

On Board Maintenance Manual



Canadian Coast Guard
Samuel Risley
September, 2017

Marine Coatings

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Registered Office 26th Floor, Portland House, Bressenden Place, London SW1E 5BG



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General Comments

This report is to outline the on-board maintenance procedures for Canadian Coast Guard Services vessels coated with International Paints.

Included in this report are instructions on prepping the substrate for the application of coatings. If you would like further information on the standards that we use to form our recommendations, please let us know. The standards that are most commonly used are SSPC-SP1 (Solvent Cleaning) SSPC-SP2 (Hand Tool Cleaning) SSPC-SP3 (Power Tool Cleaning) and SSPC-SP11 (Power Tool Cleaning to Bare Metal).

In preparing the substrate for coatings you should always keep two things in mind the substrate must be clean and an anchor profile must be achieved. When cleaning the area you intend to paint it should be cleaned with fresh water and any oil, grease or other visible contaminant should be removed.

When completing on board maintenance please keep in mind that when coatings are applied by brush and roller; you will need to apply multiple coats, to achieve the proper dry film thickness. As I spoke earlier about creating "anchor", once you have an anchor you have to ensure that it is fully coated. An anchor profile consists of peaks and valleys when a single application of a coating is applied over the profile by brush or roller you will normally only have enough coating to fill the valleys leaving the peaks exposed. This in turn can cause rash rusting and eventual breakdown.

When applying primer at least two coats more likely three coats should be applied for the coating to perform as it should, this should be followed by two coats of the finish product. All coatings have overcoating minimum and maximum overcoating windows. These windows must be observed to ensure proper adhesion.

Attached are the product data sheets for the proposed paint products for the CCGS Sir William Alexander Vessel. If you should have any questions about the product or any other question regarding the preparation or application of the coatings please call for assistance.

International Paints: Customer Service/Order Desk

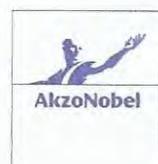
Montreal 1-800-361-2865
Dartmouth 1-800-565-7526
St. John's 1-709-368-4600

International Representatives: Scott Lidstone (514) 893-6100
Nicole Hart (902) 499-6007
Michael Kemp (902) 497-8363
Mike Stone (902) 240-0489

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OBM for Project Areas

Note: Underwater areas not applicable for on-board maintenance

Note: For detailed product information, refer to Product Data Sheets

Note: For safe application information, refer to Material Safety Data Sheets

Preparation Instructions

Maintenance Surface Preparation (Touch-Up Paint Only)

1. Degrease area with detergent cleaner or solvent wipe with clean rags.
2. Fresh water wash, rinse & allow to dry. If water beads, degrease again.
3. If loose topcoats evident, lightly sand until firm edge to old coating attained.
4. Brush or vacuum away dust and debris.
5. Protect prepared area until ready to apply repair coating.

Maintenance Surface Preparation (Touch-Up to Bare Metal)

1. Hard scrape to firm edges of old intact coating.
2. Degrease area with detergent cleaner or solvent wipe with clean rags.
3. Fresh water wash, rinse & allow to dry. If water beads, degrease again.
4. Hand or power tool bare metal until free of corrosion and minimal surface profile created.
5. Hand or power tool feather edges of old coating to allow new coating to bond.
6. Brush or vacuum away dust and debris.
7. Protect prepared area until ready to apply repair coating scheme.

Repair Surface Preparation (Blast to Bare Metal)

1. Degrease area with detergent cleaner or solvent wipe with clean rags.
2. Fresh water wash, rinse & allow to dry. If water beads, degrease again.
3. Protect target work area for safety and environmental control/containment.
4. If spot repairing, use marker to denote boundaries of blast effect.
5. Blast marked areas until metal is clean of old paint and surface rust; grey metal appearance.
6. Feather blast onto areas of good paint at area edges until marker lines disappear.
7. Brush or vacuum away dust and debris.
8. Protect prepared area until ready to apply repair coating scheme.

This document is intended only as a guide in on-going maintenance of existing coatings. For large scale repairs or contract work contact your nearest International Paints office for a complete Interspec.

Specifications Details

Hull/Topsides

Paint Products						
#	Purpose	Product	Colour	Code	Mix Ratio	Thinner/ Cleaner
1	Primer	Interprime 198	Red	CPA099	N/A	GTA007
1	Primer	Interprime 198	Off-White	CPA098	N/A	GTA007
2	Finish	Intersheen 579	White RAL9003	LAB000	N/A	GTA007
2	Finish	Intersheen 579	Red RAL3000	LAA044	N/A	GTA007
2	Finish	Intersheen 579	Black RAL9004	LAY999	N/A	GTA007

Repair Process Details (Touch-Up Only).							
#	Product	Overcoat Times	WFT	DFT	Full Dry	Coat	Limitations
1	Intersheen 579	4hrs @25°C	4.7	1.6	8hrs	1 st	Film thickness is based on spray application if work is completed by brush and roller multiple coats will be required.
2	Intersheen 579	4hrs @25°C	4.7	1.6	8hrs	2 nd	

Repair Process Details (To Bare Metal)							
#	Product	Overcoat Times	WFT	DFT	Full Dry	Coat	Limitations
1	Interprime 198	60mins@25°C	7.3	3	4hrs	1 st	Film thickness is based on spray application if work is completed by brush and roller multiple coats will be required.
2	Interprime 198	12hrs@25°C	7.3	3	4hrs	2 nd	
3	Intersheen 579	4hrs@25°C	4.7	1.6	8hrs	3 rd	
4	Intersheen 579	4hrs@25°C	4.7	1.6	8hrs	4 th	

Specifications Details

Exterior Decks

Paint Products						
#	Purpose	Product	Colour	Code	Mix With	Thinner/ Cleaner
1	Primer	Interprime 234	Red	CPA234	N/A	GTA004
2	Finish	Interlac 665	Deck Red RAL 3011	CLA066	N/A	GTA004

Add Non – Skid Aggregate GMA197 at the rate of 1 gal aggregate to 5 gals of paint.

Repair Process Details (Touch-Up Only).							
#	Product	Overcoat Times	WFT	DFT	Full Dry	Coat	Limitations
1	Interlac 665	24hrs @25°C	3.3	1.6	24hrs	1 st	Film thickness is based on spray application if work is completed by brush and roller multiple coats will be required.
2	Interlac 665	24hrs @25°C	3.3	1.6	24hrs	2 nd	

Repair Process Details (To Bare Metal)							
#	Product	Overcoat Times	WFT	DFT	Full Dry	Coat	Limitations
1	Interprime 234	6hrs@25°C	6	3.5	6hrs	1 st	Film thickness is based on spray application if work is completed by brush and roller multiple coats will be required.
2	Interprime 234	6hrs@25°C	6	3.5	6hrs	2 nd	
3	Interlac 665	24hrs@25°C	3.3	1.6	24hrs	3 rd	
4	Interlac 665	24hrs@25°C	3.3	1.6	24hrs	4 th	

Specifications Details

Superstructure, Railings and Vents

Paint Products						
#	Purpose	Product	Colour	Code	Mix Ratio	Thinner/ Cleaner
1	Primer	Interprime 198	Off White	CPA097	N/A	GTA007
2	Finish	Intersheen 579	White	LAB000	N/A	GTA007

Repair Process Details (Touch-Up Only).							
#	Product	Overcoat Times	WFT	DFT	Full Dry	Coat	Limitations
1	Intersheen 579	4hrs @25°C	4.7	1.6	8hrs	1 st	Film thickness is based on spray application if work is completed by brush and roller multiple coats will be required.
2	Intersheen 579	4hrs @25°C	4.7	1.6	8hrs	2 nd	

Repair Process Details (To Bare Metal)							
#	Product	Overcoat Times	WFT	DFT	Full Dry	Coat	Limitations
1	Interprime 198	60mins@25°C	7.3	3	4hrs	1 st	Film thickness is based on spray application if work is completed by brush and roller multiple coats will be required.
2	Interprime 198	12hrs@25°C	7.3	3	4hrs	2 nd	
3	Intersheen 579	4hrs@25°C	4.7	1.6	8hrs	3 rd	
4	Intersheen 579	4hrs@25°C	4.7	1.6	8hrs	4 th	

Specifications Details

Bollards, Bitts, Fairleads and Top of Bulwarks

Paint Products						
#	Purpose	Product	Colour	Code	Mix Ratio	Thinner/ Cleaner
1	Primer	Interprime 234	Red	CPA234	N/A	GTA004
2	Finish	Interlac 665	Black	CLY999	N/A	GTA004

Repair Process Details (Touch-Up Only).							
#	Product	Overcoat Times	WFT	DFT	Full Dry	Coat	Limitations
1	Interlac 665	24hrs @25°C	3.3	1.6	24hrs	1 st	Film thickness is based on spray application if work is completed by brush and roller multiple coats will be required.
2	Interlac 665	24hrs @25°C	3.3	1.6	24hrs	2 nd	

Repair Process Details (To Bare Metal)							
#	Product	Overcoat Times	WFT	DFT	Full Dry	Coat	Limitations
1	Interprime 234	6hrs@25°C	6	3.5	6hrs	1 st	Film thickness is based on spray application if work is completed by brush and roller multiple coats will be required.
2	Interprime 234	6hrs@25°C	6	3.5	6hrs	2 nd	
3	Interlac 665	24hrs@25°C	3.3	1.6	24hrs	3 rd	
4	Interlac 665	24hrs@25°C	3.3	1.6	24hrs	4 th	

Specifications Details

Crane, Windlass, Winches, Masts, Controls, Davits

Paint Products						
#	Purpose	Product	Colour	Code	Mix Ratio	Thinner/Cleaner
1	Primer	Interprime 198	Red	CPA099	N/A	GTA007
2	Finish	Intersheen 579	Buff RAL 070 7040	LA011	N/A	GTA007

Repair Process Details (Touch-Up Only).							
#	Product	Overcoat Times	WFT	DFT	Full Dry	Coat	Limitations
1	Intersheen 579	4hrs @25°C	4.7	1.6	8hrs	1 st	Film thickness is based on spray application if work is completed by brush and roller multiple coats will be required.
2	Intersheen 579	4hrs @25°C	4.7	1.6	8hrs	2 nd	

Repair Process Details (To Bare Metal)							
#	Product	Overcoat Times	WFT	DFT	Full Dry	Coat	Limitations
1	Interprime 198	60mins@25°C	7.3	3	4hrs	1 st	Film thickness is based on spray application if work is completed by brush and roller multiple coats will be required.
2	Interprime 198	12hrs@25°C	7.3	3	4hrs	2 nd	
3	Intersheen 579	4hrs@25°C	4.7	1.6	8hrs	3 rd	
4	Intersheen 579	4hrs@25°C	4.7	1.6	8hrs	4 th	

Specifications Details

Inside Bulwarks and Inside Flare Forward

Paint Products						
#	Purpose	Product	Colour	Code	Mix Ratio	Thinner/Cleaner
1	Primer	Interprime 234	Red	CPA234	N/A	GTA004
2	Finish	Interlac 665	Grey RAL 7042	CLA011	N/A	GTA004

Repair Process Details (Touch-Up Only).							
#	Product	Overcoat Times	WFT	DFT	Full Dry	Coat	Limitations
1	Interlac 665	24hrs @25°C	3.3	1.6	24hrs	1 st	Film thickness is based on spray application if work is completed by brush and roller multiple coats will be required.
2	Interlac 665	24hrs @25°C	3.3	1.6	24hrs	2 nd	

Repair Process Details (To Bare Metal)							
#	Product	Overcoat Times	WFT	DFT	Full Dry	Coat	Limitations
1	Interprime 234	6hrs@25°C	6	3.5	6hrs	1 st	Film thickness is based on spray application if work is completed by brush and roller multiple coats will be required.
2	Interprime 234	6hrs@25°C	6	3.5	6hrs	2 nd	
3	Interlac 665	24hrs@25°C	3.3	1.6	24hrs	3 rd	
4	Interlac 665	24hrs@25°C	3.3	1.6	24hrs	4 th	

Specifications Details

Superstructure Aft from Monkey's Island down to Viewing Deck

Paint Products						
#	Purpose	Product	Colour	Code	Mix Ratio	Thinner/ Cleaner
1	Primer	Interprime 234	Red	CPA099	N/A	GTA004
2	Finish	Tremclad Flat	Black			

Repair Process Details (Touch-Up Only).							
#	Product	Overcoat Times	WFT	DFT	Full Dry	Coat	Limitations
1	Tremclad					1 st	Film thickness is based on spray application if work is completed by brush and roller multiple coats will be required.
2	Tremclad					2 nd	

Repair Process Details (To Bare Metal)							
#	Product	Overcoat Times	WFT	DFT	Full Dry	Coat	Limitations
1	Interprime 234	6hrs@25°C	6	3.5	6hrs	1 st	Film thickness is based on spray application if work is completed by brush and roller multiple coats will be required.
2	Interprime 234	6hrs@25°C	6	3.5	6hrs	2 nd	
3	Tremclad					3 rd	
4	Tremclad					4 th	

Specifications Details

Aft Working Deck – and under timber

Paint Products						
#	Purpose	Product	Colour	Code	Mix Ratio	Thinner/ Cleaner
1	Primer/ Finish	Interseal 670HS	Deck Red RAL 3011	EGA105	5.67:1	GTA220

Repair Process Details (Touch-Up Only).							
#	Product	Overcoat Times	WFT	DFT	Full Dry	Coat	Limitations
1	Interseal 670HS	18hrs @25°C	6	5	18hrs	1 st	Film thickness is based on spray application if work is completed by brush and roller multiple coats will be required.
2	Interseal 670HS	18hrs @25°C	6	5	18hrs	2 nd	

Repair Process Details (To Bare Metal)							
#	Product	Overcoat Times	WFT	DFT	Full Dry	Coat	Limitations
1	Interseal 670HS	18hrs@25°C	6	5	18hrs	1 st	Film thickness is based on spray application if work is completed by brush and roller multiple coats will be required.
2	Interseal 670HS	18hrs@25°C	6	5	18hrs	2 nd	

Specifications Details

Paint Summary

Product	Sales Code
Interprime 198 – Red	CPA099
Interprime 198 – Off-White	CPA098
Interprime 234 – Red	CPA234
Intersheen 579 – White RAL 9003	LAB000
Intersheen 579 – Black RAL 9004	LAY999
Intersheen 579 – Red RAL 3000	LAA044
Intersheen 579 – Buff RAL 70 7040	LAA011
Interlac 665 – Deck Red Brown RAL 3011	CLA066
Interlac 665 – Grey RAL 7042	CLA011
Thinner – for Interprime 234 and Interlac 665	GTA004
Thinner – for Interprime 198 and Intersheen 579	GTA007
Thinner – for Interseal 670HS	GTA220
Non-Skid Aggregate – for decks	GMA197

Repair Coating Definitions

WFT (Wet Film Thickness) - Thickness of paint immediately after application.
- Use of Wet Film Thickness Gauge recommended.

OVERCOAT TIMES - Minimum dry before applying next coat / Maximum time for coating over.
- Overcoats are based on average temperature of 25C.
- Allow longer durations for lower surface temperatures.

FULL DRY - Time for full dry and/or cure at 25C.

LIMITATIONS - Restrictions (if any) on use of the product specified. May also include suggested application methods or equipment.

Application Suggestions

- Ensure you have the correct materials and all components before commencing work.
- Mix only small amounts sufficient for the job at hand to prevent wastage.
- Only dispose of unused or spent materials according to ship regulations.
- Avoid thinning or over-thinning if materials apply well as-mixed.
- Ensure application tools are clean and free of contaminating matter.

Surface Preparation

INTRODUCTION

Proper surface preparation is essential for the success of any marine coating scheme. The importance of removing oil, grease, old coatings and surface contaminants (such as millscale and rust on steel, and zinc salts on zinc containing primers or galvanised surfaces) cannot be over emphasised.

The performance of any paint coating is directly dependent upon the correct and thorough preparation of the surface prior to coating. The most expensive and technologically advanced coating system will fail if the surface preparation is incorrect or incomplete.

STEEL

Some of the various methods of surface preparation of steel are briefly described below. For more explicit details and recommendations please refer to full specifications, such as:

1. International Standard ISO 8504-1:2000, which is in three parts:
 - ISO 8504-1:2000 Preparation of steel substrates before application of paints and related products – Surface preparation methods – Part 1: General principles.
 - ISO 8504-2:2000 Preparation of steel substrates before application of paints and related products – Surface preparation methods – Part 2: Abrasive blast-cleaning.
 - ISO 8504-3:1993 Preparation of steel substrates before application of paints and related products – Surface preparation methods – Part 3: Hand- and power-tool cleaning.
2. The Society for Protective Coatings (SSPC), Pittsburgh, PA, USA. Full range of surface preparation standards.
3. International Standards ISO 8501-1:1988 and ISO 8501-2:1994. Preparation of steel substrate before application of paints and related products – visual assessment of surface cleanliness.
4. Shipbuilding Research Association of Japan – Standard for the Preparation of Steel Surfaces prior to Painting (“JSRA Standard – 1984”).
5. International Marine Hydroblasting Standards.
6. International Marine Slurryblasting Standards.
7. International Marine Pictorial Abrasive Sweep Blasting Standards – for shop primed surfaces.
8. International Marine Pictorial Abrasive Sweep Blasting Standards – for previously coated surfaces.

REMOVAL OF CONTAMINANTS

The performance of marine coatings applied to steel is significantly affected by the condition of the steel substrate immediately prior to painting. The principal factors affecting performance are:

- a) surface contamination including salts, oils, grease, drilling and cutting compounds,



- b) Rust and millscale,
- c) Surface profile.

The main objective of surface preparation is to ensure that all such contamination is removed to reduce the possibility of initiating corrosion and to create a surface profile that allows satisfactory adhesion of the coating to be applied. Recommended procedures are outlined in International Standard ISO 8504:2000 and SSPC SP Specifications.

It is essential to remove all soluble salts, oil, grease, drilling and cutting compounds and other surface contaminants prior to further surface preparation or painting of the steel.

Oil and Grease

The presence of even a very thin layer of oil or grease can destroy or seriously impair adhesion of paint. Solvents (e.g. paraffin or white spirit) can be used to dissolve the grease, but the problem then becomes one of completely removing the solution of oil in the solvent. Drying with cloths is only effective if two or three treatments are carried out, each time drying with clean cloths. A single treatment is rarely satisfactory and can aggravate the situation by spreading the oil or grease over an area greater than that originally affected.

Commercial chemical cleaners such as water rinsable detergents are available but before they are used it must be determined that they will not adversely attack the painted surface. It is usual to apply sufficient cleaner to incorporate the contaminant, leave for a few minutes and then hose down thoroughly with fresh water. It is imperative that all traces of the cleaner should be removed before painting. When cleaning old tanks which have contained crude oil before overcoating, it is likely that a combination of steam cleaning and degreasing will be necessary.

Salts

Sea salts are fairly easily dissolved by fresh water. Surfaces should therefore be thoroughly hosed with fresh water.

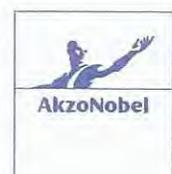
The major difficulty however is not the solubility of the salt but surface irregularities and porosity. Fine hair cracks in a paint surface can hold salt quite tenaciously. Spent and spongy antifouling films also prevent easy salt removal.

For this reason high pressure fresh water washing should always be used to flush out all the salt from the surface cracks and crevices. If high pressure fresh water washing is not available then normal fresh water hosing with thorough scrubbing should be employed. This is time consuming, but necessary, as to paint over salt residues will certainly lead to detachment or blistering of the fresh paint.

Weed Fouling

The term "weed fouling" is meant to encompass not only those organisms which are readily recognised as marine weeds, but also the algal slimes which are often only visible when wet.

They are most effectively removed by high pressure fan jet fresh water washing, the pressure



being in the range 140-350 bar (2000-5000 p.s.i.).

If high pressure fresh water washing equipment is not available, scraping, hosing and scrubbing should be employed. Results are not as good as high pressure fresh water washing but with care and attention a satisfactory result can be achieved. It must be remembered that with manual methods the final phase of the operation should be to thoroughly hose the surface with fresh water.

Shell Fouling

Acorn barnacles, tubeworms, etc. are much more difficult to dislodge from a surface than weed. Quite often high pressure water washing will not remove acorn barnacles, although other species such as goose necked barnacles, tubeworms and hydrozoa may be removed. In all cases the first step should be to determine the effect of high pressure fresh water cleaning.

Those organisms which resist removal by high pressure fresh water washing should be removed by scraping, although in many cases it will be found that either shell bases remain or the underlying paint coatings are broken. After scraping, the surface should be re-washed to clear away all the shell splinters, barnacle bases, cement residues, tissue remnants and soluble material.

HIGH PRESSURE FRESH WATER CLEANING

The operation consists of directing a high pressure fresh water jet at the surface. As with sweep blasting the effect will depend on the nature and condition of the surface and also on the pressure of water. Distance of the nozzle Fan Jet Lance or Rocky Washer from the surface will also have an effect. Usually for removing surface contamination or weed fouling, pressures in the range 140-350 bar (2000-5000 p.s.i.) are employed. Shell fouling and antifouling paint leached layers may resist the water jet. See the section "Shell Fouling".

HAND TOOL CLEANING

Loosely adhering millscale, rust and old paint coatings may be removed from steel by hand wire brushing, sanding, scraping and chipping. However, these methods are incomplete, and always leave a layer of tightly adhering rust on the steel surface. Methods for hand tool cleaning are described in SSPC-SP2 and should be to ISO 8501-1:1988 grade St2-B, C or D and also in the JSRA Standard – 1984, this standard is particularly useful for Newbuilding projects.

POWER TOOL CLEANING

Generally more effective and less laborious than hand tool cleaning for the removal of loosely adhering millscale, paint and rust. However, power tool cleaning will not remove tightly adhering rust and millscale. Power wire brushes, impact tools (such as needle guns), grinders and sanders are all commonly used, the cutting actions of grinding discs would be the preferred choice. Care should be taken, particularly with power wire brushes, not to polish the metal surface as this will reduce the key for the subsequent paint coating.

Methods are described in SSPC-SP3 and SSPC-SP11 and should be to ISO 8501-1:1988 grade St3-B, C or D. SSPC-SP11 describes a degree of surface profile which can be achieved by power tool cleaning. JSRA standard – 1984 describes power tool cleaning methods of particular use in Newbuilding projects.



BLAST CLEANING

By far the most effective method for removal of millscale, rust and old coatings, using abrasives such as garnet, grit or shot under high pressure.

The grade of blasting suitable for a particular coating specification depends on a number of factors, the most important of which is the type of coating system selected.

The primary standard used in marine product datasheets is ISO 8501-1:1988, preparation of steel substrate before application of paints and related products – visual assessment of surface cleanliness. This standard represents a slight extension of the old Swedish Standard (SIS 05 59 00), which was developed by the Swedish Corrosion Institute, in co-operation with the American Society for Testing & Materials (ASTM), and the Society for Protective Coatings (SSPC), USA, and is already used on a worldwide scale. The JSRA Standard 1984 is the principal standard quoted for Japanese Newbuilding projects.

In North American marine product datasheets the nearest equivalent SSPC specification has been quoted. It is recognised that the SSPC and ISO standards are not identical, and as a consequence worldwide/North American product datasheets may show grade Sa2½ (ISO 8501-1:1988) as equivalent to SSPC-SP6, (commercial blast cleaning), whilst others will be equivalent to SSPC-SP10 (near white metal). The selection of these blast cleaning grades have been assessed using a number of factors including coating type, performance expectation, and in-service conditions.

As a general principle, where products are recommended for immersion or aggressive atmospheric conditions the blasting standard required will be to Sa2½ (ISO 8501-1:1988) or SSPC-SP10, however, when products are recommended for general atmospheric exposure the blasting standard required will be Sa2 (ISO 8501-1:1988) or SSPC-SP6.

Prior to blasting, steelwork should be degreased and all weld spatter removed. If salts, grease or oil are present on the surface it will appear to be removed by the blasting process, but this is not the case. Although not visible, the contamination will still be present as a thin layer, and will affect the adhesion of subsequent coatings. Weld seams, metal slivers and sharp edges revealed by the blasting process should be ground down, as paint coatings tend to run away from sharp edges, resulting in thin coatings and reduced protection. Weld spatter is almost impossible to coat evenly, in addition to often being loosely adherent, and it is a common cause of premature coating failure.

The surface profile obtained during blasting is important, and will depend on the abrasive used, the air pressure and the technique of blasting. Too low a profile may not provide a sufficient key for coating, while too high a profile may result in uneven coverage of high, sharp peaks possibly leading to premature coating failure, particularly for thin film coatings such as blast primers. 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)



Grit Blasting

When large areas of a vessel's hull or tanks are cleaned by grit blasting a variety of steel surface conditions will be found. Previously coated or superficially corroded steel, can be readily cleaned to Sa2½. However, cleaning heavily corroded or pitted surfaces is more difficult and Sa2½ may not be practically achievable.

The effectiveness of various types and particle sizes of abrasives has been examined in carefully controlled practical trials and the most efficient grit particle size for corroded steel is found to be mineral slag with a range of 0.3-1.5mm (12-60 mils).

After grit blasting, surface dust must be removed. In open conditions, blowing with dry compressed air from the blasting kettle is satisfactory. Tanks however require careful cleaning normally using vacuum cleaners to remove all grit and dust particles.

Spot Blasting

This localised abrasive cleaning is often carried out on the outside of the hull of a vessel where patchy corrosion has occurred. It will effectively remove corrosion and yield surfaces cleaned to Standards described in ISO 8501-1:1998. In practice there are some precautions which need to be taken in order to prevent subsequent breakdown:

The surrounding paint film (particularly epoxy coatings) can be undercut by the abrasive particles and the edges around the blasted patch loosened from the steel surface. If this occurs the loose edges must be removed by thorough scraping or feathering, using a rotary disc.

The surrounding paint will be peppered by stray abrasive particles and the protective value of the scheme in the vicinity may be destroyed. In making good the coating system it is necessary to treat the area of damage around the blasted area.

Damage can also occur in the areas between patches if the jet of abrasive particles is played across the surface. Blasting should be discontinued whilst moving from one patch to the next. Any damage which is sustained in this way should be made good as described above. It is recommended that whenever possible the patches to be blasted should be defined by "marking in" the boundaries.

Sweep Blasting

Sweep blasting is the treatment of a surface by the sweeping of a jet of abrasive across the surface. Its effectiveness depends on the nature and condition of the surface, the type and particle size of the abrasive and above all the skill of the operator.

a) Light Sweeping

Rapid sweep blasting will clean the surface of contamination or loose coatings. It may be used to etch the surface of an existing hard and tough coating to improve the adhesion of the following coat. Superficial corrosion such as that found on weathered shop primed steel also responds well to this type of treatment, but more deep seated corrosion is not removed. Where such removal is required, Sa2½ by 'full blasting' should



be specified. Particle size of the abrasive is important, a fine abrasive is most suitable when the paint surface under treatment is not to be destroyed (grit or sand particle size 0.2mm-0.5mm, 8-20 mils).

b) Hard/Heavy Sweeping

The old coatings are removed to shop primer or bare steel. The surface standard of steel exposed will vary but all standards, nevertheless, are satisfactory provided rust scale has been removed.

Hard/heavy sweeping is used for example to upgrade otherwise unsuitable vessels to higher performance coating systems.

Particle size considerations are the same as those described in the sections dealing with blasting/grit blasting.

c) Sweeping of Shop Primers

At Newbuilding it is often necessary to remove the shop primer coat (fully or partially) prior to subsequent overcoating. The surface preparation standard to be achieved is agreed and is to one of : JSRA Standard 1984 or International Marine Pictorial Abrasive Sweep Blasting Standard.

WET ABRASIVE
BLASTING/SLURRY
BLASTING

Wet abrasive blasting uses a slurry of water and abrasive rather than dry abrasive alone. This has the advantage that the hazards of dust and associated health problems are largely overcome.

A further advantage is that when wet blasting old, well rusted surfaces, many of the soluble corrosion products in the pits of the steel will be washed out, which will greatly improve the performance of the applied coating system. However, a disadvantage of this technique is that the cleaned steel begins to rust rapidly after blasting.

The use of corrosion inhibitors is not recommended when wet blasting areas which will be exposed to marine environments.

Where wet blasted surfaces have been allowed to corrode, they should be mechanically cleaned or preferably sweep blasted, to remove the corrosion prior to painting.

HYDROBLASTING

Hydroblasting is a technique for cleaning surfaces, which relies entirely on the energy of water striking a surface to achieve its cleaning effect. Abrasives are NOT used in hydroblasting systems. Consequently the problems caused by dust pollution and by the disposal of spent abrasives are eliminated. Two different hydroblasting operating pressures are commonly encountered.

- High pressure hydroblasting, operating at pressures between 680 bar (10,000 p.s.i.) and 1,700 bar (25,000 p.s.i.).
- Ultra high pressure hydroblasting, operating at pressures above 1700 bar (25,000 p.s.i.).

The terms hydroblasting, hydrojetting and water jetting essentially mean the same thing, with



all being used to describe the same process. There can be confusion however over the difference between simple water washing and hydroblasting. To clarify the situation, International Paint have adopted the following commonly accepted definitions.

Low Pressure Water Washing:

Operates at pressures less than 68 bar (1,000 p.s.i.).

High Pressure Water Washing:

Operates at pressures between 68-680 bar (1,000-10,000 p.s.i.).

High Pressure Hydroblasting:

Operates at pressures between 680-1,700 bar (10,000-25,000 p.s.i.).

Ultra High Pressure Hydroblasting:

Operates at pressures above 1,700 bar (25,000 p.s.i.) with most machines operating in the 2,000-2,500 bar range (30,000-36,000 p.s.i.).

The International Marine Hydroblasting Standards have been prepared using ultra high pressure hydroblasting equipment. This standard however is also applicable to surfaces produced by a whole range of hydroblasting pressures, providing the equipment used is capable of cleaning to the visual standard depicted.

The steel surfaces produced by hydroblasting do NOT look the same as those produced by dry abrasive blasting, or slurryblasting. This is because water on its own cannot cut, or deform steel in the same way as abrasives. Hydroblasted surfaces therefore tend to look dull, even before they "flash rust". In addition steel, with active corrosion pitting, shows a mottled appearance after hydroblasting. Mottling occurs when the corrosion products are washed out of the pits, leaving a bright patch, and the surrounding areas are left a dull grey, brown to black colour. This pattern is the reverse of that left by abrasive blasting, where anodic pits are often dark, due to corrosion products not being entirely removed, and the surrounding areas are bright. "Flash rusting", i.e. light oxidation of the steel, which occurs as hydroblasted steel dries off, will quickly change this initial appearance.

When flash rusting is too heavy for coating application, it may be removed or reduced by brushing with a hard bristle brush, or by washing down with high pressure fresh water. High pressure washing, at pressures above 68 bar (1,000 p.s.i.) using either the rotational nozzles, or fan jet lances of the hydroblasting equipment itself is the preferred method. It will cause the area to re-rust, but it is possible to reduce the degree of flash rusting from heavy to light using this method. Hand wire or bristle brushing to remove heavy flash rusting may be acceptable for small areas, but will generally produce an inadequate surface. Mechanical rotary wire brushing can however produce acceptable surfaces for large areas.

When large areas are hydroblasted, flash rusting which obscures the original blast standard may occur, before an inspection can be carried out. Establishing the required standard by blasting a small test area prior to the main blast may help, providing the rest of the job is blasted to the same standard. Methods of ensuring the rest of the job is blasted to the same standard will vary from project to project.

The use of corrosion inhibitors is not recommended when wet blasting areas which will be exposed to marine environments.

The temperature of steel substrates can rise during the hydroblasting process. There are two reasons for this:

- a) Compression of the water to reach hydroblasting pressure will create a temperature rise in the water itself,
- b) the velocity of the water striking the steel will impart energy to it as heat. This temperature rise can be substantial and may help hydroblasted surfaces dry off more quickly, with a corresponding reduction in the severity of flash rusting.

An important property of the hydroblasting process is that it can emulsify and remove oil and grease from a surface as it is blasted. However, this does not preclude the need for proper degreasing procedures as specified in SSPC-SP1, prior to hydroblasting.

Hydroblasting will not produce a surface profile, although the process can eventually erode steel and result in metal loss. The surface profile exposed after hydroblasting will have been produced by earlier surface preparation work, or by corrosion. For most coating schemes, International Paint will accept a profile in the 50 to 100 microns range.

NON FERROUS METALS

Galvanised Steel

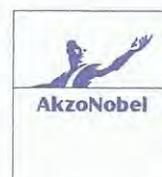
The surface should be clean, dry and grease free (see under Steel – Degreasing). Degreasing of most galvanised surfaces requires some effort to obtain a clean surface. Any white zinc corrosion products should be removed by high pressure fresh water washing, or fresh water washing with scrubbing. When using the preferred method of surface preparation, i.e. sweep blasting, it is still advisable to fresh water wash to remove soluble zinc salts. Many coatings based on non-saponifiable polymers can be applied directly to galvanised surfaces prepared in this way.

When sweep blasting is not possible, then an acid etch solution or etch primer should be used to passivate the surface and provide a key for further paint coatings. Details of coatings which can be applied to sweep blasted galvanised steel and of suitable etch solutions and primers can be obtained from International Paint.

When steel has been treated with a passivating treatment immediately after galvanising, then this must either be allowed to weather off over a period of several months exterior exposure or be abraded before application of a coating. In general etch treatments have no effect on fresh materials of this type.

Other Non Ferrous Metals/Aluminium (Abrading)

The surface should be clean, dry and grease free (see under Steel – Removal of Contaminants). Any corrosion salts should be removed by light abrasion and water washing. The cleaned surface should then be prepared by abrasive blasting at low pressure, using aluminium oxide or garnet abrasive. The specified surface profile should be achieved.



Aluminium (Acid Etching)

International Paint do not normally recommend the use of acid etch primers, however in non-immersed areas they may be used.

Before painting, apply one thin coat of a proprietary etch primer to provide a key for further coats. A colour change from pale yellow to green/brown should occur. If this reaction does not take place, adhesion will be found to be poor. The surface should be scraped clean, and treated with a proprietary aluminium pre-treatment solution, and the acid etch primer then re-applied.

SAFETY CONSIDERATIONS

Always carefully read and completely follow the safety procedures and instructions recommended by manufacturers of surface preparation devices, application equipment, media or products and the job site safety measures.

Prior to use, obtain and consult the Material Safety Data Sheet for this product concerning health and safety information. Read and follow all precautionary notices on the Material Safety Data Sheet and container label. If you do not fully understand these warnings and instructions or if you cannot strictly comply with them, do not use this product. Proper ventilation and protective measures must be provided during application and drying to keep solvent vapour concentrations within safe limits and to protect against toxic or oxygen deficient hazards. Actual safety measures are dependent on application methods and work environment.

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Paint Application

INTRODUCTION

The object in applying a coating is to provide a film which will give protection and/or decoration to the surface being painted. The success of any paint application will be governed by a number of parameters, including:

- Surface preparation
- Film thickness applied
- Methods of application
- Conditions during application

These are discussed below.

SURFACE PREPARATION

The importance of surface preparation to the success of a coating system cannot be over emphasised. See Section 2 - Surface Preparation.

FILM THICKNESS

An adequate film thickness is essential for the success of any coating system. Under-application will generally result in premature failure for obvious reasons. However, the old adage of "the more paint, the better" can be equally dangerous. The gross over-application of coatings can lead either to solvent entrapment and subsequent loss of adhesion, cracking or to splitting of primer coats. With the majority of coatings, the limits of acceptable dry film thickness allow for reasonable practical variation, but the specified film thickness should always be the target during application.

The actual dry film thickness recommended for a particular surface will depend on the type of coating system being used and the nature of the surface. Recommended dry film thicknesses for individual products are given on the product datasheets.

DRY FILM THICKNESS MEASUREMENT

If a coating is applied to a steel substrate previously blast cleaned with abrasive grit or shot, the measurement of its dry film thickness is more complicated than that of a coating applied to a smooth steel substrate.

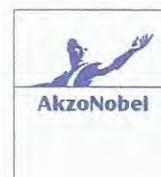
The measurement results are influenced by the profile of the abrasive blasted surfaces which change from point-to-point.

International Paint recommends that all measuring instruments are calibrated on smooth steel in accordance with ISO 2808 (1997), Method 6, or SSPC-PA2.

When thin films are being applied care should be taken to consider the surface profile ~~whereby some of the coating is being used to fill in the profile~~. For shop primers and coatings of less than 25 microns, measurement over the blasted surfaces is not meaningful. For recommended measurement techniques, consult International Paint.

METHOD OF APPLICATION

The accepted methods of applying the coatings described in the datasheets are by brush, roller, conventional (air) spray, conventional (pressure pot) spray and airless spray. The advantages and dis-advantages of each method are briefly discussed below.



BRUSH APPLICATION

Brush application should always be undertaken using good quality natural fibre or synthetic brushes of the appropriate size compatible with the product being applied. However, this application technique is relatively slow, but is generally used for coating small areas with decorative paints and for surface tolerant primers, where good penetration of rusty steel substrates is required. It is particularly suitable for the application of stripe coats and for coating complex areas where the use of spray methods would lead to considerable losses due to overspray and associated dry spray problems.

However, most high build coatings are designed for application by airless spray, and high film build will generally not be achieved by brush application. In general, twice as many coats will have to be applied by brush to achieve a similar build when compared to airless spray.

Brush application requires considerable care when applying non-convertible coatings over one another, e.g. chlorinated rubber over chlorinated rubber, or vinyl on top of vinyl. In these cases, the solvents in the wet coat readily redissolve the previously dry bottom coat. Even a mild degree of the "brushing-out" normally given to topcoats will cause pick-up of the previous coat and result in a very poor finish. Even, light strokes should be used in these circumstances, covering a particular area with one or two brush strokes, and on no account working the bristles into the previous coat.

ROLLER APPLICATION

Roller application is faster than brush on large, even surfaces and can be used for the application of most decorative paints.

However, control of film thickness is not easily achieved. As with brush application, high film build will generally not be attained. Care must be taken to choose the correct roller pile length and material, depending on the type of paint and degree of roughness of the surface.

Typically, phenolic core rollers should be used, fitted with a smooth to medium pile roller cover. The roller cover should be pre-washed to remove any loose fibres prior to use.

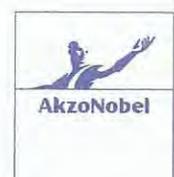
AIR SPRAY (CONVENTIONAL)

This is a widely accepted, rapid method of coating application in which paint is atomised by a low pressure air stream. "Conventional" air spray equipment is relatively simple and inexpensive, but it is essential to use the correct combination of air volume, air pressure and fluid flow to give good atomisation and a paint film free from defects.

If conventional spray application is not controlled correctly, large losses of paint can result from overspray and rebound from the surface in addition to problems such as poor flow, sagging and pinholing. The major disadvantage of conventional air spray is that high build coatings can generally not be applied by this method as most paints have to be thinned to a suitable viscosity for satisfactory atomisation, and so lose their high build properties.

AIR SPRAY (PRESSURE POT)

Pressure feed tanks or "pressure pots" are commonly used in association with low pressure air stream (conventional) spray guns, to provide a means of delivering paint at a regulated pressure from a tank, through a fluid hose to a spray gun.



Several manufacturers produce suitable equipment (e.g. DeVilbiss, Binks) which operate in the following manner.

A length of air hose from the compressed air supply is connected to an air pressure regulator on the tank lid. Some air bleeds through the regulator at an adjusted pressure into the tank but most of the air passes the regulator and reaches the spray gun through a second length of air hose to atomise the paint as it is sprayed. The air which has entered the tank forces paint from it to the gun through a length of fluid hose. Paint in the tank can be prevented from settling by means of an agitator driven by hand or by a compressed air motor.

Air spray (pressure pot) is often used in the application of zinc silicate coatings and is recommended in cases where large quantities of paint are to be applied, and their use instead of a suction or gravity feed cup attached to the gun significantly reduces waste time in constant refilling and also enables the gun to be turned to any angle to coat objects effectively without spilling paint. Pressure feed tanks up to 20 litres (5 US gallon) capacity can be used and allow ease of movement around the workplace.

AIRLESS SPRAY

Unlike air spray techniques, air is not mixed with the coating to form a spray, hence the name airless spray. Atomisation is achieved by forcing the paint through specially designed nozzles or tips, by hydraulic pressure. The required hydraulic pressure is usually generated by an air powered pump having a high ratio of fluid pressure to air input pressure. Pumps with ratios between 20:1 and 60:1 (or greater) are available, perhaps the most common being around 45:1.

The chief advantages of airless spray are:

1. High build coatings can be applied without thinning.
2. Very rapid application is possible, giving an economic advantage.
3. Compared to conventional spray, overspray and bounce-back are reduced, leading to reduced losses of material and less dust and fume hazards.

The tips, through which the paint is forced to achieve atomisation, are precisely constructed from tungsten carbide. The atomised "fan" is produced by a slot ground on the face of the orifice. Various orifice sizes together with different slot angles are available. The choice of tip is governed by the fluid pressure required to give atomisation coupled with the orifice size needed to give the correct fluid delivery rate. The fluid delivery rate controls the film thickness applied per pass of the spray gun.

Different slot angles produce spray fans of different widths. The selection of a particular fan width depends on the shape and size of the structure to be painted. Choice of fan width is also related to orifice size – for the same orifice size, the paint applied per unit area will be less the wider the spray fan.

Airless spray equipment normally operates at fluid line pressures up to 352kg/cm² (5,000 p.s.i.), and should always be used in accordance with the manufacturer's operating instructions and safety precautions.

Generally, tips with an orifice size 0.23-0.33mm (9-12 thou) are suitable for coatings to be

applied at approximately 50 microns (2 mils) wet film thickness. Tip sizes from 0.33-0.48mm (13-19 thou) for wet films of 100-200 microns (4-8 mils) and 0.48-0.79mm (19-31 thou) for 200 microns (8 mils) and above. Heavy duty mastics which are applied at very high film thicknesses may need tips with orifices as large as 1.02-1.52mm (40-60 thou).

There are several designs of tips available, the choice of which depends upon the finish required, the ease of application and ease of clearing blockages from the tips. With some products, the decorative effect achieved with airless spray is not as good as can be achieved by conventional spray. However, airless spray application is now widely accepted as a convenient method of applying marine coatings.

Some paints are designed to be applied at high film thicknesses. Others, such as conventional finishing paints are not. The data sheet will show a typical film thickness. If over-application occurs sagging and running can result. To avoid over-application the recommendations for each product shown on the appropriate data sheet should be followed.

The area sprayed should be within a comfortable distance of the operator to avoid a long traverse of the jet or arcing of the gun.

It is essential that due regard be paid to safety because an airless spray gun ejects a paint stream under very high pressure, and injury can be caused if the jet is directed at someone close by. The skin can be easily penetrated.

For high solids, high viscosity paints, it may be necessary to apply using twin-feed equipment, where the two compounds are heated and circulated separately and only mixed near the spray tip. A typical example of such equipment is the Graco Hydra-Cat. Various models exist and the manufacturers instructions must be followed in conjunction with advice given by International Paint relating to the equipment set-up for specific products.

CONDITIONS DURING APPLICATION

When applying marine coatings, the most important factors to consider are the condition of the substrate, the surface temperature, and the atmospheric conditions at the time of painting.

Paint application should only be carried out when good atmospheric conditions and clement weather prevail.

Painting should not be undertaken:

- when the air temperature falls below the lower drying or curing limit of the coating,
- during fog or mist conditions or when rain or snow is imminent,
- when the surface to be painted is wet with condensation or when condensation can occur during the initial drying period of the paint.

During the night steel temperatures fall. They rise again during the day but there is always a lag in movement of steel temperature compared to the atmospheric condition, so condensation on the steel surface is possible. Condensation will occur if the steel temperature is below the dew point of the atmosphere.

Borderline Conditions

Bad weather is a familiar problem to those using marine coatings. Relative humidity itself rarely creates a problem. Most paints will tolerate high humidities, but humidity should not be permitted to lead to condensation on the surface being painted. In order to determine whether or not a surface is wet, the steel temperature should be measured using a surface temperature thermometer and the dew point calculated after measurement of humidity with a hygrometer. Paint application should not take place when steel temperature is less than 3°C (5°F) above the dew point.

Paint should not be applied when surfaces are affected by rain or ice. Some two component paints (for example certain epoxy coatings) should not be applied at low temperatures as curing may be retarded.

Extreme Conditions

Generally, extreme conditions refers to ambient temperatures below 5°C (41°F) or above 40°C (104°F).

Below 5°C (41°F) the curing of coatings, such as traditional two component epoxies, slows down dramatically and for some paints curing stops altogether. International Paint's product range contains certain epoxy and polyurethane coatings specifically formulated for use at temperatures below 5°C. Consult International Paint. Other marine coatings are not so severely affected; chlorinated rubbers and vinyls are quite suitable for use at temperatures below 0°C (32°F) provided that the surface is clean and free from ice or frost.

At the other extreme of 40°C (104°F) and above, the drying and curing of paints is rather rapid and care should be taken to avoid dry spray. This is caused by the too rapid loss of solvent from paint droplets between the spray nozzle and the surface. It can be avoided by:-

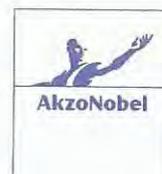
- (i) Keeping the spray gun at the minimum suitable distance from the work piece, spraying consistently at 90° to the surface being painted.
- (ii) Adding thinners, if necessary, up to a maximum of 5% by volume.

In conditions of high temperature, techniques must be adopted to prevent defects such as voids, pinholes, bubbles and poor coverage due to the over rapid evaporation of solvent. However, provided that good standards of workmanship are maintained, it is normally possible to satisfactorily apply most International Marine Coatings products on to steel substrates up to 65°C (149°F). Consult International Paint for specific product guidance.

SAFETY CONSIDERATIONS

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Definitions and Abbreviations

TOLERANCES The numerical information quoted on marine product datasheets has been derived from laboratory test data obtained under controlled conditions for the products described. Whilst every effort has been made to ensure accuracy, this information will be subject to minor variations obtained in normal manufacturing tolerances, and any fluctuations in ambient conditions during the application and curing periods.

GLOSS LEVEL Typical gloss values have been determined in accordance with ISO 2813:1994/Corr 1:1997 using a 60° gloss head or, for North America, ASTM-D-523. The categories used in the data sheet are:

Finish (Sheen)	Gloss (60°) Head
Matt	0-15
Eggshell	16-30
Semi-Gloss	31-60
Gloss	61-85
High Gloss	>85

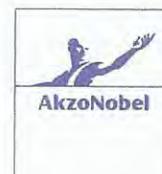
In practice, the level of sheen and surface finish will be dependent upon a number of factors, including application and the condition of the surface to be overcoated.

DRY FILM THICKNESS (DFT) The measured thickness of the final dried film applied to the substrate.

WET FILM THICKNESS (WFT) The initial thickness of the wet coating applied to the substrate.

VOLUME SOLIDS The volume solids figure given on the product data sheet is the percentage of the wet film, which remains as the dry film, and is obtained from a given wet film thickness under specified application method and conditions. These figures have been determined under laboratory conditions using a modification of the test method described in ISO 3233:1998/Corr 1:1999 – Determination of Volume Solids by Measurement of Dry Film Density. The modification is technically equivalent involving the use of slightly smaller glass slides. For North America, volume solids are measured by ASTM-D-2697 (1986) which determines the volume solids of a coating using the recommended dry film thickness of the coating quoted on the product data sheet, and a specified drying schedule at ambient temperature, i.e. 7 days at 25°C ± 1°C.

DRYING TIME The drying times quoted in the product data sheet have been determined in the laboratory using a typical dry film thickness, the ambient temperature quoted in the relevant product data sheet, and the appropriate test method, i.e.



Touch Dry
(ISO 1517 - 1973) The surface drying state of a coating when Ballotini (small glass spheres) can be lightly brushed away without damaging the surface of the coating.

Hard Dry
(ISO 9117-1990) The condition of the film in which it is dry throughout its thickness, as opposed to that condition in which the surface of the film is dry but the bulk of the coating is still mobile.

This through drying state is determined by the use of a "mechanical thumb" device "in situ" at the temperature quoted.

In North America the Touch Dry, Hard Dry and Re-coat times are determined in accordance with ASTM-D-1680 (1995) using sections 7.5, 7.7 and 7.8 respectively.

The drying times achieved in practice may show some slight fluctuation, particularly in climatic conditions where the substrate temperature differs significantly from the ambient air temperature and because of variations in practical dry film thickness.

OVERCOATING INTERVAL

The product data sheet gives both a "minimum" and a "maximum" overcoating interval and the figures quoted at the various temperatures are intended as guidelines, consistent with good painting practices. Certain terms require elaboration as follows:

Minimum

The "minimum overcoating time" quoted is an indication of the time required for the coating to attain the necessary state of dryness and hardness to allow the application of a further coat of paint without the development of any film irregularities such as lifting or loss of adhesion of the first coat (ASTM-D-1640). It assumes:

- (i) the coating has been applied at the normal recommended thickness.
- (ii) environmental conditions both during and after application were as recommended for that particular coating, especially in respect of temperature, relative humidity and ventilation.
- (iii) the paint used for overcoating is suitable for that purpose.
- (iv) an understanding of the "method of application". For example, if a coating can be applied by both brush or spray it is expected that overcoating may be carried out more rapidly if sprayed and it is the "lowest" figure that is quoted.

If the above conditions are not met, the quoted minimum overcoating times are liable to variation and will invariably have to be extended.

Maximum

The "maximum overcoating time" indicates the allowable time period within which overcoating should take place in order to ensure acceptable intercoat adhesion is achieved.

Extended

Where an "extended" overcoating time is stated, the anticipated level of intercoat adhesion can only be achieved if:

- (i) the coating has been applied in accordance with good painting practices and at the specified film thickness.



- (ii) the aged coating has the "intended" surface characteristics required for long term overcoatability. For example, an over-applied epoxy MIO may not have its usual "textured" surface and will no longer be overcoatable after ageing unless it is abraded.
- (iii) the coating to be overcoated must be intact, tightly adherent, clean, dry and free from all contaminants. For example, the leached layer on an antifouling coating is usually porous and friable and must be removed to provide the necessary surface for overcoating.
- (iv) coatings having a glossy surface which could have a detrimental effect on the adhesion of subsequent coats should be treated by light surface abrasion, sweep blasting, or other suitable processes which will not cut through or detract from the performance of the underlying coating.
- (v) in some situations, and with specific products, it may be necessary to high pressure fresh water wash prior to overcoating.

It should be recognised that the level of intercoat adhesion obtained is also dependent upon the chemistry of the "topcoat". By their nature, primers or undercoats will have inherently better adhesion than finish coats.

The measurement of ultimate "adhesion strength" can often be a difficult process, and interpretation of results can be subjective. Excellent adhesion does not necessarily mean good performance, nor does relatively poor adhesion necessarily mean poor performance.

Although the adhesion of coatings applied to aged / cured coatings may be deemed satisfactory for the specified end use, actual numerical values obtained for adhesion may be less than with coatings applied within "minimum / short" overcoating intervals.

FLASH POINT

The minimum temperature at which a product, when confined in a Setaflash closed cup, must be heated for the vapours emitted to ignite momentarily in the presence of a flame (ISO 3679:1983). In North America Flash Point is determined in accordance with ASTM-D-3278 (1996).

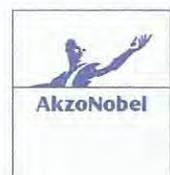
VOLATILE ORGANIC COMPOUND (VOC)

VOC content is the weight of volatile organic compounds which participate in atmospheric photochemical reactions for litre of paint.

Legislative requirements differ from country to country, and from region to region, and are constantly being reviewed. Values quoted for VOC on the product data sheet are calculated from the product formulation or have been determined practically in the laboratory using one of the following published test methods:-

UK-PG6/23(92), Appendix 3

This test method was published in February 1992, by the UK Department of the Environment as part of the Secretary of State's Guidance Note (PG6/23(92)), issued as a guide to local authorities on the appropriate techniques to control air pollution, in order to achieve the objectives laid down in the Environmental Protection Act 1990. The method described in Appendix 3 includes guidance on the method of meeting VOC of coatings, as applied to demonstrate compliance with Clause 19 of the Guidance Note.



USA - EPA Federal Reference Method 24

The Environmental Protection Agency (EPA), published procedures for demonstration of compliance with VOC limits under Federal Reference Method 24 "The Determination of Volatile Matter Content, Density, Volume Solids and Weight Solids of Surface Coatings". This method was originally published in the Federal Register in October 1980, and coded 40 CFR, Part 60, Appendix A, and amended in 1992 to incorporate instructions for dealing with multi-component systems, and a procedure for the quantitative determination of VOC exempt solvent.

It is recommended that users check with local agencies for details of current VOC regulations, to ensure compliance with any local legislative requirements when proposing the use of any coating.

EU Council Directive 1999/13/EC

The purpose of this directive is to prevent or reduce the direct and indirect effects of the emission of volatile organic compounds into the environment, mainly into air, and the potential risks to human health. In essence the directive sets emission limits for coatings users (installations), these differ by application and for old/new installations. For the purpose of the Directive a Volatile Organic Compound (VOC) is defined as:

"Any organic compound having at 293.15 K a vapour pressure of 0.01 kPa or more, or having a corresponding volatility under the particular conditions of use."

WORKING POT LIFE

The maximum time during which the product supplied as separate components should be used after they have been mixed together at the specified temperature.

The values quoted have been obtained from a combination of laboratory tests, and application trials, and refer to the time periods under which satisfactory coating performance will be achieved.

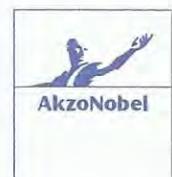
Application of any product after the working pot life has been exceeded will lead to inferior product performance, and must NOT be attempted, even if the material in question appears liquid in the can.

SHIPPING WEIGHT

The shipping weights quoted refer to the total weight of the product supplied plus the weight of the can and are for guidance only. These weights are quoted for individual components, and do not take into account any additional packaging weight attributable to cartons, etc.

SHELF LIFE

The shelf life quoted on the product datasheets is generally a conservative value, and it is probable that the coating can be applied without any deterioration in performance after this period has elapsed. Exceeding the shelf life of a product does not necessarily render it unusable. However, if the specified shelf life has been exceeded, it is recommended that the condition of the material is checked before any large scale application is undertaken using materials beyond the quoted shelf life. If this occurs contact International Paint for advice on how to progress.



Theoretical & Practical Coverage

INTRODUCTION

Estimating paint coverage is a key costing factor for both owners, vessel operators, shipyards and contractors.

On site, practical coverage is a function of many factors, with losses due to surface condition, paint distribution, application procedure, ambient weather conditions and wastage being the major factors in determining the volume of paint required for a given specification. At the initial costing stage, however, paint usage is calculated from the quoted "volume solids".

The variety of methods used by different manufacturers to calculate, or determine "volume solids" can lead to confusion and misunderstanding, particularly when comparisons between paint systems are being made. These notes are intended to guide users and specifiers both in the practical assessment of paint losses, and in their theoretical calculations.

The technique and approach described have been adopted by International Marine Coatings throughout its worldwide organisation.

VOLUME SOLIDS

The volume solids of a coating is the ratio of the volume of its non volatile components to its total wet volume.

Traditionally, this figure was calculated from the paint formulation but, since this took no account of factors such as pigment packing, solvent retention, or film contraction, the value bore little relation to that obtained in practice. Also, since these factors vary in importance between paint types, the calculated volume solids can result in an underestimation of coverage of some generic types of paint and an overestimation of others.

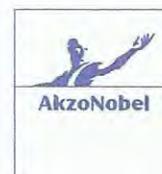
To overcome this problem, International Marine Coatings (and most other manufacturers) use a more practical method to establish a paint's "volume solids".

The method used measures the dry film thickness obtained from a measured wet film thickness, and volume solids is given by:

$$\text{Volume solids} = \frac{\text{measured dft} \times 100}{\text{measured wft}}$$

MEASUREMENT OF VOLUME SOLIDS IN THE LABORATORY

The volume solids figure given in the product datasheets is the percentage of the film obtained from a given wet film thickness under specified application method and conditions. These figures have been determined under laboratory conditions using the test method described in ISO 3233:1998/Corr 1:1999 "Determination of Volume Solids by Measurement of Dry Film Density". For North America, volume solids are measured by ASTM D-2697 which determines the volume solids of a coating using the recommended dry film thickness of the coating quoted on the product data sheet, and a specified drying schedule at ambient temperature, i.e. 7 days at 25°C ± 1°C.



SPECIAL SITUATIONS
- ZINC PAINTS

The volume solids of such paints are determined by different means because they are so highly pigmented. The high pigment loading means that the dry film contains voids and the extent of the voids is dependent, to some extent, on the techniques of application. An alternative method of measuring volume solids has therefore been used to circumvent the variable void content of the dry film and thus provide a reliable figure. Details of the methods used will be given on request. In general a modification of ASTM D-2697 gives the most meaningful results and is used on International Marine Coatings Product Datasheets.

THEORETICAL COVERAGE DETERMINATION FROM VOLUME SOLIDS

The theoretical coverage can be determined from the two formulae below:

Formula 1 (Metric)

$$\frac{\text{volume solids (\%)} \times 10}{\text{measured dft (in microns)}} = \text{Theoretical Coverage (m}^2/\text{ltr)}$$

Formula 2 (US Measure)

$$\frac{\text{volume solids (\%)} \times 16.04}{\text{measured dft (in mils)}} = \text{Theoretical Coverage (sq.ft/US gallon)}$$

CONVERSION FROM THEORETICAL TO PRACTICAL COVERAGE

INTRODUCTION

Estimating accurately the quantity of paint required for a particular job is complicated, since the theoretical coverage takes no account of the variable "losses" involved in converting paint in the can to a film on the chosen surfaces. Experienced contractors, with their knowledge of local conditions and their workforce etc., are best able to produce accurate estimates. These notes are intended to supplement this experience by highlighting the major areas of "losses". Two types of loss are considered; "apparent losses" where the paint, though on the surface, does not contribute to the specified thickness, and "actual losses", where the paint is lost or wasted.

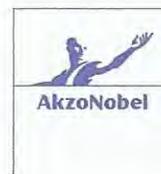
By far the biggest discrepancy in practice results from an inability to distribute paint evenly. Measured dry film thickness at any one point is either well below or above the target thickness. It may be stipulated that the measured thickness should not fall below a minimum. Typically such guide lines take the form: "90% of readings will be at the specified thickness or better and no reading will be less than 80% of specified". Attempts to ensure that the minimum thickness requirements are met everywhere, mean applying more paint than the calculated "theoretical".

THE EFFECT OF BLAST PROFILE

When paint is applied to an abrasive blasted surface, the paint thickness over the peaks on the surface is less than the thickness over the troughs.

However, in general, it is the thickness over the peaks which is most important in relation to performance. Therefore, it can be considered that the paint which does not contribute to this thickness is "lost in the steel profile".

The surface profile produced by blasting and hence the extent of the paint "loss" is proportional to the dimensions of the abrasive used.



Where steel has been blasted by small round steel shot and shop primed, the influence of the fine surface roughness on paint loss is low, but when in situ blasting is carried out, particularly with coarse grit, then the allowance necessary for paint "lost on profile" is considerable.

Typical "losses" in dry paint film thickness for given blast profiles are suggested below:

Surface	Blast Profile	DFT "Loss"
Steel preparation by wheelabrator using round steel shot and shop primed	0-50 microns (0-2 mils)	10 microns (0.4 mils)
Fine open blasting (80 mesh)	50-100 microns (2-4 mils)	35 microns (1.4 mils)
Coarse open blasting (12 mesh)	100-150 microns (4.6 mils)	60 microns (2.4 mils)
Old "honeycomb pitted" steel - reblasted	150-300 microns (6-12 mils)	125 microns (5 mils)

(Note: For the shop primers and holding primers which are applied at low film thickness, the concept of losses in the blast profile is not appropriate. These thin coatings are not normally considered to contribute to the total film thickness of the paint system.)

PAINT DISTRIBUTION

This is the loss of paint resulting from over-application when a competent painter is attempting to achieve, with reasonable accuracy, the minimum thickness specified. The extra paint used over and above that calculated from the theoretical spreading rate is very dependent on the method of application, i.e. brush, roller or spray, and also on the type of structure being painted. A simple (uncomplicated) shape with a high proportion of flat surfaces should not incur heavy losses but if there are stiffeners or open lattice work involved then obviously losses will be high.

The following approximate over-applications are suggested as being appropriate:

Brush & Roller	"Loss"
Simple structures	5%
Complex structures	10-15% (including stripe coat)
Spray	"Loss"
Simple structures	20%
Complex structures	60% for single coat (including stripe coat) 40% for two coats 30% for three coats

Where open lattice work is sprayed, no realistic estimate can be made of paint distribution loss. In those special cases where the specification calls for a minimum thickness at all measured points, then the distribution losses would be greater than those indicated above.



ACTUAL LOSSES - APPLICATION

There is a real loss of paint during the painting operation, i.e. paint which drips from a brush or roller during the transfer from the paint container to the surface to be painted. With care this can be disregarded as a significant contribution to the overall "loss". The use of "man helps" to extend the painter's reach however can increase this type of loss, and in an extreme case could result in a 5% loss.

When application is by spray, losses are inevitable and their magnitude is dependent on the shape of the structure being painted, together with weather conditions.

The following losses are common:

Well ventilated but confined space	5%
Outdoors in almost static air	5-10%
Outdoors in windy conditions	over 20% (obviously this figure can become exceptionally high if painting is attempted in unsuitable windy conditions)

PAINT WASTAGE

Some paint wastage is inevitable; paint is spilt, a certain amount remains in discarded containers; and in the case of two component materials, mixed paint may be left beyond its pot life.

The following losses are common:

Single component paints	No more than 5%
Two component paints	5-10%

SUMMARY OF LOSSES

Paint losses are summarised in the table:

	Loss Factor	Source of Loss
Apparent loss	1.1	Surface profile
	1.2	Distribution
Actual loss	2.1	Application losses
	2.2	Wastage

Factor 1.1 effectively applies to the first coat. Factors 1.1 and 1.2 should be added and 2.1 and 2.2 compounded.

PRACTICAL COVERAGE

Given the theoretical coverage and the preceding loss factors, it is possible to calculate a practical coverage. However, due to the extremely complex nature of the calculations, and variability of a number of external factors which include surface roughness, ambient climatic conditions, complexity of structure, access limitations and application methods, it is advised that these calculations are performed by professional estimators who have the appropriate knowledge and experience of the application of marine coatings under various site conditions.

The following example illustrates the calculation of practical coverage, using the loss factors described:



Example:

Two coats of two pack paint are applied by spray in a confined space to a shot blasted and shop primed surface to yield a dft per coat of 125 microns/5 mils (i.e. 250 microns/10 mils total dft). Theoretical spreading rate for the paint at the recommended film thickness is 5.0m²/litre, 204 sq.ft/gal. What is the practical spreading rate?

Loss Factor	Consider 1st Coat:	125 microns	5 mils
1.1	"Loss" due to surface roughness	10 microns	0.4
1.2	"Loss" due to distribution – 40% i.e. dft x 0.4	50 microns	2.0
		<hr/> dft 185 microns	<hr/> 7.4
2.1	Loss due to application – 5% i.e. dft x 0.05	9.25 microns	0.4
		<hr/> dft 194.25 microns	<hr/> 7.8
2.2	Loss due to wastage – 10% . i.e. dft x 0.1	19.42 microns	0.8
		<hr/> Total dft 213.67 microns	<hr/> 8.6
	Extra paint used	213.67 - 125 = 88.67 x 100 <hr/> 125 = 71%	8.6 - 5 = 3.6 x 100 <hr/> 5 = 71%

Loss Factor	Consider 2nd Coat:	125 microns	5 mils
1.1	"Loss" due to surface roughness	-	-
1.2	"Loss" due to distribution – 40% i.e. dft x 0.4	50 microns	2.0
		<hr/> dft 175 microns	<hr/> 7.0
2.1	Loss due to application – 5% i.e. dft x 0.05	8.75 microns	0.4
		<hr/> dft 183.75 microns	<hr/> 7.4
2.2	Loss due to wastage – 10% i.e. dft x 0.1	18.37 microns	0.7
		<hr/> Total dft 202.12 microns	<hr/> 8.1
	Extra paint used	202.12 - 125 = 77.12 x 100 <hr/> 125 = 62%	8.1 - 5 = 3.1 x 100 <hr/> 5 = 62%

In other words for the two coat system

$$\frac{(71 + 62)\%}{(2)} = 66.5\%$$

more paint has been needed than would have been calculated from the ideal spreading rate.

In the example the theoretical spreading rate is one litre of paint per 5 sq.metres or 1 US gallon of paint per 204 sq. feet. In practice 1.66 litres of paint can be expected to cover 5 sq.metres or 1.66 US gallons can be expected to cover 204 sq.feet.

Practical spreading rate

$$= \frac{5}{1.66} = 3\text{m}^2/\text{litre} \quad \text{or} \quad \frac{204}{1.66} = 123 \text{ sq.ft./US gallon}$$

It has been customary in our industry to refer to "loss factors" i.e. the difference between theoretical spreading rate and practical spreading rate expressed as a percentage of the theoretical spreading rate. In the above example:

$$\text{Loss factor} = \frac{5 - 3}{5} \times 100 = 40\%$$

$$\text{Or} = \frac{204 - 123}{204} \times 100 = 40\%$$

Safety Precautions

INTRODUCTION

These notes concern health and safety requirements, industrial hygiene and potential hazards involved in handling paint and thinners. They are not intended to be exhaustive and do not cover all eventualities during the application and storage of paint.

International Paint places considerable emphasis on the importance of the safe use of paint, and has developed products to cope with potential hazards.

Solvent free and WB products are available which minimise the hazards of fire and explosion and reduce the interference with people's work in the vicinity of the painting operation.

Material Safety Datasheets on all products are available on request.

FIRE AND EXPLOSION

The majority of paints contain flammable organic solvents. As soon as a paint container is opened, solvent vapours are released.

The lower explosive limit (LEL) is defined as the percentage of solvent vapour in the air which is the point where an explosion will occur if the air and solvent mixture is ignited with a spark. If the LEL is never reached, no explosion can occur. Information on LELs can be found on Product Health & Safety Datasheets.

The flash point is the lowest temperature at which a liquid gives off sufficient vapour to form an inflammable mixture in contact with air:-

- If the flash point of the paint is lower than or close to the temperature of the air there is a very considerable risk of explosion and fire.
- If the flash point exceeds the air temperature then there is no risk of explosion but there is still a risk of fire.

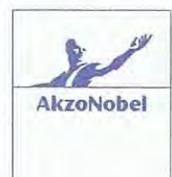
As such, therefore, no naked flames, cigarettes, matches or other sources of ignition should be allowed near an area where paint is being applied or stored. Precautions should also be taken to avoid sparks from electrical appliances or caused by metal to metal contact. If a fire involving paint does occur:-

- Do not extinguish with water, as paint solvents float on water, and this helps to spread fire.
- Use a dry chemical, foam or CO₂ extinguisher.
- Protect yourself from the smoke and vapours with breathing apparatus/supplied air.

SKIN AND EYE CONTACT

If paint is spilled the following precautions should be taken:

- Eliminate all potential ignition sources.
- Ventilate the area to remove the vapours.
- Wear appropriate Personal Protective Equipment (PPE).
- Do not walk into the spill.
- Mop up all spilled paint with absorbent material, ensuring that all materials used to mop up the paint are disposed of in closed metal containers.
- Arrange for proper disposal of all waste materials.



It is recommended that the following precautions should be taken to prevent paint coming into contact with the skin and eyes.

- Select sensible working clothes, that cover as much of the body as possible.
- Always wear gloves and eye protection. See Material Safety Data Sheet for details on relevant PPE.
- Do not touch your mouth or eyes with your gloves.
- Read and observe precautionary notices on paint containers.
- Eyes are particularly sensitive, so if you are splashed in the eyes, by paint or thinners, flood them immediately with fresh water for at least 15 minutes and seek medical advice immediately.
- If paint should splash on your skin, remove it with soap and water. NEVER USE SOLVENT.
- Remember to wash hands and rinse mouth after working with paint.
- Despite these precautions paint can still come into contact with the skin or eyes (e.g. spray mist, excessive splashing), so a non-greasy barrier cream is recommended for all exposed skin.

Remember the objective is to avoid skin contact. If your clothes become soaked in paint, change them immediately and thoroughly wash the affected garments with suitable detergent and water.

INHALATION

The inhalation of solvent vapours, paint vapours and dust must be avoided. Please follow the precautions listed.

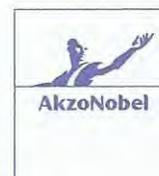
- Ensure that ventilation is available to remove solvent vapours.
- Check Material Safety Data Sheet for appropriate respiratory protection.
- If spaces are difficult to ventilate efficiently wear an airfed hood / mask.
- Spaces may require monitoring for LEL and exposure levels.
- Think about where the vapours are being ventilated. They could affect other people in adjacent spaces.

Remember solvent vapours are heavier than air, they push breathable air upwards. They can flow down drains and ventilation ducts.

- If dizziness, drunkenness or headaches are experienced this could indicate you are being affected by solvent vapours. Move into fresh air and do not return until the ventilation has improved.
- If breathing vapours results in the collapse of a painter medical attention should be sought immediately. Forced exercise is inadvisable.
- Never enter a space where vapours have or could have accumulated without breathing apparatus.

INHALATION OF SPRAY MISTS

- The mist of paint particles created when spraying should not be inhaled.
- In well ventilated spaces a dust cartridge respirator can filter out these particles of paint effectively. Cartridges can be product specific, careful selection is required. (Replace the cartridge regularly, following a regular schedule).



- If ventilation is poor an airfed hood or mask is essential, if any doubt whatsoever exists wear an airfed hood/mask.
- Never filter spray mists through rags wrapped over the mouth, as the rags can get soaked and allow paint to come into direct contact with the mouth. Rags are also rather inefficient filters.

INGESTION

Food and drink should not be consumed, stored or prepared in areas where paint is stored or being applied.

In the case of accidental ingestion, medical attention should be obtained at once.

Safety can be assured by adopting a sensible working attitude and good housekeeping practice.

**MATERIAL SAFETY
DATASHEETS**

Prior to use, obtain and consult the Material Safety Data Sheet for products being used concerning health and safety information. Read and follow all precautionary notices on the Material Safety Data Sheet and container label. If you do not fully understand these warnings and instructions or if you can not strictly comply with them, do not use this product. Proper ventilation and protective measures must be provided during application and drying to keep solvent vapour concentrations within safe limits and to protect against toxic or oxygen deficient hazards. Take precautions to avoid skin and eye contact (i.e. gloves, goggles, face, mask, barrier creams etc.) Actual safety measures are dependent on application methods and work environment.

Unless otherwise agreed in writing, all products supplied and technical advice or recommendations given are subject to the Conditions of Sale of our supplying company.

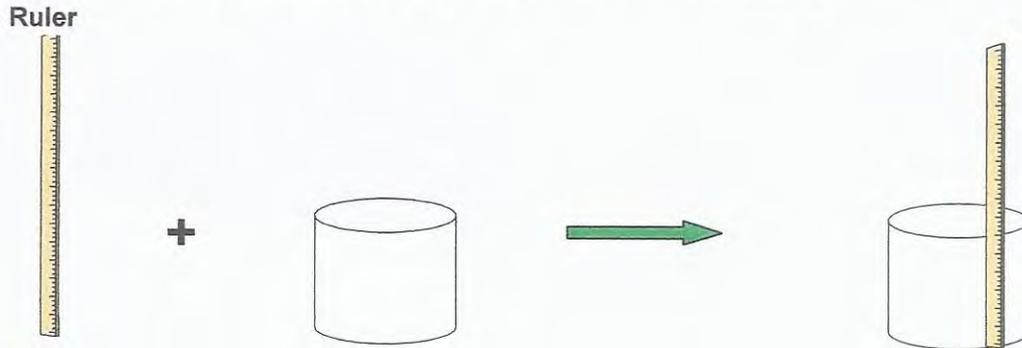
To find out more visit: www.international-marine.com



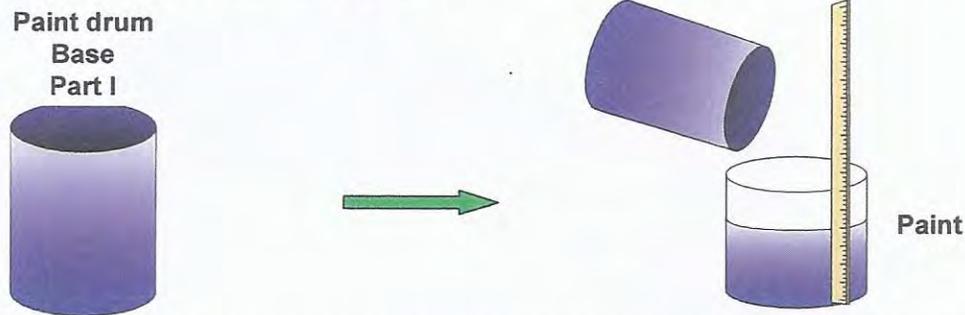
February 2009

Epoxy Paints

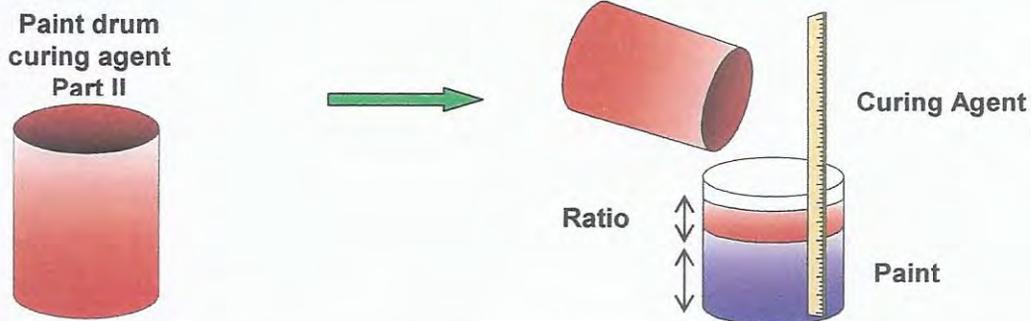
Step 1 : Mixing enough paint to only cover areas that need painting



Step 2 : Pour Base into empty drum



Step 3 : Pour curing agent in drum containing base



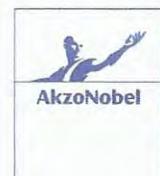
Step 4 : Mix base and curing agent thoroughly



Marine Coatings

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Registered Office 26th Floor, Portland House, Bressenden Place, London SW1E 5BG



**Measuring the Wet Film Thickness
Instructions for Use**

Step 1



Step 2 : Put onto freshly applied paint



Step 3



WFT reading is between 200 and 225 microns

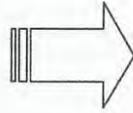
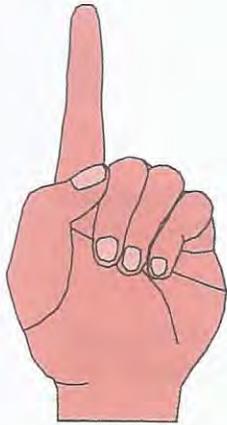
Marine Coatings

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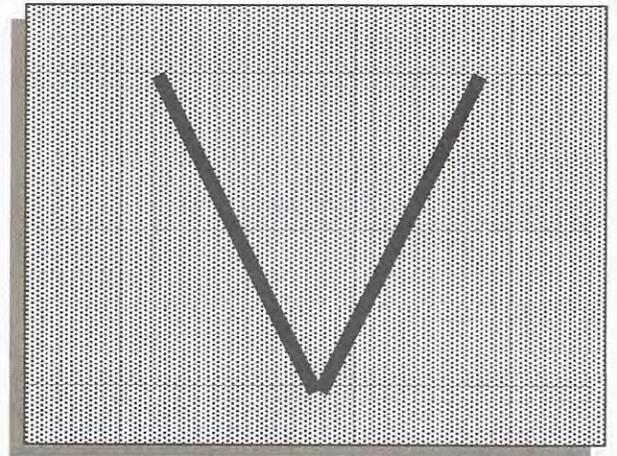
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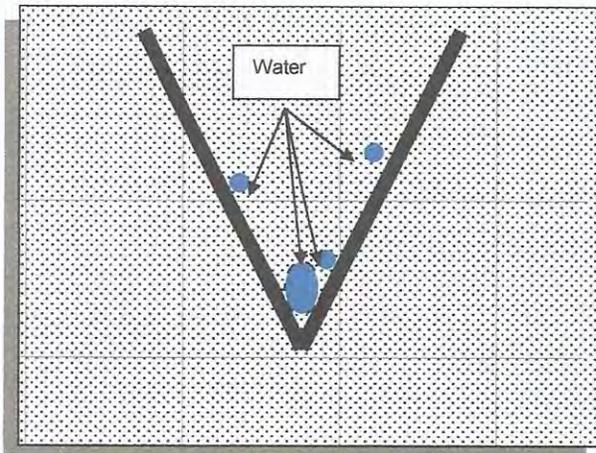
Practical Guide to Damp Tolerance



Use finger to mark "V" on steel surface



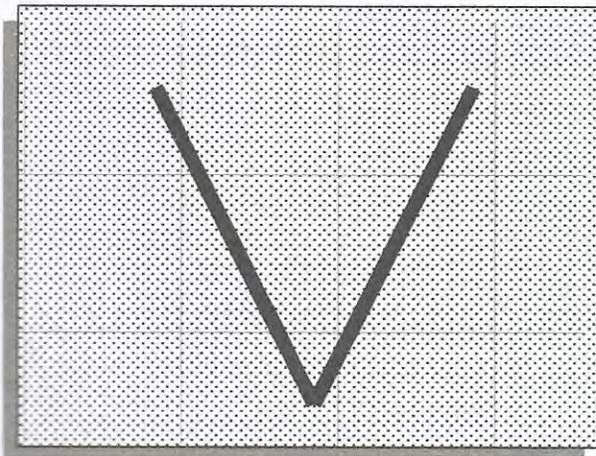
Humid steel surface



! If water accumulates at bottom of V

SURFACE IS WET

DO NOT PAINT



! If no water accumulates

SURFACE IS DAMP

PAINTING ALLOWED
with moisture tolerant coatings

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Extent Diagrams

Diagram B

0.1%



Diagram C

0.3%

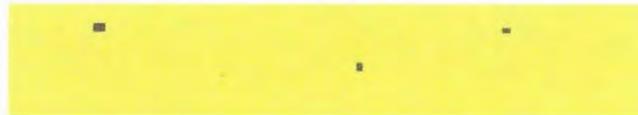


Diagram D

1% Scattered



Diagram E

1% Localised



Diagram F

3% Scattered



Diagram G

3% Localised



Diagram H

5% Scattered

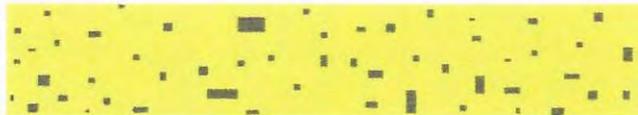


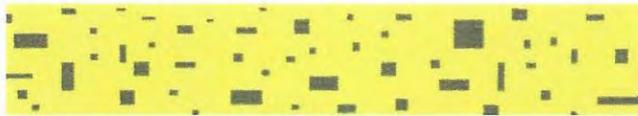
Diagram J

5% Localised



Diagram K

10% Scattered



Extent Diagrams

Diagram B

0.1%



Diagram C

0.3%



Diagram D

1% Scattered

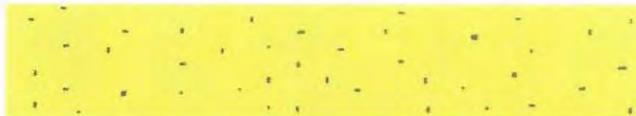


Diagram E

1% Localised



Diagram F

3% Scattered



Diagram G

3% Localised



Diagram H

5% Scattered

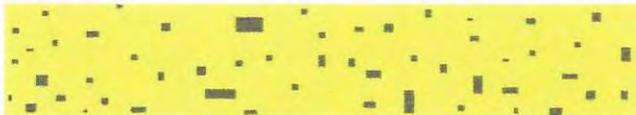


Diagram J

5% Localised



Diagram K

10% Scattered



Diagram L
10% Localised



Diagram M
15% Scattered



Diagram N
15% Localised



Diagram P
25%



Diagram Q
33%



Diagram R
50%



Diagram S
75%



Diagram T
90%



Diagram V
100%



Alkyd Primer

PRODUCT DESCRIPTION A quick drying, one pack primer. Interprime 198 is surface tolerant, compatible with most substrates and can be overcoated with a wide range of finishes.

INTENDED USES For the maintenance of above water areas. Approved for the carriage of grain when used as part of an approved scheme.
For use at Maintenance & Repair or On Board Maintenance.

PRODUCT INFORMATION

Color	CPA097-White, CPA098-Grey, CPA099-Red
Finish/Sheen	Matt
Part B (Curing Agent)	Not applicable
Volume Solids	41% ±2% (ISO 3233:1998)
Mix Ratio	Not applicable
Typical Film Thickness	3 mils dry (7.3 mils wet)
Theoretical Coverage	219 ft ² /US gal at 3 mils dft, allow appropriate loss factors
Method of Application	Airless Spray, Brush, Roller
Flash Point	Single Pack 95°F

Drying Information	23°F	41°F	77°F	95°F
Touch Dry [ISO 9117/3:2010]	8 hrs	3 hrs	60 mins	30 mins
Hard Dry [ISO 9117-1:2009]	48 hrs	24 hrs	4 hrs	2 hrs

Overcoating Data - see limitations	Substrate Temperature							
	23°F		41°F		77°F		95°F	
Overcoated By	Min	Max	Min	Max	Min	Max	Min	Max
Interfine 5703	-	-	-	-	2 hrs	3 days	2 hrs	24 hrs
Interfine 599	-	-	9 hrs	3 days	3 hrs	2 days	60 mins	24 hrs
Interlac 665	24 hrs	3 days	6 hrs	3 days	2 hrs	2 days	60 mins	24 hrs
Interprime 198	8 hrs	ext	3 hrs	ext	60 mins	ext	30 mins	ext
Intersheen 579	24 hrs	3 days	24 hrs	3 days	12 hrs	2 days	6 hrs	24 hrs
Interstores Alkyd	-	-	6 hrs	3 days	2 hrs	2 days	60 mins	24 hrs
Interstores Polyurethane	-	-	24 hrs	7 days	12 hrs	7 days	6 hrs	3 days
Interthane 990	-	-	24 hrs	7 days	12 hrs	7 days	6 hrs	3 days
Intertherm 891	24 hrs	28 days	6 hrs	28 days	2 hrs	28 days	60 mins	28 days

REGULATORY DATA VOC 506 g/lit (4.22 lb/US gal) as supplied (EPA Method 24)
416 g/kg of liquid paint as supplied. EU Solvent Emissions Directive (Council Directive 1999/13/EC)

Note: VOC values are typical and are provided for guidance purposes only. These may be subject to variation depending on factors such as differences in color and normal manufacturing tolerances.

Marine Coatings

Alkyd Primer

CERTIFICATION

When used as part of an approved scheme, this material has the following certification:

- Fire Resistance - Surface Spread of Flame (Exova Warringtonfire)
- Fire Resistance - Surface Spread of Flame (Korean Register of Shipping)
- Fire Resistance - Smoke & Toxicity (Exova Warringtonfire)
- Food Contact - Carriage of Grain (NOHA)
- Fire Resistance - Marine Equipment Directive compliant

Consult your International Paint representative for details.

SYSTEMS AND COMPATIBILITY

Consult your International Paint representative for the system best suited for the surfaces to be protected.

SURFACE PREPARATIONS

Use in accordance with the standard Worldwide Marine Specifications.

All surfaces to be coated should be clean, dry and free from contamination.

High pressure fresh water wash or fresh water wash, as appropriate, and remove all oil or grease, soluble contaminants and other foreign matter in accordance with SSPC-SP1 solvent cleaning.

REPAIR/OBM

Prepare area to be repaired to a minimum of St2 (ISO 8501-1:1998). Higher levels of surface preparation by abrasive blasting to Sa2 (ISO 8501-1:2001) or hydroblasting to HB2M (International Paint Hydroblasting Standards), will enhance product performance.

Feather or chip back surrounding area to a sound edge.

Ensure that the area is clean and dry prior to application of Interprime 198.

Overlap the primer onto existing coatings by approximately 2-3cm.

Consult your International Paint representative for specific recommendations.

NOTE

For use in Marine situations in North America, the following surface preparation standards can be used:

SSPC-SP6 in place of Sa2 (ISO 8501-1:2007)

SSPC-SP2 in place of St2 (ISO 8501-1:2007)

Alkyd Primer

APPLICATION

Mixing	This material is a one pack coating and should always be mixed thoroughly with a power agitator before application.
Thinner	Not recommended. Use International GTA007 only in exceptional circumstances. DO NOT thin more than allowed by local environmental legislation.
Airless Spray	Recommended Tip Range 21-26 thou (0.53-0.66 mm) Total output fluid pressure at spray tip not less than 2500 psi (176 kg/cm ²)
Conventional Spray	Application by conventional spray is not recommended.
Brush	Recommended. Multiple coats may be required to achieve specified dft.
Roller	Recommended. Multiple coats may be required to achieve specified dft.
Cleaner	International GTA007
Work Stoppages and Cleanup	Thoroughly flush all equipment with International GTA007. All unused material should be stored in tightly closed containers. Partially filled containers may show surface skinning and/or a viscosity increase of the material after storage. Material should be filtered prior to use.
Welding	In the event welding or flame cutting is performed on metal coated with this product, dust and fumes will be emitted which will require the use of appropriate personal protective equipment and adequate local exhaust ventilation. In North America do so in accordance with instruction in ANSI/ASC Z49.1 "Safety in Welding and Cutting."

SAFETY

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

Prior to use, obtain, consult and follow the Material Safety Data Sheet for this product concerning health and safety information. Read and follow all precautionary notices on the Material Safety Data Sheet and container labels. If you do not fully understand these warnings and instructions or if you can not strictly comply with them, do not use this product. Proper ventilation and protective measures must be provided during application and drying to keep solvent vapor concentrations within safe limits and to protect against toxic or oxygen deficient hazards. Take precautions to avoid skin and eye contact (ie. gloves, goggles, face masks, barrier creams etc.) Actual safety measures are dependant on application methods and work environment.

EMERGENCY CONTACT NUMBERS:

USA/Canada - Medical Advisory Number 1-800-854-6813

Europe - Contact (44) 191 4696111. For advice to Doctors & Hospitals only contact (44) 207 6359191

China - Contact (86) 532 83889090

R.O.W. - Contact Regional Office

Interprime 198



Alkyd Primer

LIMITATIONS

It is recommended that Interprime 198 is not overcoated with epoxy coatings.

In certain regions, for specific customer requests and where cosmetic properties are not of concern, Interprime 198 may be applied without a cosmetic finish. Consult your regional technical centre for guidelines and details of colors available.

Overcoating information is given for guidance only and is subject to regional variation depending upon local climate and environmental conditions. Consult your local International Paint representative for specific recommendations. Apply in good weather. Temperature of the surface to be coated must be at least 5°F above the dew point. For optimum application properties bring the material to 70°F-81°F, unless specifically instructed otherwise, prior to mixing and application. Unmixed material (in closed containers) should be maintained in protected storage in accordance with information given in the STORAGE Section of this data sheet. Technical and application data herein is for the purpose of establishing a general guideline of the coating application procedures. Test performance results were obtained in a controlled laboratory environment and International Paint makes no claim that the exhibited published test results, or any other tests, accurately represent results found in all field environments. As application, environmental and design factors can vary significantly, due care should be exercised in the selection, verification of performance and use of the coating.

UNIT SIZE	Unit Size	Vol	Pack
	1 US gal	1 US gal	1 US gal
	5 US gal	5 US gal	5 US gal
	5 lt	5 lt	5 lt
	20 lt	20 lt	20 lt

For availability of other unit sizes consult International Paint

UNIT SHIPPING WEIGHT	Unit Size	Unit Weight
	1 US gal	12.2 lb
	20 lt	26.7 Kg
	5 lt	6.71 Kg
	5 US gal	60.9 lb

STORAGE	Shelf Life	24 months minimum at 77°F. Subject to reinspection thereafter. Store in dry, shaded conditions away from sources of heat and ignition
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WORLDWIDE AVAILABILITY Consult International Paint.

IMPORTANT NOTE

The information in this data sheet is not intended to be exhaustive; any person using the product for any purpose other than that specifically recommended in this data sheet without first obtaining written confirmation from us as to the suitability of the product for the intended purpose does so at their own risk. All advice given or statements made about the product (whether in this data sheet or otherwise) is correct to the best of our knowledge but we have no control over the quality or the condition of the substrate or the many factors affecting the use and application of the product. Therefore, unless we specifically agree in writing to do so, we do not accept any liability at all for the performance of the product or for (subject to the maximum extent permitted by law) any loss or damage arising out of the use of the product. We hereby disclaim any warranties or representations, express or implied, by operation of law or otherwise, including, without limitation, any implied warranty of merchantability or fitness for a particular purpose. All products supplied and technical advice given are subject to our Conditions of Sale. You should request a copy of this document and review it carefully. The information contained in this data sheet is liable to modification from time to time in the light of experience and our policy of continuous development. It is the user's responsibility to check with their local representative that this data sheet is current prior to using the product.

This Technical Data Sheet is available on our website at www.international-marine.com or www.international-pc.com, and should be the same as this document. Should there be any discrepancies between this document and the version of the Technical Data Sheet that appears on the website, then the version on the website will take precedence.

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Marine Coatings

Interprime 234



Alkyd Primer

PRODUCT DESCRIPTION A one pack, high build alkyd primer containing anticorrosive pigment.

INTENDED USES A general purpose conventional primer for application to steelwork above water. Can also be applied over wood and aluminium surfaces.
For use at Newbuilding, Maintenance & Repair or On Board Maintenance.

PRODUCT INFORMATION

Color	CPA234-Red, CPA235-Off White
Finish/Sheen	Matt
Part B (Curing Agent)	One pack
Volume Solids	58% ±2% (ASTM D2697-86)
Typical Film Thickness	2 mils dry (3.4 mils wet), 1.5 - 3.5 mils dry practical range equivalent to 2.6 - 6 mils wet
Theoretical Coverage	465 ft ² /US gal at 2 mils dft, allow appropriate loss factors
Method of Application	Airless Spray, Brush, Conventional Spray, Roller
Flash Point	Single Pack 98°F (Setaflash) (ASTM D-3278)

Drying Information	41°F	50°F	77°F	95°F
Touch Dry [ASTM D1640 7.5.1]	2 hrs	2 hrs	90 mins	30 mins
Hard Dry [ASTM D1640 7.7]	16 hrs	12 hrs	6 hrs	5 hrs

Overcoating Data - see limitations	Substrate Temperature							
	41°F		50°F		77°F		95°F	
	Min	Max	Min	Max	Min	Max	Min	Max
Overcoated By								
Interfine 5703	-	-	12 hrs	14 days	2 hrs	14 days	2 hrs	7 days
Interlac 665	20 hrs	ext	12 hrs	ext	6 hrs	ext	5 hrs	ext
Interprime 234	20 hrs	ext	12 hrs	ext	6 hrs	ext	5 hrs	ext
Intertherm 891	20 hrs	ext	12 hrs	ext	6 hrs	ext	5 hrs	ext

REGULATORY DATA VOC 340 g/lit (2.84 lb/US gal) as supplied (EPA Method 24)

Note: VOC values are typical and are provided for guidance purposes only. These may be subject to variation depending on factors such as differences in color and normal manufacturing tolerances.

Alkyd Primer

CERTIFICATION

When used as part of an approved scheme, this material has the following certification:

- Fire Resistance - Marine Equipment Directive compliant
- Fire Resistance - Surface Spread of Flame (Exova Warringtonfire)
- Fire Resistance - Smoke & Toxicity (Exova Warringtonfire)

Consult your International Paint representative for details.

SYSTEMS AND COMPATIBILITY

Consult your International Paint representative for the system best suited for the surfaces to be protected.

SURFACE PREPARATIONS

Paint only clean, dry surfaces. Remove all grease, oil, soluble contaminants and other foreign matter by "solvent cleaning" (SSPC-SP1).

Steel:

"Hand Tool Cleaning" (SSPC-SP2) or "Power Tool Cleaning" (SSPC-SP3) of welds, corrosion and damaged shop primer.

Previously Painted Surfaces:

Remove all mill scale, loose rust, loose paint and other foreign matter by "Hand or Power Tool Cleaning" (SSPC-SP2 or SP3, respectively).

Wood and aluminium:

Consult International Paint.

Apply one or more coats of Interprime 234, as specified.

Alkyd Primer

APPLICATION	Apply by conventional or airless spray. Application by other methods, brush or roller, may require more than one coat. Strain material through a minimum 60 mesh screen before application. Apply at 3.5 mils wet which will yield 2.0 mils dry film thickness. Consult the following equipment recommendations or utilize suitable equal.
Mixing	This material is a one pack coating. Always mix thoroughly with a power agitator before application.
Thinner	DO NOT THIN BEYOND YOUR STATE'S COMPLIANCY. Material is supplied at spray viscosity and normally does not need thinning. If thinning is necessary, thin up to a maximum of 4 ounces/gal. with International GTA004 Thinner.
Airless Spray	Minimum 28:1 ratio pump; 0.018" - 0.021" (475-533 microns) orifice tip; 3/8" ID high pressure material hose; 60 mesh tip filter
Conventional Spray	DeVilbiss MBC-510 gun E tip and 704 air cap; 3/8" (9.5 mm) ID material hose; double regulated pressure tank with oil and moisture separator.
Brush	Use appropriate size China bristle brush.
Roller	Use All Purpose Roller cover with 3/8" (9.5 mm) smooth to medium nap. Prewash roller cover to remove loose fibres prior to use.
Cleaner	International GTA004
Work Stoppages and Cleanup	Clean all equipment immediately after use with International GTA004. It is good working practice to periodically flush out spray equipment during the course of the working day. Frequency will depend upon factors such as amount sprayed, temperature and elapsed time including work stoppages. Monitor material condition. All surplus materials and empty containers should be disposed of in accordance with appropriate regional regulations/legislation.
Welding	In the event welding or flame cutting is performed on metal coated with this product, dust and fumes will be emitted which will require the use of appropriate personal protective equipment and adequate local exhaust ventilation. In North America do so in accordance with instruction in ANSI/ASC Z49.1 "Safety in Welding and Cutting."

SAFETY

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

Prior to use, obtain, consult and follow the Material Safety Data Sheet for this product concerning health and safety information. Read and follow all precautionary notices on the Material Safety Data Sheet and container labels. If you do not fully understand these warnings and instructions or if you can not strictly comply with them, do not use this product. Proper ventilation and protective measures must be provided during application and drying to keep solvent vapor concentrations within safe limits and to protect against toxic or oxygen deficient hazards. Take precautions to avoid skin and eye contact (ie. gloves, goggles, face masks, barrier creams etc.) Actual safety measures are dependant on application methods and work environment.

EMERGENCY CONTACT NUMBERS:

USA/Canada - Medical Advisory Number 1-800-854-6813

Europe - Contact (44) 191 4696111. For advice to Doctors & Hospitals only contact (44) 207 6359191

R.O.W. - Contact Regional Office

Alkyd Primer

LIMITATIONS

Apply in good weather. Curing will be delayed if air and surface temperatures are below 41°F. Unmixed material (in closed containers) should be maintained in protected storage between 40 and 100°F. Overcoating information is given for guidance only and is subject to regional variation depending upon local climate and environmental conditions. Consult your local International Paint representative for specific recommendations. Technical and application data herein is for the purpose of establishing a general guideline of the coating and proper coating application procedures. Test performance results were obtained in a controlled laboratory environment and International Paint makes no claim that the exhibited published test results, or any other tests, accurately represent results actually found in all field environments. As application, environmental and design factors can vary significantly, due care should be exercised in the selection, verification of performance and use of the coating. In the overcoating data section 'ext' = extended overcoating period. Please refer to our Marine Painting Guide - Definitions and Abbreviations available on our website.

UNIT SIZE	Unit Size	Part A	
		Vol	Pack
	5 US gal	5 US gal	5 US gal
	1 US gal	1 US gal	1 US gal
For availability of other unit sizes consult International Paint			
UNIT SHIPPING WEIGHT	Unit Size	Unit Weight	
	1 US gal	14 lb	
	5 US gal	64.5 lb	
STORAGE	Shelf Life	24 months minimum from date of manufacture when maintained in protected storage at 40-100°F. Subject to reinspection thereafter. Store in dry, shaded conditions away from sources of heat and ignition.	

WORLDWIDE AVAILABILITY Consult International Paint.

IMPORTANT NOTE

The information in this data sheet is not intended to be exhaustive; any person using the product for any purpose other than that specifically recommended in this data sheet without first obtaining written confirmation from us as to the suitability of the product for the intended purpose does so at their own risk. All advice given or statements made about the product (whether in this data sheet or otherwise) is correct to the best of our knowledge but we have no control over the quality or the condition of the substrate or the many factors affecting the use and application of the product. Therefore, unless we specifically agree in writing to do so, we do not accept any liability at all for the performance of the product or for (subject to the maximum extent permitted by law) any loss or damage arising out of the use of the product. We hereby disclaim any warranties or representations, express or implied, by operation of law or otherwise, including, without limitation, any implied warranty of merchantability or fitness for a particular purpose. All products supplied and technical advice given are subject to our Conditions of Sale. You should request a copy of this document and review it carefully. The information contained in this data sheet is liable to modification from time to time in the light of experience and our policy of continuous development. It is the user's responsibility to check with their local representative that this data sheet is current prior to using the product.

This Technical Data Sheet is available on our website at www.international-marine.com or www.international-pc.com, and should be the same as this document. Should there be any discrepancies between this document and the version of the Technical Data Sheet that appears on the website, then the version on the website will take precedence.

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Modified Acrylic Finish

PRODUCT DESCRIPTION A fast drying, one pack, modified acrylic finish.

INTENDED USES As a cosmetic finish on above water areas.
For use at Newbuilding, Maintenance & Repair or On Board Maintenance.

PRODUCT INFORMATION

Color	LAB000-White, LAK724-Storm Grey, LAL274-Red, LAL549-Signal Green, LAY999-Black ; and a wide range of colors.
Finish/Sheen	Semi-gloss
Part B (Curing Agent)	Not applicable
Volume Solids	35% ±3% (ISO 3233:1998)
Mix Ratio	Not applicable
Typical Film Thickness	1.6 mils dry (4.7 mils wet)
Theoretical Coverage	351 ft ² /US gal at 1.6 mils dft, allow appropriate loss factors
Method of Application	Airless Spray, Brush, Roller
Flash Point	Single Pack 73°F (Product produced and supplied in North America has a flash point of 80°F, in Korea has a flash point of 72°F due to locally sourced solvent. There is no detrimental effect on product performance)

Drying Information	Substrate Temperature							
	23°F		41°F		77°F		95°F	
Touch Dry [ISO 9117/3:2010]	2 hrs		60 mins		30 mins		15 mins	
Hard Dry [ISO 9117-1:2009]	36 hrs		24 hrs		8 hrs		8 hrs	

Overcoating Data - see limitations	Substrate Temperature							
	23°F		41°F		77°F		95°F	
Overcoated By	Min	Max	Min	Max	Min	Max	Min	Max
Intersheen 579	24 hrs	ext	8 hrs	ext	4 hrs	ext	2 hrs	ext

REGULATORY DATA

VOC	565 g/lit (4.71 lb/US gal) as supplied (EPA Method 24) 518 g/kg of liquid paint as supplied. EU Solvent Emissions Directive (Council Directive 1999/13/EC) 490 g/lit (4.11 lb/US gal) as supplied under Korea Clean Air Conservation Act
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Note: VOC values are typical and are provided for guidance purposes only. These may be subject to variation depending on factors such as differences in color and normal manufacturing tolerances.

Modified Acrylic Finish

SYSTEMS AND COMPATIBILITY

Intersheen 579 should only be applied over recommended anticorrosive primers. The primer to be used will depend upon vessel area and application location. Typical primers include:

Intergard 263 (as a tiecoat)
Interprime 198
Intertuf 203
Interchlor 37
Interstores Epoxy Primer

Alternative primers may be used, depending upon region. Consult International Paint.
Consult your International Paint representative for the system best suited for the surfaces to be protected.

SURFACE PREPARATIONS

Use in accordance with the standard Worldwide Marine Specifications.

All surfaces to be coated should be clean, dry and free from contamination.

High pressure fresh water wash or fresh water wash, as appropriate, and remove all oil or grease, soluble contaminants and other foreign matter in accordance with SSPC-SP1 solvent cleaning.

NEWBUILDING/MAJOR REFURBISHMENT

Intersheen 579 should always be applied over a recommended primer coating scheme. The primer surface should be dry and free from all contamination, and Intersheen 579 must be applied within the overcoating intervals specified (consult the relevant product data sheet). Areas of breakdown, damage etc., should be prepared to the specified standard (e.g. Sa2½ (ISO 8501-1:2007) and primed prior to the application of Intersheen 579

REPAIR/OBM

Intersheen 579 should always be applied over a recommended primer coating scheme. The primer surface should be dry and free from all contamination, and Intersheen 579 must be applied within the overcoating intervals specified (consult the relevant product data sheet). Areas of breakdown, damage etc., should be prepared to the specified standard (e.g. Sa2½ (ISO 8501-1:2007) and primed prior to the application of Intersheen 579

Intersheen 579 may be applied directly over aged Intersheen 579 following thorough fresh water washing and degreasing provided the coating to be overcoated is in an intact and tightly adherent condition. Loose or flaking coatings should be removed back to a firm edge and Intersheen 579 or an appropriate primer should be used to repair the area before application of the full coat.

Consult your International Paint representative for specific recommendations.

NOTE

For use in Marine situations in North America, the following surface preparation standards can be used:
SSPC-SP10 in place of Sa2½ (ISO 8501-1:2007)

Modified Acrylic Finish

APPLICATION

Mixing	This material is a one pack coating and should always be mixed thoroughly with a power agitator before application.
Thinner	Not recommended. Use International GTA007 only in exceptional circumstances. DO NOT thin more than allowed by local environmental legislation.
Airless Spray	Recommended Tip Range 15-21 thou (0.38-0.53 mm) Total output fluid pressure at spray tip not less than 2500 psi (176 kg/cm ²)
Conventional Spray	Application by conventional spray is not recommended.
Brush	Application by brush is recommended for small areas only. Multiple coats may be required to achieve specified film thickness.
Roller	Application by roller is recommended for small areas only. Multiple coats may be required to achieve specified film thickness.
Cleaner	International GTA007
Work Stoppages and Cleanup	Thoroughly flush all equipment with GTA007. All unused material should be stored in tightly closed containers. Partially filled containers may show surface skinning and/or a viscosity increase of the material after storage. Material should be filtered prior to use.
Welding	In the event welding or flame cutting is performed on metal coated with this product, dust and fumes will be emitted which will require the use of appropriate personal protective equipment and adequate local exhaust ventilation. In North America do so in accordance with instruction in ANSI/ASC Z49.1 "Safety in Welding and Cutting."

SAFETY

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

Prior to use, obtain, consult and follow the Material Safety Data Sheet for this product concerning health and safety information. Read and follow all precautionary notices on the Material Safety Data Sheet and container labels. If you do not fully understand these warnings and instructions or if you can not strictly comply with them, do not use this product. Proper ventilation and protective measures must be provided during application and drying to keep solvent vapor concentrations within safe limits and to protect against toxic or oxygen deficient hazards. Take precautions to avoid skin and eye contact (ie. gloves, goggles, face masks, barrier creams etc.) Actual safety measures are dependant on application methods and work environment.

EMERGENCY CONTACT NUMBERS:

USA/Canada - Medical Advisory Number 1-800-854-6813

Europe - Contact (44) 191 4696111. For advice to Doctors & Hospitals only contact (44) 207 6359191

China - Contact (86) 532 83889090

R.O.W. - Contact Regional Office

Modified Acrylic Finish

LIMITATIONS

When applying Intersheen 579 by brush or roller, care is required to prevent "pick-up" of recently applied one pack coatings.

Overcoating information is given for guidance only and is subject to regional variation depending upon local climate and environmental conditions. Consult your local International Paint representative for specific recommendations. Apply in good weather. Temperature of the surface to be coated must be at least 5°F above the dew point. For optimum application properties bring the material to 70°F-81°F, unless specifically instructed otherwise, prior to mixing and application. Unmixed material (in closed containers) should be maintained in protected storage in accordance with information given in the STORAGE Section of this data sheet. Technical and application data herein is for the purpose of establishing a general guideline of the coating application procedures. Test performance results were obtained in a controlled laboratory environment and International Paint makes no claim that the exhibited published test results, or any other tests, accurately represent results found in all field environments. As application, environmental and design factors can vary significantly, due care should be exercised in the selection, verification of performance and use of the coating.

In the overcoating data section 'ext' = extended overcoating period. Please refer to our Marine Painting Guide - Definitions and Abbreviations available on our website.

UNIT SIZE	Unit Size	Vol	Pack
	1 US gal	1 US gal	1 US gal
	5 US gal	5 US gal	5 US gal
	20 lt	20 lt	20 lt
<i>For availability of other unit sizes consult International Paint</i>			
UNIT SHIPPING WEIGHT	Unit Size	Unit Weight	
	20 lt	23.88 Kg	
	5 US gal	50 lb	
	1 US gal	10.4 lb	
STORAGE	Shelf Life	24 months at 77°F. Subject to reinspection thereafter. Store in dry, shaded conditions away from sources of heat and ignition.	

WORLDWIDE AVAILABILITY Consult International Paint.

IMPORTANT NOTE

The information in this data sheet is not intended to be exhaustive; any person using the product for any purpose other than that specifically recommended in this data sheet without first obtaining written confirmation from us as to the suitability of the product for the intended purpose does so at their own risk. All advice given or statements made about the product (whether in this data sheet or otherwise) is correct to the best of our knowledge but we have no control over the quality or the condition of the substrate or the many factors affecting the use and application of the product. Therefore, unless we specifically agree in writing to do so, we do not accept any liability at all for the performance of the product or for (subject to the maximum extent permitted by law) any loss or damage arising out of the use of the product. We hereby disclaim any warranties or representations, express or implied, by operation of law or otherwise, including, without limitation, any implied warranty of merchantability or fitness for a particular purpose. All products supplied and technical advice given are subject to our Conditions of Sale. You should request a copy of this document and review it carefully. The information contained in this data sheet is liable to modification from time to time in the light of experience and our policy of continuous development. It is the user's responsibility to check with their local representative that this data sheet is current prior to using the product.

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Interlac 665



Alkyd Finish

PRODUCT DESCRIPTION A one pack alkyd gloss finish.

INTENDED USES For use as an easily maintained cosmetic finish coat on areas above the waterline.
For use at Newbuilding, Maintenance & Repair or On Board Maintenance.

PRODUCT INFORMATION

Colour	CLB000-White, CLD260-Intl. Orange, CLK724-Storm Grey, CLL274-Red, CLL549-Signal Green, CLY999-Black ; and a wide range of colours.
Finish/Sheen	High Gloss
Part B (Curing Agent)	Not applicable
Volume Solids	48% ±3% (ISO 3233:1998)
Typical Film Thickness	40 microns dry (83 microns wet)
Theoretical Coverage	12 m ² /litre at 40 microns dft, allow appropriate loss factors
Method of Application	Airless Spray, Brush, Conventional Spray, Roller
Flash Point (Typical)	Single Pack 40°C (Product produced and supplied in North America has a flashpoint of 41°C due to locally sourced solvents. There is no detrimental effect on product performance.)

Drying Information	Substrate Temperature			
	5°C	10°C	25°C	35°C
Touch Dry [ISO 9117/3:2010]	18 hrs	14 hrs	6 hrs	5 hrs
Hard Dry [ISO 9117-1:2009]	62 hrs	48 hrs	24 hrs	12 hrs

Overcoating Data - see limitations	Substrate Temperature							
	5°C		10°C		25°C		35°C	
Overcoated By	Min	Max	Min	Max	Min	Max	Min	Max
Interlac 665	36 hrs	ext	24 hrs	ext	24 hrs	ext	16 hrs	ext

REGULATORY DATA

VOC	420 g/lit as supplied (EPA Method 24) 364 g/kg of liquid paint as supplied. EU Solvent Emissions Directive (Council Directive 1999/13/EC) 407 g/lit Chinese National Standard GB23985
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Note: VOC values are typical and are provided for guidance purposes only. These may be subject to variation depending on factors such as differences in colour and normal manufacturing tolerances.

Marine Coatings

Alkyd Finish

CERTIFICATION

When used as part of an approved scheme, this material has the following certification:

- Fire Resistance - Surface Spread of Flame (Exova Warringtonfire)
- Fire Resistance - Surface Spread of Flame (Korean Register of Shipping)
- Fire Resistance - Smoke & Toxicity (Exova Warringtonfire)
- Fire Resistance - Marine Equipment Directive compliant
- Food Contact - Carriage of Grain (NOHA)
- Meets Petrobras Standard N-2492 - Alkyd Finish Gloss

Consult your International Paint representative for details.

SYSTEMS AND COMPATIBILITY

Interlac 665 should only be applied over recommended anticorrosive primers. The primer to be used will depend upon vessel area, existing coatings, coating condition and application location. Typical primers include:

Interprime 198
Intertuf 203
Interprime 128 (in Europe)
Interprime 222 (in South America)
Interprime 234 (in North America)
Interprime 538 (in Europe)
Interlac 497 (applied as a sympathetically coloured undercoat over Interprime 198)

In the Americas, Interlac 665 may also be applied over epoxy primers or epoxy tie coats. Consult International Paint.

Consult your International Paint representative for the system best suited for the surfaces to be protected.

SURFACE PREPARATIONS

Use in accordance with the standard Worldwide Marine Specifications.

All surfaces to be coated should be clean, dry and free from contamination.

High pressure fresh water wash or fresh water wash, as appropriate, and remove all oil or grease, soluble contaminants and other foreign matter in accordance with SSPC-SP1 solvent cleaning.

NEWBUILDING/MAJOR REFURBISHMENT

Interlac 665 should always be applied over a recommended primer coating scheme. The primer surface should be dry and free from all contamination, and Interlac 665 must be applied within the overcoating intervals specified (consult the relevant product data sheet). Areas of breakdown, damage etc., should be prepared to the specified standard (e.g. Sa2½ (ISO 8501-1:2007) and primed prior to the application of Interlac 665

REPAIR

Repair corroded areas with an appropriate International Paint primer (consult the primer data sheet).

OBM

Interlac 665 should always be applied over a recommended primer coating scheme. The primer surface should be dry and free from all contamination, and Interlac 665 must be applied within the overcoating intervals specified (consult the relevant product data sheet). Areas of breakdown, damage etc., should be prepared to the specified standard (e.g. Sa2½ (ISO 8501-1:2007) and primed prior to the application of Interlac 665

Interlac 665 may be applied directly over aged Interlac 665 following thorough fresh water washing and degreasing provided the coating to be overcoated is in an intact and tightly adherent condition. Loose or flaking coatings should be removed back to a firm edge and Interlac 665 or an appropriate primer should be used to repair the area before application of the full coat.

Consult your International Paint representative for specific recommendations.

NOTE

For use in Marine situations in North America, the following surface preparation standards can be used: SSPC-SP10 in place of Sa2½ (ISO 8501-1:2007)

Alkyd Finish

APPLICATION

Mixing	This material is a one pack coating and should always be mixed thoroughly with a power agitator before application.
Thinner	International GTA004. Thinning is not normally required. Consult the local representative for advice during application in extreme conditions. Do not thin more than allowed by local environmental legislation.
Airless Spray	Recommended Tip Range 0.33-0.48 mm (13-19 thou) Total output fluid pressure at spray tip not less than 141 kg/cm ² (2010 p.s.i.)
Conventional Spray	Use suitable proprietary equipment. Thinning may be required.
Brush	Suitable.
Roller	Suitable.
Cleaner	International GTA004
Work Stoppages and Cleanup	Thoroughly flush all equipment with International GTA004. All unused material should be stored in tightly closed containers. Partially filled containers may show surface skinning and/or a viscosity increase of the material after storage. Material should be filtered prior to use.
Welding	In the event welding or flame cutting is performed on metal coated with this product, dust and fumes will be emitted which will require the use of appropriate personal protective equipment and adequate local exhaust ventilation. In North America do so in accordance with instruction in ANSI/ASC Z49.1 "Safety in Welding and Cutting."

SAFETY

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

Prior to use, obtain, consult and follow the Material Safety Data Sheet for this product concerning health and safety information. Read and follow all precautionary notices on the Material Safety Data Sheet and container labels. If you do not fully understand these warnings and instructions or if you can not strictly comply with them, do not use this product. Proper ventilation and protective measures must be provided during application and drying to keep solvent vapour concentrations within safe limits and to protect against toxic or oxygen deficient hazards. Take precautions to avoid skin and eye contact (ie. gloves, goggles, face masks, barrier creams etc.) Actual safety measures are dependant on application methods and work environment.

EMERGENCY CONTACT NUMBERS:

USA/Canada - Medical Advisory Number 1-800-854-6813

Europe - Contact (44) 191 4696111. For advice to Doctors & Hospitals only contact (44) 207 6359191

China - Contact (86) 532 83889090

R.O.W. - Contact Regional Office

Interlac 665



Alkyd Finish

LIMITATIONS

Interlac 665 is not suitable for use on immersed areas.

Overcoating information is given for guidance only and is subject to regional variation depending upon local climate and environmental conditions. Consult your local International Paint representative for specific recommendations. Apply in good weather. Temperature of the surface to be coated must be at least 3°C above the dew point. For optimum application properties bring the material to 21-27°C, unless specifically instructed otherwise, prior to mixing and application. Unmixed material (in closed containers) should be maintained in protected storage in accordance with information given in the STORAGE Section of this data sheet. Technical and application data herein is for the purpose of establishing a general guideline of the coating application procedures. Test performance results were obtained in a controlled laboratory environment and International Paint makes no claim that the exhibited published test results, or any other tests, accurately represent results found in all field environments. As application, environmental and design factors can vary significantly, due care should be exercised in the selection, verification of performance and use of the coating.

In the overcoating data section 'ext' = extended overcoating period. Please refer to our Marine Painting Guide - Definitions and Abbreviations available on our website.

UNIT SIZE	Unit Size	
	Vol	Pack
	20 lt	20 lt
	5 lt	5 lt
	5 US gal	5 US gal
	1 US gal	5 US gal

For availability of other unit sizes consult International Paint

UNIT SHIPPING WEIGHT (TYPICAL)	Unit Size	
	Unit Weight	
	1 US gal	10 lb
	20 lt	23.9 Kg
	5 lt	6.01 Kg
	5 US gal	49.5 lb

STORAGE	Shelf Life
	24 months minimum at 25°C. Subject to reinspection thereafter. Store in dry, shaded conditions away from sources of heat and ignition

WORLDWIDE AVAILABILITY Consult International Paint.

IMPORTANT NOTE

The information in this data sheet is not intended to be exhaustive; any person using the product for any purpose other than that specifically recommended in this data sheet without first obtaining written confirmation from us as to the suitability of the product for the intended purpose does so at their own risk. All advice given or statements made about the product (whether in this data sheet or otherwise) is correct to the best of our knowledge but we have no control over the quality or the condition of the substrate or the many factors affecting the use and application of the product. Therefore, unless we specifically agree in writing to do so, we do not accept any liability at all for the performance of the product or for (subject to the maximum extent permitted by law) any loss or damage arising out of the use of the product. We hereby disclaim any warranties or representations, express or implied, by operation of law or otherwise, including, without limitation, any implied warranty of merchantability or fitness for a particular purpose. All products supplied and technical advice given are subject to our Conditions of Sale. You should request a copy of this document and review it carefully. The information contained in this data sheet is liable to modification from time to time in the light of experience and our policy of continuous development. It is the user's responsibility to check with their local representative that this data sheet is current prior to using the product.

This Technical Data Sheet is available on our website at www.international-marine.com or www.international-pc.com, and should be the same as this document. Should there be any discrepancies between this document and the version of the Technical Data Sheet that appears on the website, then the version on the website will take precedence.

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Marine Coatings

PRODUCT DESCRIPTION

A low VOC, two component high build, high solids surface tolerant epoxy maintenance coating.

INTENDED USES

For application to a wide variety of substrates including hand prepared rusty steel, abrasive blast cleaned and hydroblasted steel, and a wide range of intact, aged coatings.

Provides excellent anti-corrosive protection in industrial, coastal structures, pulp and paper plants, bridges and offshore environments in both atmospheric exposure and immersion service.

NSF Certification is for tanks greater than 100 gallons (378.5 litres).



Certified to NSF/ANSI 61

PRACTICAL INFORMATION FOR INTERSEAL 670HS

Colour Available in a wide range of colours including Aluminium

Gloss Level Semi-gloss (Aluminium is eggshell)

Volume Solids 82% ± 3% (depends on colour)

Typical Thickness 100-250 microns (4-10 mils) dry equivalent to 122-305 microns (4.9-12.2 mils) wet

Theoretical Coverage 6.56 m²/litre at 125 microns d.f.t and stated volume solids
263 sq.ft/US gallon at 5 mils d.f.t and stated volume solids

Practical Coverage Allow appropriate loss factors

Method of Application Airless spray, Air spray, Brush, Roller

Drying Time ▲

Temperature	Touch Dry	Hard Dry	Overcoating Interval Interseal 670HS with Self			Overcoating Interval with recommended topcoats		
			Min	Max ●	Max †	Min	Max ●	Max †#
10°C (50°F)	8 hours	32 hours	32 hours	6 weeks	Extended*	20 hours	21 days	12 weeks
15°C (59°F)	7 hours	26 hours	26 hours	4 weeks	Extended*	14 hours	14 days	8 weeks
25°C (77°F)	5 hours	18 hours	18 hours	14 days	Extended*	10 hours	7 days	4 weeks
40°C (104°F)	2 hours	6 hours	6 hours	7 days	Extended*	4 hours	3 days	2 weeks

▲ For curing at low temperatures, an alternative curing agent is available. See Product Characteristics for details.

● Refers to situations where immersion is likely to occur

† Refer to atmospheric service only

* See International Protective Coatings Definitions & Abbreviations

Maximum overcoating intervals are shorter when using polysiloxane topcoats. Consult International Protective Coatings for further details.

REGULATORY DATA

Flash Point (Typical) Base (Part A) 36°C (97°F) Curing Agent (Part B) 56°C (133°F) Mixed 33°C (91°F)

Product Weight 1.6 kg/l (13.3 lb/gal)

VOC 114 g/kg EU Solvent Emissions Directive (Council Directive 1999/13/EC)

2.00 lb/gal (240 g/l) EPA Method 24

151 g/l Chinese National Standard GB23985

Surface Tolerant Epoxy

SURFACE PREPARATION

The performance of this product will depend upon the degree of surface preparation. The surface 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 8504:2000.

Accumulated dirt and soluble salts must be removed. Dry bristle brushing will normally be adequate for accumulated dirt. Soluble salts should be removed by fresh water washing.

Abrasive Blast Cleaning

For immersion service, Interseal 670HS must be applied to surfaces blast cleaned to Sa2.5 (ISO 8501-1:2007) or SSPC-SP10. However, for atmospheric exposure best performance will be achieved when Interseal 670HS is applied to surfaces prepared to a minimum of Sa2.5 (ISO 8501-1:2007) or SSPC-SP6.

Surface defects revealed by the blast cleaning process, should be ground, filled, or treated in the appropriate manner.

A surface profile of 50-75 microns (2-3 mils) is recommended.

Hand or Power Tool Preparation

Hand or power tool clean to a minimum St2 (ISO 8501-1:2007) or SSPC-SP2.

Note, all scale must be removed and areas which cannot be prepared adequately by chipping or needle gun should be spot blasted to a minimum standard of Sa2 (ISO 8501-1:2007) or SSPC-SP6. Typically this would apply to C or D grade rusting in this standard.

Ultra High Pressure Hydroblasting/Abrasive Wet Blasting

May be applied to surfaces prepared to Sa2.5 (ISO 8501-1:2007) or SSPC-SP6 which have flash rusted to no worse than Grade HB2.5M (refer to International Hydroblasting Standards) or Grade SB2.5M (refer to International Slurry blasting Standards). It is also possible to apply to damp surfaces in some circumstances. Further information is available from International Protective Coatings.

Aged Coatings

Interseal 670HS is suitable for overcoating a limited range of intact, tightly adherent aged coatings. Loose or flaking coatings should be removed back to a firm edge. Glossy finishes may require light abrasion to provide a physical 'key'. See Product Characteristics section for further information.

APPLICATION

Mixing	Material is supplied in two containers as a unit. Always mix a complete unit in the proportions supplied. Once the unit has been mixed it must be used within the working pot life specified.			
	(1) Agitate Base (Part A) with a power agitator.			
	(2) Combine entire contents of Curing Agent (Part B) with Base (Part A) and mix thoroughly with power agitator.			
Mix Ratio	5.67 parts : 1.00 part by volume			
Working Pot Life	10°C (50°F)	15°C (59°F)	25°C (77°F)	40°C (104°F)
	5 hours	3 hours	2 hours	1 hour
Airless Spray	Recommended	Tip range 0.45-0.58 mm (18-23 thou) Total output fluid pressure at spray tip not less than 176 kg/cm ² (2,500 p.s.i.)		
Air Spray (Pressure Pot)	Recommended	Gun	DeVilbiss MBC or JGA	
		Air Cap	704 or 765	
		Fluid Tip	E	
Brush	Recommended	Typically 100-125 microns (4-5 mils) can be achieved		
Roller	Recommended	Typically 75-100 microns (3-4 mils) can be achieved		
Thinner	International GTA220 (or GTA415)	Thinning is not normally required. Consult the local representative for advice during application in extreme conditions. Do not thin more than allowed by local environmental legislation.		
Cleaner	International GTA822 (or GTA415)			
Work Stoppages	Do not allow material to remain in hoses, gun or spray equipment. Thoroughly flush all equipment with International GTA822. Once units of paint have been mixed they should not be resealed and it is advised that after prolonged stoppages work recommences with freshly mixed units.			
Clean Up	Clean all equipment immediately after use with International GTA822. It is good working practice to periodically 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 regulations/legislation.			

Surface Tolerant Epoxy

PRODUCT CHARACTERISTICS

For water immersion service, surface preparation to a minimum of Sa2.5 (ISO 8501-1:2007) or SSPC-SP10 followed by application of multi-coats of Interseal 670HS to a total minimum dry film thickness of 250 microns (10 mils) is required.

Colours derived from chromascan bases as the first coat of a specification for immersion service is not recommended.

Maximum film build in one coat is best attained by airless spray. When applying by methods other than airless spray, the required film build is unlikely to be achieved. Application by air spray may require a multiple cross spray pattern to attain maximum film build. Low or high temperatures may require specific application techniques to achieve maximum film build.

If salt water is used in the wet blast process the resulting surface must be thoroughly washed with fresh water before application of Interseal 670HS. With freshly blasted surfaces a slight degree of flash rusting is allowable, and is preferable to the surface being too wet. Puddles, ponding and accumulations of water must be removed.

Interseal 670HS may be applied to suitably sealed or primed concrete; contact International Protective Coatings for further advice on specification and primers.

Interseal 670HS is suitable for overcoating intact, aged alkyd, epoxy and polyurethane systems. However, this product is not recommended where thermoplastic coatings such as chlorinated rubbers and vinyls have previously been used. Please consult International Protective Coatings for alternative recommendations.

Surface temperature must always be a minimum of 3°C (5°F) above dew point.

Level of sheen and surface finish is dependent on application method. Avoid using a mixture of application methods whenever possible.

In common with all epoxies Interseal 670HS will chalk and discolour on exterior exposure. However, these phenomena are not detrimental to anti-corrosive performance.

Premature exposure to ponding water will cause a colour change, especially in dark colours.

Interseal 670HS can be used as a non-skid deck system by modification with addition of GMA132 (crushed flint) aggregate. Application should then be to a suitably primed surface. Typical thicknesses will be between 500-1,000 microns (20-40 mils). Preferred application is by a suitable large tip hopper gun (e.g. Sagola 429 or Air texture gun fitted with a 5-10 mm nozzle). Trowel or roller can be used for small areas. Alternatively, a broadcast method of application can be used. Consult International Protective Coatings for further details.

Interseal 670HS is certified to NSF/ANSI Standard 61 (selected colours only). Consult International Protective Coatings for further details. Certification is for tanks greater than 100 gallons (378.5 litres), for pipes which are 6 inches (15 cm) in diameter or greater and for valves which are 2 inches (5 cm) in diameter or greater.

Low Temperature Curing

A winter grade curing agent is also available to enable more rapid cure at temperatures less than 10°C (50°F), however this curing agent will give an initial shade variation and more rapid discoloration on weathering.

Interseal 670HS is capable of curing at temperatures below 0°C (32°F). However, this product should not be applied at temperatures below 0°C (32°F) where there is a possibility of ice formation on the substrate.

Temperature	Touch Dry	Hard Dry	Overcoating Interval Interseal 670HS with Self			Overcoating Interval with recommended topcoats		
			Min	Max •	Max †	Min	Max •	Max †
-5°C (23°F)	24 hours	72 hours	72 hours	12 weeks	Extended*	72 hours	84 hours	12 weeks
0°C (32°F)	16 hours	56 hours	56 hours	10 weeks	Extended*	42 hours	54 hours	10 weeks
5°C (41°F)	9 hours	36 hours	36 hours	8 weeks	Extended*	36 hours	48 hours	8 weeks
10°C (50°F)	5 hours	24 hours	24 hours	6 weeks	Extended*	16 hours	24 hours	6 weeks

• Refers to situations where immersion is likely to occur

† Refer to atmospheric service only

* See International Protective Coatings Definitions & Abbreviations

Touch dry times shown above are actual drying times due to chemical cure, rather than physical set due to solidification of the coating film at temperatures below 0°C (32°F).

Note: VOC values quoted are based on maximum possible for the product taking into account variations due to colour differences 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

Interseal 670HS will normally be applied to correctly prepared steel substrates. However, it can be used over suitably primed surfaces. Suitable primers are:

- Intercure 200
- Interzinc 315
- Interplus 356
- Interplus 256
- Intergard 269

Where a cosmetically acceptable topcoat is required the following products are recommended:

- Intercryl 530
- Interfine 878
- Intergard 740
- Interthane 990
- Interfine 629HS
- Interfine 979
- Interthane 870

Other suitable primers/topcoats are available. Consult International Protective Coatings.

Surface Tolerant Epoxy

ADDITIONAL INFORMATION

Further information regarding industry standards, terms and abbreviations used in this data sheet can be found in the following documents available at www.international-pc.com:

- Definitions & Abbreviations
- Surface Preparation
- Paint Application
- Theoretical & Practical Coverage

Individual copies of these information sections are available upon request.

SAFETY PRECAUTIONS

This product is intended for use only by professional applicators in industrial situations in accordance with the advice given on this sheet, the Material Safety Data Sheet and the container(s), and should not be used without reference to the Material Safety Data Sheet (MSDS) which International Protective Coatings has provided to its customers.

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

In the event welding or flame cutting is performed on metal coated with this product, dust and fumes will be emitted which will require the use of appropriate personal protective equipment and adequate local exhaust ventilation.

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

PACK SIZE	Unit Size		Part A		Part B	
		Vol	Pack	Vol	Pack	
	20 litre	17 litre	20 litre	3 litre	3.7 litre	
	5 US gal	4.25 US Gal	5 US Gal	0.75 US Gal	1 US gal	
For availability of other pack sizes, contact International Protective Coatings						
SHIPPING WEIGHT (TYPICAL)	Unit Size		Part A		Part B	
	20 litre		30.8 kg		3.5 kg	
	5 US gal		64.9 lb		6.8 lb	
STORAGE	Shelf Life		12 months minimum at 25°C (77°F). Subject to re-inspection thereafter. Store in dry, shaded conditions away from sources of heat and ignition. Protect from frost.			

Important Note

The information in this data sheet is not intended to be exhaustive; any person using the product for any purpose other than that specifically recommended in this data sheet without first obtaining written confirmation from us as to the suitability of the product for the intended purpose does so at their own risk. All advice given or statements made about the product (whether in this data sheet or otherwise) is correct to the best of our knowledge but we have no control over the quality or the condition of the substrate or the many factors affecting the use and application of the product. Therefore, unless we specifically agree in writing to do so, we do not accept any liability at all for the performance of the product or for (subject to the maximum extent permitted by law) any loss or damage arising out of the use of the product. We hereby disclaim any warranties or representations, express or implied, by operation of law or otherwise, including, without limitation, any implied warranty of merchantability or fitness for a particular purpose. All products supplied and technical advice given are subject to our Conditions of Sale. You should request a copy of this document and review it carefully. The information contained in this data sheet is liable to modification from time to time in the light of experience and our policy of continuous development. It is the user's responsibility to check with their local representative that this data sheet is current prior to using the product.

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Product	S.G.	Flash Point		Product Description
		°C	°F	
GMA100	N/A	N/A	N/A	Non-slip aggregate.
GMA130	N/A	N/A	N/A	Non-slip aggregate.
GMA131	N/A	N/A	N/A	Non-slip aggregate.
GMA132	N/A	N/A	N/A	Non-slip aggregate.
GMA197	N/A	N/A	N/A	Non-slip aggregate.
GMA904	N/A	N/A	N/A	Conventional paint and varnish remover.
GPA900	N/A	N/A	N/A	Non-slip aggregate.
GTA004	0.78	38	100	A thinner and equipment cleaner for use with a wide range of conventional products.
GTA007	0.86	26	79	A thinner and equipment cleaner for use with a wide range of conventional products.
GTA056	0.81	39	102	A thinner and equipment cleaner for use with certain Intershield and Interthane products in North America.
GTA065	0.91	31	88	A reactive thinner for use with certain polyester products.
GTA075	0.84	3	37	A thinner for use with certain epoxy shop primers in South America.
GTA123	0.98	42	108	A thinner and equipment cleaner for Chartek products.
GTA137	0.83	1	34	A thinner and equipment cleaner for use with certain epoxy/urethane and polyurethane products in South America.
GTA138	0.92	32	90	A thinner and equipment cleaner for use with certain Interzinc zinc silicate products.
GTA203	0.81	-4	25	A thinner and equipment cleaner for use with certain Interzone products.
GTA220	0.85	25	77	A thinner and equipment cleaner for use with a wide range of epoxy products.
GTA313	0.94	34	93	A thinner and equipment cleaner for use with polyurethane finishes.
GTA407	0.85	19	66	A thinner and equipment cleaner for use with vinyl antifoulings in North America.
GTA415	0.88	25	77	A thinner and/or equipment cleaner for use with a range of products.
GTA713	0.91	30	86	A thinner and equipment cleaner for use with polyurethane products.
GTA733	0.87	27	81	A thinner for use with certain Interthane products.
GTA803	0.82	-17	1	A thinner and equipment cleaner for use with certain Interplate and Interzinc products.
GTA820	0.82	5	41	A thinner and equipment cleaner for use with certain Interplate products in warmer conditions.
GTA822	0.85	26	79	An equipment cleaner for use with a wide range of products.
GTA840	0.83	17	63	A thinner and equipment cleaner for use with certain Interplate products in colder conditions.
GTA853	0.82	15	59	A thinner and equipment cleaner for use with certain Interline products.
GTA991	0.94	43	109	A thinner and equipment cleaner for certain water based products.
5822	0.84	32	90	A thinner and equipment cleaner for use with certain Epoxy MIL-SPEC products in North America.
7754D	N/A	N/A	N/A	A non-slip aggregate for Interzone 1000 systems.

NOTE: Refer to individual product Technical Data Sheet for specific recommendations.

Marine and Protective Coatings

**REGULATORY
DATA**

The EPA in North America has defined almost all solvents, included those contained herein, as photochemically active. The exceptions include methanol, ethanol, acetone and a few halogenated solvents such as methylene chloride.

VOC values may vary due to regional variations in solvent availability. Consult your International Paint representative for details.

SAFETY

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

Prior to use, obtain, consult and follow the Material Safety Data Sheet for this product concerning health and safety information. Read and follow all precautionary notices on the Material Safety Data Sheet and container labels. If you do not fully understand these warnings and instructions or if you can not strictly comply with them, do not use this product. Proper ventilation and protective measures must be provided during application and drying to keep solvent vapour concentrations within safe limits and to protect against toxic or oxygen deficient hazards. Take precautions to avoid skin and eye contact (ie. Gloves, goggles, face masks, barrier creams etc.) Actual safety measures are dependant on application methods and work environment.

EMERGENCY CONTACT NUMBERS:

USA/Canada – Medical Advisory Number 1-800-854-6813

Europe – Contact (44) 191 4696111. For advice to Doctors & Hospitals only contact (44) 207 6359191

China – Contact (532) 838 89090 Shanghai – Contact (21) 626 79090

R.O.W. – Contact Regional Office

LIMITATIONS

Flash points and SG may vary slightly from the figures quoted due to locally sourced solvents.

**WORLDWIDE
AVAILABILITY**

Consult International Paint.

IMPORTANT NOTE

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