to be pulled for about 10-15 seconds before aiming the gun at the substrate for electrostatic spray. It usually takes about 10-15 seconds for the gun to charge atomised paint particles once the trigger has been pulled. For electrostatic equipment with an external generator supply, this is not required as the charge is applied immediately.

Once the electrostatic spray application starts, the trigger should be pulled continuously until the completion of coating the target area. Spraying in a discontinuous manner would cut off the transfer of charge onto atomised particles, which would in return negatively affect electrostatic application behaviour.

It is difficult to electrostatically spray into corners or metal parts designed/welded very closely to each other. This is called the Faraday cage effect – please see below for details. To be able to coat these types of areas, voltage should be set to 0kV (e.g. non-electrostatic application) and spray non-electrostatically to fill the corners and then continue electrostatically by setting the voltage at the necessary level for the rest of the object.

The Faraday cage effect is the electrostatic force that prevents charged particles from penetrating into recessed areas. Charged paint particles are attracted to the closest grounded surface.

For Interthane® 3230M, SG and G, it may be necessary to thin the product with 5% v/v GTA713 to enhance the electrostatic “wrap-around” effect, whereas Interthane® 3230HG may not require thinning. It is always recommended that a suitable trial is carried out when utilising electrostatic spray techniques.

10. BRUSH AND ROLLER APPLICATION

Brush and roller are suitable methods of application for Interthane® 3230 Series, although the standard of cosmetic appearance may be reduced. They are recommended for small areas of touch-up or stripe coating, where minimal overlap to other areas is required and where local site access prevents spray application. When using a brush/roller technique it may be necessary to apply multiple coats to achieve specified system dry film thickness. Typically, 60 – 80 µm dry film thickness can be achieved. Dry film thickness readings should be measured upon completion and any low areas should be brought up to specification. Attention should be given to the pot life for this product when applying by brush and roller. Periodic cleaning (using recommended International® cleaners as stated on the Technical Datasheet) will be required to prevent build-up of paint on the equipment and maintain efficiency of transfer from brush/roller to steel and aesthetic requirements.

11. CURE

Best cosmetic appearance is achieved when the product is cured to hard dry at ambient temperature of 10-40°C and relative humidity at 30-50%.

If stoving at 40-80°C, a minimum flash-off time of 15-20 minutes should be given after the application before the coated pieces are stoved. This flash-off time is dependent upon the applied dft and amount of ventilation.

12. USE OF GMA990 POLYURETHANE ACCELERATOR

International® Polyurethane Accelerator (GMA990) is a single component solvent based accelerator which when added at a level of 1-2% by volume to mixed, 2 component polyurethane coatings, provides faster touch and hard dry times.

The acceleration effect is more pronounced at low temperatures where slow drying is often an issue, but this accelerator is also suitable in forced cure situations at 40-80°C.

Recommended dosage level is 1-2% by volume to the mixed polyurethane coating. Care should be exercised not to exceed this level. Please see the International® Polyurethane Accelerator (GMA990) Application Guide for more information (available on request from International Protective Coatings).

The addition of the accelerator does cause a decrease in surface gloss. Where there is a requirement for a high level of cosmetics, the use of the accelerator may not be appropriate. A small test patch should be carried out in these situations. The greater the level of addition, the greater the impact on gloss loss. Maintaining levels at 1-2% v/v addition have proven to be satisfactory in typical applications to obtain a good workable balance of hard dry time, film hardness, gloss level and pot life.

Do not use GMA990 in conjunction with the recommended International® GTA713 thinner. When choosing to use GMA990, the GTA713 thinner is NOT recommended.

As a general guide, hard dry times and pot life will be decreased by approximately 50% of the published datasheet values at 2% v/v addition.

ID 3230_uk	Rev. 02	Date 14/07/2014	Interthane 3230 Series	Page 8 of 14
---------------	------------	--------------------	-------------------------------	--------------

13. STANDARD OF COSMETIC FINISH

Interthane® 3230 Series Acrylic Polyurethane Technology has been designed to provide long term colour and gloss retention, superior to that exhibited by alkyds and alkyd based polyurethanes. The degree of cosmetic finish attained is dependent on the quality of application, applicator experience and the equipment employed.

The applicator is advised to use the maximum/minimum film thickness guidelines and to avoid using a mixture of application techniques whenever possible.

Spray applications will generally give the best results in terms of glossy, uniform films. The level of gloss and surface finish may be affected when using other techniques such as brush/roller application, which creates a more uneven appearance due to the presence of brush marks.

14. POSSIBLE FILM DEFECTS

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

Gloss Reduction

Relative humidity in excess of 85% may lead to a noticeable reduction in gloss, so regular environmental measurements should be conducted throughout application.

Overspray or dry spray may lead to gloss reduction and this is explained in detail below.

Applications at film thicknesses higher than those specified on the Technical Datasheets may lead to lower gloss measurements which would be in relation to possible micro-foaming on the film surface. Care should particularly be taken not to over apply Interthane® 3230HG

Excessive blast profiles on substrates (e.g. those higher than half of the total film thickness applied) may lead to lower gloss measurement reading which would be in relation to an uneven film surface. To overcome this problem, either the blast profile should be monitored and reduced or a primer such as Intergard® 3210 should be used to fill excessive blast profiles before applying Interthane® 3230 Series products.

It is generally observed with most polyurethane accelerators (e.g. GMA990) that they reduce gloss up to 10 gloss units. If GMA990 is required the product with the appropriate gloss level should be chosen so that the finish is still at the desired gloss level.

Stoving at temperatures between 40-80°C may lead to a gloss reduction if the wet film is stoved straight after application without any flash-off time prior to stoving. Flash-off times of 15-20 minutes should be allowed before the applied wet film is stoved at 40-80°C.

Orange Peel

This is often due to application technique and/or the environmental conditions. The effects can be minimised by adjusting the spray/pump pressures and tip sizes, and ensuring that the material is at a working temperature of 20°C-35°C. If applying at pressures ≤150 bar, thinning by up to 5% with GTA713 may help to reduce orange peel further.

ID 3230_uk	Rev. 02	Date 14/07/2014	Interthane 3230 Series	Page 9 of 14
---------------	------------	--------------------	-------------------------------	--------------

Over-Application

Interthane® 3230 Series Acrylic Polyurethane Technology is tolerant to some over-application. However, excessive film thickness may lead to extended cure times and potential micro-foaming, especially when curing at elevated temperatures.

Care should be taken particularly with Interthane® 3230HG so that the product is applied within 60-100µm dry film thickness. Dry film thickness above 100µm leads to excessive micro-foaming on the surface. For best cosmetic appearance, apply Interthane® 3230HG at 60µm dry film thickness over Intergard® 3210.

Under-Application

If insufficient coating is applied then the film may not adequately coalesce and this will reduce the gloss and general aesthetics of the finish.

Stripe coats should be applied to bolts, welds, sharp edges and areas of difficult access which are likely to receive less than the specified film thickness. When the material is theoretically up to specified thickness, film thickness readings must be taken and any low areas brought up to specification.

Overspray / Dry Spray

Overspray will be apparent as a rough surface with poor aesthetics and reduced gloss.

Overspray can be minimised by good work planning, good spray technique, electrostatic spray, thinning, reduction of air pressure, appropriate tip size, etc. depending on the structure to be sprayed. If the effect is severe, leaving a rough, uneven surface, a further thin coat may be applied on top once it has dried sufficiently.

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.

Pinholes

Pinholes may occur as a result of application over porous substrates, hand-prepared substrates, surfaces that are suffering from overspray/dry spray or poorly cleaned surfaces containing dust debris. Surfaces should be suitably prepared before application commences. Pressurised air may be used to blow down the surfaces but it should first be checked for cleanliness to avoid further contamination of the substrate, e.g. to ISO 8573. Where pinholing is identified, the surface should be lightly abraded and a thinned coat applied to seal the pores. A full coat may then be required to bring up to specification.

Sagging

This is the result of excessive film thickness and poor spray technique or over-thinning. If the areas are greater than 100mm equivalent diameter, the coating should be removed and reapplied.

Soft Films

Films which show signs of being soft after the hard dry time indicate a lack of curing. This may be as a result of poor mixing or even omission of the curing agent and affected areas will require removal and re-application. Film hardness can be affected by temperature and humidity, as at lower temperatures and at low humidity the film will need further time to reach hard dry properties.

Soft films may also be observed due to solvent entrapment under cross-linked films if excessive thinning, more than 3% v/v, takes place in the presence of GMA990 International® Polyurethane Accelerator. The effect can be minimised by avoiding thinning in the presence of GMA990.

Bubbling, Blistering or Micro-foaming

This can present itself where the film build is excessive or where moisture contamination has occurred. This can be avoided by ensuring that the pot life is observed, correct thinners are used for cleaning, environmental conditions are appropriate for application and part-used curing agent is not used. Good control of the dry film thickness will also help to ensure that bubbling/blistering does not occur.

Applications at film thicknesses higher than those specified on the Technical Datasheet may lead to possible micro-foaming on the film surface. Particular care should particularly be taken not to over apply Interthane® 3230HG. If micro-foaming is encountered with certain application equipment, thinning with GTA713 by up to 10% v/v should minimise this effect.

The use of GTA713 thinner along with GMA990 International® Polyurethane Accelerator results in micro-foaming on the applied film surface. To prevent micro-foaming in the presence of GMA990 International® Polyurethane Accelerator, the GTA713 thinner is NOT recommended. If thinning is absolute necessary, then GTA007 should be used as a thinner and the dilution rate should not exceed 3% by volume.

The temperature of the substrate or the primer onto which the product is to be applied should not be more than 45°C, otherwise surface defects in the form of bubbling or micro-foaming may be observed.

15. INSPECTION AND REPAIR

Damage Down to Steel

For small areas of damage:

Clean down to remove all dirt, grease, oil or other deleterious matter. Remove any loose coating and/or corrosion products by abrading the surface to a minimum of SSPC-SP11, feathering back the edges of sound coating by 50mm to provide a suitable overlap area. Care must be taken not to polish the steel. The bare areas should be patch primed with thinned product, approximately 5% (with the appropriate International® thinner), using brush application, ensuring that it is worked into the profile of the steel to allow good adhesion. The coating system can then be reinstated with unthinned paint by roller application to the required dry film thickness overlapping onto feathered areas. Multiple applications may be required to achieve the specified thickness, taking care to observe the relevant overcoating interval.

For large areas of damage:

Surface preparation should be carried out as per the original standard, i.e. spot blast to ISO 8501-1:2007 Sa2.5 (SSPC-SP6), followed by reinstatement of the original specified protective coating scheme. It is advised that adjacent areas to the repair site be 'masked' off with tape to help prevent fine pinholing at the edges of the repair site.

It is important to limit the amount of damage and subsequent repair work as much as possible so as not to detract from the overall appearance of the coating. Ensuring the correct film thickness is applied first time and that the hard dry properties are attained before handling, the amount of repair required can be minimised.

Low Film Thickness

If, at site, areas of low DFT are reported then it is essential to repair in accordance with the following recommendations.

Interthane® 3230 Series Acrylic Polyurethane Technology produces a hard, glossy film which could have a detrimental effect on the adhesion of subsequent coats and should be first treated by light surface abrasion, sweep blasting, or another suitable process which will not cut through or detract from the performance of the underlying coating. Once the surface is suitably abraded, solvent wash to remove any surface contamination and then apply a fresh coat of the product in accordance with the Technical Datasheet.

ID 3230_uk	Rev. 02	Date 14/07/2014	Interthane 3230 Series	Page 11 of 14
---------------	------------	--------------------	-------------------------------	---------------

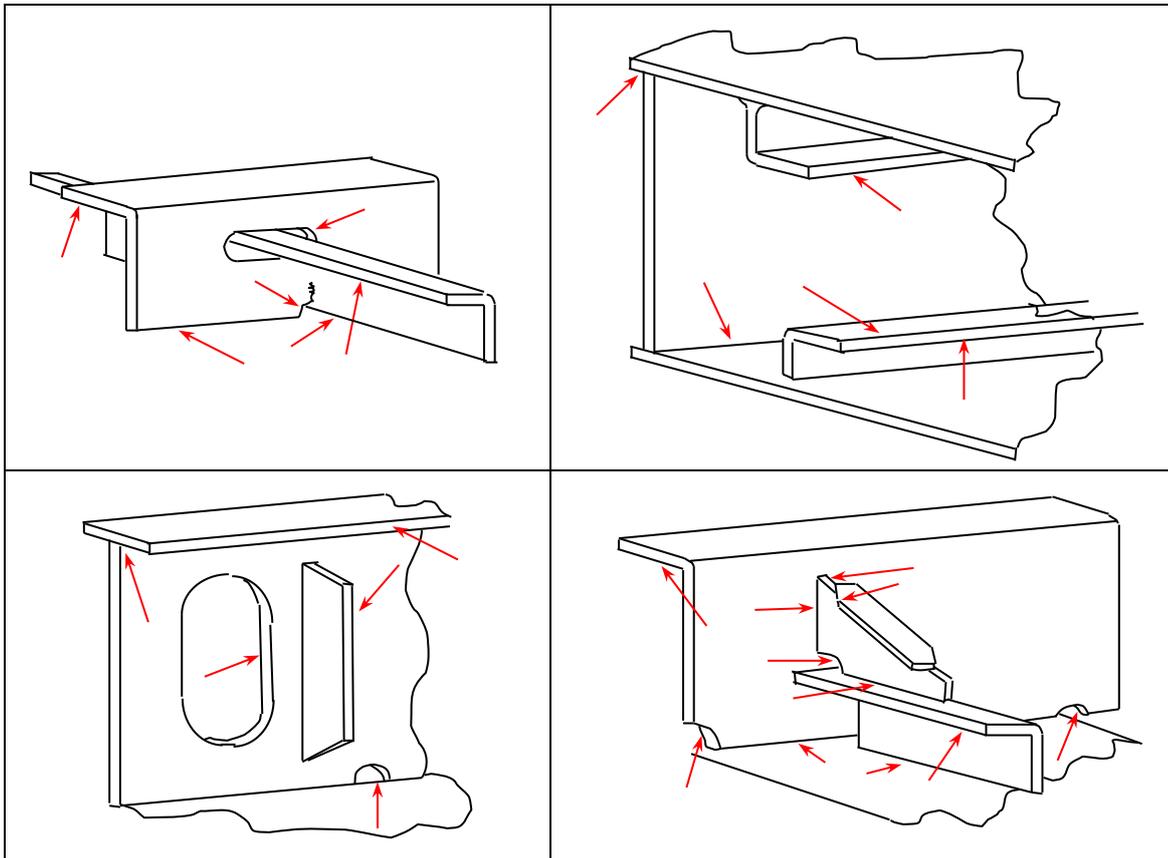
16. GENERAL NOTES

Stripe Coating

Stripe coating is an essential part of good painting practice. Typical areas where stripe coats must be applied include:

1. Behind bars
2. Plate edges
3. Cut outs i.e. scallops, manholes, etc.
4. Welds
5. Areas of difficult access
6. Small fitments of difficult configuration
7. Areas of pitting

Note: The above list is not comprehensive, all areas must be included. The following diagrams indicate key areas requiring stripe coating:



In general, stripe coats should be applied by brush. Application by roller should be limited to the inside of scallops.

In exceptional circumstances it may be acceptable to apply a stripe coat to the backs of angle bars by narrow angle spray. The use of spray applied stripe coats however, must be discussed and agreed with the International[®] Paint representative on site.

17. HEALTH AND SAFETY

Interthane® 3230 Series Acrylic Polyurethane 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 and Safety Data Sheets (MSDS) which International® Protective Coatings has provided to its customers. If for any reason a copy of the relevant MSDS is not immediately available, the user should obtain a copy before using the product.

This product contains isocyanate and air-fed respirators should always be used during application, to prevent inhalation of the spray mist.

- Ensure that in addition to air-fed breathing apparatus, all recommended 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.
- These coatings contain flammable materials so keep away from sparks and open flames. Smoking should be prohibited in the area.
- Observe all precautionary notices on containers.

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ID 3230_uk	Rev. 02	Date 14/07/2014	Interthane 3230 Series	Page 13 of 14
---------------	------------	--------------------	-------------------------------	---------------

APPENDIX 1 – FABRICATION RECTIFICATION

ITEM	PROBLEM / SOLUTION	
Sharp Edge	Remove sharp edges or gas cutting edges with grinder or disc sander to achieve a radius of 1.5mm-2.0mm	
Weld Spatter	<ol style="list-style-type: none"> 1. Remove spatter observed before blasting by grinder, chipping hammer etc. 2. For spatter observed after blasting: <ol style="list-style-type: none"> a) Remove with chipping hammer /scraper etc. b) Where spatter is sharp, use disc sander or grinder until obtuse c) Obtuse spatter – no treatment required 	
Plate Lamination	Any lamination to be removed by grinder or disc sander	
Undercut	Where undercut is to a depth exceeding 1mm and a width smaller than the depth, repair by welding or grinding may be necessary	
Manual Weld	For welding bead with surface irregularity or with excessive sharp edges, remove by disc sander or grinder	
Gas Cut Surface	For surfaces of excessive irregularity, remove by disc sander or grinder	