



Ministry
of Defence



WARPAINT



Issue 38

September 2015

Defence Equipment & Support

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WARPAINT

Issue 38

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The information on acceptable paint systems / coatings, given in this publication, updates BR3939 Issue 3 - October 2014.

1. INTRODUCTION

- 1.1 WARPAINT is the main guidance document of acceptable paint coatings for in-service and new-build Royal Naval Vessels. However, not all approved coatings are necessarily listed in WARPAINT as paint manufacturers' are constantly striving to improve their current paint systems. Consequently the Whole Ship Specifications (WSS) / Annexes are regularly updated. Should a coating therefore be proposed, which is not listed in the current issue of WARPAINT, confirmation of acceptance must be obtained.
- 1.2 **NOTE:** All paint coatings listed in the annexes are to be applied strictly in accordance with their respective paint manufacturers' Technical (TDS), Material Safety Data Sheets (MSDS) and Instructions. This includes all aspects of the preparation stage and post application. TDS's are used to define a Paint Specification that must be followed *in conjunction with* the data sheets. Full Quality Control (QC) data must be recorded to provide assurance and evidence that the specification has been satisfactorily achieved.
- 1.3 The differing paint manufacturers 'Whole Ship Specification' annexes are listed in alphabetical order and it is important to first determine your current paint supplier before ordering *any* specific coating. For example; there have been instances where coatings manufactured by Chugoku Paints (UK) Ltd have been ordered, simply because they are listed first (alphabetically) in the annexes.
- 1.4 WARPAINT is only available electronically. The easiest way to obtain an e-copy is via the internet or intranet. From here it can be easily downloaded. Information on accessing these websites is detailed at 1.6 and 1.7.
- 1.5 The main aim of WARPAINT is to continue to offer guidance on the various approved commercial off the shelf (COTS) paint manufacturers' coatings that have been assessed for their health and safety, fire and toxicity and suitability when applied to various areas of Royal Naval Vessels. This issue should be a useful addition to the data required by projects for ship/submarine build or maintenance.
- 1.6 The latest copy of WARPAINT is available via the DE&S *intranet* website at:
<http://defenceintranet.dii.r.mil.uk/Organisations/Orgs/DES/Organisations/Orgs/CoMFleet/Ships/Pages/WARPAINT.aspx>
or on the World Wide Web at: <https://www.gov.uk/government/publications/warpaint>
- 1.7 WARPAINT and extracts relative to areas of ship husbandry can also be found on the 'Ship / Submarine Husbandry & Habitability Information Portal' via the internet at: www.ShipShapeRN.com along with a full copy and current issue of BR3939. To gain access to this database you will require a user name and log in available by emailing your request and details to DESShipsWSpt-PEG-Husbandry@mod.uk

2. AMENDMENTS TO ISSUE 37

- 2.1 Front Cover: HMS PEMBROKE silhouetted against the Dubai skyline.
Since the end of 2006, Britain has maintained a permanent mine-hunter presence in the region – initially two ships, since 2008 a four-strong force.
Over these 9 years the harsh realities of tropical water shipping have been realised and lessons are still being learned in terms of adapting coating systems and exploration of the technologies/science available to gain a better understanding in order to combat the issues.
- 2.2 Hangar Doors, section K(a), in every WSS has had to be amended. The equipment desk currently procure the doors c/w a powder coated system via their supplier.
- 2.3 The Specialist Coatings table at item 6 has a new section, Nav Lights, as a matte black finish is required to cancel out the glare associated with a gloss finish. Following 2nd round testing of HPSW Inlet pipe coatings there has been a small change in this section.
- 2.4 Submarines Annex J, Sections S20 & S28, have been amended and still require work following coating failures and uncovering certain limitations of others.

NOTE: All respective companies are to undertake regular reviews, proposing the latest products for inclusion and submitting corrections where required. This includes WSS, Submarine specification and all NSN's, which, if up-to-date on ISIS, helps the contract of supply and stores system. An ISIS list can be supplied on request.

3. VOC COMPLIANT COATING SYSTEMS

- 3.1 EU Legislation changed the way VOC emissions are recorded. Notwithstanding this, there remains a MOD requirement for low VOC materials. Based on the guidance table below, Paint Manufacturers and Suppliers are reminded that any formulation changes to their existing products **must** be advised. They will then be required to provide the Institute of Naval Medicine (INM) with full product formulation data, on request. Failure to do so will automatically result in the withdrawal of MOD(N) acceptance. INM forms can be provided on request and any submissions must go through DES Ships WSpt-PEG-Husbandry.
- 3.2 MOD(N) requires that Paint Manufacturers and Suppliers quote VOC levels in accordance with CEN or ISO Standards.
- 3.3 The MOD(N) maximum VOC target levels are shown in the following table and both paint manufacturers and applicators are encouraged to propose/apply coatings which at least meet or are lower than these target levels.

Category No.	Category	VOC limit - gms/litre, Paint less Water
(i)	Blast/Weldable primer*	600
(ii)	Tie-coats/sealers	550
(iii)	General primer/undercoat	200
(iv)	External Finishes	420

Category No.	Category	VOC limit - gms/litre, Paint less Water
(v)	Internal Finishes	200
(vi)	Anti-Fouling [#]	400
(vii)	FFF Tanks	390
(viii)	Demineralised Water Tanks	390
(ix)	AVCAT, Dieso & Hydraulic Oil Tanks	390
(x)	All other tank coating systems inc cofferdams, engine room bilges & chain lockers	300
(xi)	Marine Varnish	530

* Blast or holding primers are typically applied to a specified thickness of 25 - 40 micrometres and are not considered to be weldable. Shop primers, or weldable primers, are applied by automatic spray, typically to a dft of 15 - 25 micrometres. It is recommended that the primer is removed before welding unless the user can demonstrate that the presence of the material does not affect weld integrity. This is particularly important where high strength steels, such as QN1, QN2, HY80 etc, with susceptibility to hydrogen cracking are used. In all cases, the end user must establish whether the condition of supply of the coated steel substrate is suitable for their specific welding process conditions.

The balance between VOC level and toxic content (should there be any) will be assessed. It may prove necessary to accept a higher VOC material if the lower toxic content outweighs the release of VOC.

- 3.4 For the benefit of New-Building Specifications ONLY, if a paint system can offer cost benefits but one part of it has a VOC level higher than the MOD(N) target value, the actual VOC value must be equal to or less than the stated value in Process Guidance Note 6/23 which can be found here: www.defra.gov.uk. This part of the scheme could be proposed on the assumption that it will be subsequently submitted for approval and inclusion in WARPAINT. In this instance data will be required supporting the case, including a statement that the total VOCs' to be given off to the atmosphere during application, will be equal to or less than when applying a paint scheme fully in accordance with the MOD(N) target values.

4. SUBMARINE SPECIFICATIONS

- 4.1 Acceptable paint specifications are outlined in Annex J, together with a list of other acceptable materials.
- 4.2 DESSMPG-NavArch3bNNPPI@mod.uk, Tel. No. 030 679 33221, is the Structures & Coatings POC within In-Service Submarines.
- 4.3 BR1326 Classification can be found in the 'Submarine Material Toxicity Database' located here - <http://www.tes-ssg-smtd.r.mil.uk/default.aspx>. DES NAG SMA1 is the sponsor of the hazard assessment process in line with the requirements set for submarine atmosphere control – This process is documented in BR1326 chapter 6. DES NAG SMA1 has the responsibility for assessing materials for internal submarine use. Enquiries regarding material assessments should therefore in the first instance be directed to DESAG-SMA1Tox@mod.uk at MOD Abbeywood South, Bristol, BS34 8JH. Tel. 030 679 35045.

- 4.4 In-Service Submarines then have to be contacted and provide a risk assessment to the whole boat, and Clearance For Use (CFU) of a product (This is for Vanguard and Trafalgar class, and Astute platform). CFU is obtained through the nominated ISM Platform Safety Co-ordinator, DESSMIS-SSG-Con1@mod.uk, Tel. 0117 9161435.
- 4.5 Not all of the Astute class has been adopted by in service submarines so Clearance For Use can be sought from the Design Authority – BAE systems.
 Engineering Manager Non Metallic Materials BAE SYSTEMS - Submarine Solutions
 Phone: 01229 873980
 Mobile: 07525 079325
 Fax: 01229 874294
 Email: Derek.Scholes@baesystems.com

5. WHOLE SHIP SPECIFICATIONS

- 5.1 The Whole Ship Specifications were submitted by seven major marine paint manufacturers / suppliers and are detailed in their respective annexes to this document. All of these companies must be approached when tendering on a new build project to conform to EU competitive law and to achieve VFM for the tax payer. It is considered advantageous to choose more than one company for an entire Class of RN vessel in order to engage more across all seven companies and put their differing products/technologies into service. New build paint specifications are no longer separately included as they so closely mirror refit, maintenance and repair.
- 5.1.1 The various paint manufacturers' annexes were originally inserted into WARPAINT in alphabetical order, with Chugoku Paints (UK) Ltd being listed first. It is important when searching for any particular coating or paint system, to ensure that the correct paint manufacturer is sourced and not to just turn to the first annex (i.e. Chugoku) for convenience.
- 5.1.2 The paint specifications in the annexes are the recommendations of the respective paint manufacturers. They are based on performance requirements, VOC and health and safety criteria of MOD(N). They are not specifications prescribed by MOD(N) and their fitness for purpose remains the responsibility of the paint manufacturer.
- 5.2 Items in the tables highlighted with a grey band do not fully meet MOD(N) criteria and are not to be used without prior confirmation from the relevant Platform Project Group. A number of these items may have obtained approval prior to the next issue of WARPAINT and readers should always check their current approval status.
- 5.3 To ensure that vessels allocated under the Whole Ship Specification concept receive paints from the selected supplier, their specific materials have been codified where necessary.
- 5.4 **Tables**
- 5.4.1 These include Nominal Dry Film Thickness (NDFT) per coat in micrometres (μm), as well as both the minimum and maximum recoat intervals. The figures quoted are meant for guidance only.
- 5.4.2 VOC grams per litre in the table highlighted thus in a box; do not comply with MoD VOC emission target levels.

5.4.3 Items with a ‘?’ appearing in the boxes, indicate that manufacturer/supplier information is awaited.

5.4.4 Annexes are listed in alphabetical order as follows: -

Chugoku Paints (UK) Ltd	Annex A
Hempel Paints Ltd	Annex B
International Paint Ltd	Annex C
Jotun Paints (Europe) Ltd	Annex D
Maker Coating Systems Ltd	Annex E
PPG Protective & Marine Coatings (Sigma)	Annex F
Sherwin Williams Protective & Marine Coatings	Annex G

5.5 LCUs and LCVP's

5.5.1 In general LCU's and LCVP's follow the Whole Ship Specifications with the exception of Above Water Hull coatings where Chemical Agent Resistant Coatings (CARC) and Infra Red Resistant coatings (IRR) are specified. For advice, review of proposed Paint Specifications and queries in relation to these vessels contact WSpt-PEG-Husbandry.

6. SPECIALIST COATINGS & PAINT REMOVERS

6.1 “WHOLE SHIP SPECIFICATIONS” & “SUBMARINES” Annexes do not cover Specialist areas. The following table lists specialist coatings and their location of use: -

SPECIALIST SYSTEMS/MATERIALS	Generic Type	VOC gms per ltr	NATO Stock Number	BR 1326
<u>ANTIFOULING FOR “ARCHER” CLASS & YACHTS</u>				
SUPERSPEED 52	Anti-Fouling	411	-	N/A
COPPERCOAT	Anti-Fouling	0	-	N/A
<u>RUDDERS, STABILISERS & ‘A’ FRAMES</u> Corrosion, Erosion & Cavitation Protection [Limpetite products use an approved Primer/Tie Coat system]				
LIMPETITE PRC (Single, thick coat system – fast application)	Liquid Rubber / Polyurethane	0		N/A
LIMPETITE A3 (Multiple coat system – slower application)	Liquid Synthetic Rubber	433		N/A
BELZONA 1311 Ceramic R-Metal (fill and fair)	Epoxy	0	99-720-9644	N/A
BELZONA 1341 Supermetalglide (cavitation protection) (2 coats. 3 coats if blasting prior to application of anti-foul)	Epoxy	5		N/A
<u>HULL (Underwater-Applied Coatings) GENERAL REPAIR</u>				
BIOFIX 561 LT Black – Kevlar reinforced	Epoxy	0	99-133-9985	N/A
BELZONA 5831	Epoxy	0		N/A
INTERZONE 101 Trowel Grade – WARNING: Contains Silica	Epoxy	0		N/A
ALOCIT 28.15	Epoxy	0		N/A

SPECIALIST SYSTEMS/MATERIALS	Generic Type	VOC gms per ltr	NATO Stock Number	BR 1326
<u>HULL - LINK COATS FOR FOUL RELEASE PAINT SYSTEMS</u>				
<u>Hempel Paints Ltd</u>				
HEMPASIL NEXUS X-Seal 27600	Silicone	400		N/A
<u>International Paints Ltd</u>				
Link Coat for INTERSLEEK 737: INTERSLEEK 7180	Silicone	376		N/A
<u>HPSW Internal Coating for Intake Pipework</u>				
Belzona 1341	Epoxy	5		
Corroless RF35	Glass Flake Epoxy	93	99-337-0778	BLI
LIMPETITE A3 (Multiple coat system – slower application)	Liquid Synthetic Rubber	433		N/A
<u>FLIGHTDECK MARKINGS</u>				
<u>Chugoku Paints (UK) Ltd</u>				
521E0020 Type 1 White	Epoxy	374	99-541-9583	N/A
521E0013 Type 1 Black	Epoxy	374	99-543-0790	N/A
521E2947 Type 1 Red	Epoxy	374	99-543-0793	N/A
521E0013 Type 1 Green	Epoxy	374	99-5430-791	N/A
<u>Hempel Paints Ltd</u>				
HEMPELS DECK MARKING 453GB White	Epoxy	347	99-323-1118	N/A
HEMPELS DECK MARKING 453GB Black	Epoxy	347	99-351-4222	N/A
HEMPELS DECK MARKING 453GB Red BS381C 537	Epoxy	347	99-724-9085	N/A
HEMPELS DECK MARKING 453GB Green BS381C 225	Epoxy	347	99-986-6762	N/A
<u>International Paints Ltd</u>				
INTERSHIELD 852 White	Epoxy	219	99-968-9269	N/A
INTERSHIELD 852 Black	Epoxy	219	TBC	N/A
INTERSHIELD 852 Red	Epoxy	219	99-666-9269	N/A
INTERSHIELD 852 Green	Epoxy	219	99-871-6360	N/A
<u>Sherwin-Williams Protective & Marine Coatings</u>				
EPIDEK M377 White	Epoxy	330	99-777-8690	N/A
EPIDEK M377 Black	Epoxy	330	99-777-8692	N/A
EPIDEK M377 Green	Epoxy	330	99-777-8691	N/A
<u>LCU & LVCP - CARC & IRR A/W HULL FINISH</u>				
Def Stan 80-208 approved coating - applied over Intergard 5000.				
<u>Trimite</u>				
D00386 UK Army Brown	Polyurethane	TBC	TBC	N/A
D00341 Matt Black	Polyurethane	TBC	TBC	N/A
<u>NAVIGATION LIGHT ENCLOSURES</u> Matte Black Finsh				
<u>Sherwin-Williams Protective & Marine Coatings</u>				
LEIGHS M155	Alkyd Anti-Corrosive (150 DFT)	410	TBC	N/A
<u>International Paints Ltd</u>				
INTERLAC 497 [Primer - Intergard 5000 (150 DFT) & Tie-Coat - Intergard 263 (75 DFT)]	Alkyd Finish Coat (40 DFT)	391	TBC	N/A

SPECIALIST SYSTEMS/MATERIALS	Generic Type	VOC gms per ltr	NATO Stock Number	BR 1326
INSTRUMENTS & TELECOMMUNICATIONS EQUIPMENT Light Admiralty Grey BS381C 697 Trimite SF59 Filler / SP59 Primer / S59 Top Coat <u>Onboard Repairs:</u> Q55X Indestructible Paints IP3-6700 epoxy primer IP3-6971 epoxy finish	Manufacturer Applied Coatings Stoved Epoxy Synthetic Epoxy Epoxy	- 491 350 420	- 99-224-9624 - -	N/A BLI N/A N/A
WOODEN FLIGHT DECKS & ASSOCIATED STEELWORK <i>Note adjacent steel decks to follow Flight Decks paint system</i> Hempel Paints Ltd HEMPADUR 4588 MIO 12430 HEMPADUR 45710 Dark Sea Grey BS381C 640 <u>Gloss for Deck Margins:</u> HEMPEL'S NON SKID 457GA Sherwin-Williams Protective & Marine Coatings METAGARD L574 Red Oxide EPIGRIP M339 Extra Dark Sea Grey BS381C 640 <u>Gloss for Deck Margins:</u> EPIGRIP M262 International Paints INTERSHIELD 300 (thinned 10%) INTERSHIELD 300 INTERSHIELD 851 <u>Gloss for Deck Margins:</u> INTERGARD 740	Epoxy Epoxy Epoxy Epoxy Epoxy Epoxy Epoxy Epoxy	198 198 198 354 386 386 169 420	99-479-5449 99-831-0343 99-879-5150 99-895-9894 99-215-4495 99-133-8713 99-391-0953 99-182-2627	N/A N/A N/A N/A N/A N/A N/A N/A
WEATHERWORK SYSTEMS OVER RAC Chugoku Paints Ltd CAMLAC UNDERCOAT CAMSIL FINISH Hempel Paints Ltd HEMUDUR 18500 HEMUCRYL ENAMEL 58100 International Paint Ltd INTERGARD 5000 INTERFINE 691HS Jotun Paints (Europe) Limited JOTAMASTIC 80 JOTAPROOF TOPCOAT Sherwin-Williams Protective & Marine Coatings EPIGRIP C425V2 EPIGRIP C750V2 Marker Coating Systems Ltd AMERLOCK 400C SIGMADUR 540	Alkyd WB Silicone Alkyd Water-Based Epoxy Water-Based Acrylic Epoxy Epoxy Acrylic Epoxy Epoxy Acrylic Epoxy Epoxy Acrylic	380 116 85 150 179 409 145 310 200 364 106 411	99-327-9058 99-876-8090 99-149-2439 99-000-5256 99-864-5322 99-519-2253 99-126-6377 99-212-2175 99-974-7400	N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A

SPECIALIST SYSTEMS/MATERIALS	Generic Type	VOC gms per ltr	NATO Stock Number	BR 1326
<u>EMERGENCY REPAIR OF FRESH WATER TANKS</u> <u>Hempel Paints Ltd</u> Hempel's TAPECRETE 6818	Cementicious Acrylic	0	99-302-2646	N/A
<u>GALVANISED STEEL & ZINC METAL SPRAY (REPAIR)</u> <u>Maker Coatings</u> ZINGA M <u>Hempel Paints Ltd</u> HEMUDUR ZINC 18560 or HEMPEL'S ZINC PRIMER 16490 <u>International Paints Ltd</u> INTERZINC 22 or INTERZINC 72 <u>PPG Protective & Marine Coatings</u> SIGMAZINC 19 <u>Sherwin-Williams Protective & Marine Coatings</u> EPIGRIP J984	Polystyrene Water-Based Epoxy Zinc Phenoxy Zinc Silicate Zinc Epoxy Zinc Epoxy Zinc Epoxy	539 60 590 470 410 584 331	13-113-7072 B (CI, CF) B LI	BLI
<u>VARNISHED WOODWORK</u> <u>Chugoku Paints Ltd</u> SPAR VARNISH <u>Hempel Paints Ltd</u> HEMPEL'S MARINE VARNISH 022GB <u>International Paint Ltd</u> INTERLAC 678 <u>Jotun Paints (Europe) Limited</u> SPONTAN VARNISH <u>PPG Protective & Marine Coatings</u> SIGMAVAR GLOSS 8103	Varnish Alkyd Alkyd Urethane Alkyd Phenolic	433 430 373 470 393	99-224-5783 99-328-9646 99-161-6220	BLI BLI
<u>CORROSION INHIBITOR GREASE</u> CORROLESS CCI 355	HD Grease	N/A	99-676-5736	BLI
<u>HEAT RESISTANT COATINGS (below 175 °C)</u> <u>PPG Protective & Marine Coatings</u> SIGMATHERM 175	Modified Alkyd	561		BLI

SPECIALIST SYSTEMS/MATERIALS	Generic Type	VOC gms per ltr	NATO Stock Number	BR 1326
<u>HEAT RESISTANT COATINGS (above 250 °C)</u> <u>Hempel Paints Ltd</u> HEMPEL'S GALVOSIL 15700 <u>International Paint Ltd</u> INTERTHERM 890 <u>PPG Protective & Marine Coatings</u> SIGMATHERM 500	Zinc Silicate Zinc Silicate Modified Alkyd	435 305 600	99-593-8923 BLI BLI	BLI
<u>HEAT RESISTANT COATINGS (above 400 °C)</u> <u>Hempel Paints Ltd</u> HEMPEL'S SILICONE ALUMINIUM 56910 <u>International Paint Ltd</u> INTERTHERM 50 <u>PPG Protective & Marine Coatings</u> SIGMATHERM 500	Polysiloxane Silicone Aluminium Modified Alkyd	585 495 600	99-257-1455 BLI BLI	BLI
<u>SYSTEM FOR COATING NATURAL RUBBER MOUNTS</u> <i>Applied by Mount OEM, not to be touched up once fitted.</i> <u>Dunlop Precision Rubber Ltd</u> DUNLOP NPL 100 <u>Maker Coating Systems Ltd</u> GUMMIPAIN - Orange	Twin Pack Single Pack			B BLI
<u>PAINT REMOVER</u> <u>Cirrus Systems Ltd</u> REMOVAL 510 (Formerly NAPIER-PMA) <u>N A Robson Ltd</u> BACK TO NATURE VIII <u>International Paint Ltd</u> INTERPLUS 634 <u>Maker Coating Systems Ltd</u> SEA TO SKY SPC-203	Biodegradable Biodegradable Biodegradable Biodegradable	N/A N/A N/A N/A	99-871-5945 99-361-6273 99-551-8994 20-003-3432	BLI CI CI
<u>RUST STAIN REMOVER</u> <u>International Paint Ltd</u> INTERPLUS 614 <small>(20l drum only. Corrosion source / issue must be rectified before using. 6 to 16hrs dwell time. Cover with Polythene to keep wet. Excessive orders require suitable justification. SL max = 18mths.)</small>	Biodegradable	N/A	99-870-1799	N/A

SPECIALIST SYSTEMS/MATERIALS	Generic Type	VOC gms per ltr	NATO Stock Number	BR 1326
<u>UNIQUE IMMERSED AREAS - PUMPS ETC</u>				
<u>Corrocoat Limited</u>				
CORROGLASS 202	Polyester Glass Flake			
CORROGLASS 232	Polyester Glass Flake			
CORROGLASS 602	Vinyl Ester Glass Flake			
CORROGLASS 632	Vinyl Ester Glass Flake			
POLYGLASS VE	Vinyl Ester Glass Flake			
POLYGLASS VE HAND APPLIED	Vinyl Ester Glass Flake			
POLYGLASS VEF	Vinyl Ester Glass Flake			
POLYGLASS ZIPCOAT	Polyester Glass Flake			
CORROCOAT ZIP E	Glass Flake Epoxy			

6.2 Cleaning Materials and Rust Removers

DES Ships WSpt-PEG-Husbandry is the Ship Husbandry (inc. Paint) & Habitability desk officer. All enquiries regarding cleaning materials and rust removers should be emailed to DESShipsWSpt-PEG-Husbandry@mod.uk alternatively telephone 030 679 36606.

BR2203 Ship Husbandry Manual dated Feb 2015 is now available on DII - <http://defenceintranet.dii.r.mil.uk/Organisations/Orgs/Navy/Organisations/Orgs/DRes/HdCOMMS/Pages/BRs2000-2999.aspx>. This is a major update in terms of information supplied which has taken nearly 10 years to publish. There is still commercial work to be done to procure new Cleaning Products and Equipment but the requirements are now in place to proceed. The Ship / Submarine Husbandry & Habitability Information Portal can be found here - www.ShipShapeRN.com.

6.3 Specialist Coatings Suppliers contact details:

Superspeed 52	H Marcel Guest	Tel 01612 057631
Coppercoat	Aquarius Marine Coatings Ltd.	Tel 01258 861059
Limpetite	Bristol Metal Spraying & PC Ltd	Tel 01179 662206
BIOFIX 561LT	Maker Coating Systems Ltd	Tel 01392 822600
Interzone 101	International Paint	Tel 01489 775060
Alocit 28.15	Alocit International Ltd	Tel 01362 694915
Chemi-Tech UW	Thortex Ltd	Tel 01609 780170
MMP Repairite	MMP International	Tel 08704 587781
Belzona	Belzona Polymerics Ltd	Tel 01423 567641
S*59	Tromite	Tel 01895 201444
IP3-6***	Indestructible Paint	Tel 01217 022485
Zinga	Maker Coating Systems Ltd	Tel 01392 822600
Gummipaint-Orange	Maker Coating Systems Ltd	Tel 01392 822600
Removall 510	Cirrus Systems Ltd	Tel 01305 822659
Back to Nature VIII	N A Robson Ltd	Tel 01253 393406
Sea to Sky SPC-203	Maker Coating Systems Ltd	Tel 01392 822600
Corroglass & Polyglass	Corrocoat Ltd	Tel 01132 760760

7. PAINTING AND PRESERVATION HOT TOPICS

- 7.1 Relevant news stories, direct questions on approved coatings or paint systems and all matters regarding preparation standards, NATO stock numbers and MOD(N) Paint Policy can be directed to DES Ships WSpt-PEG-Husbandry.

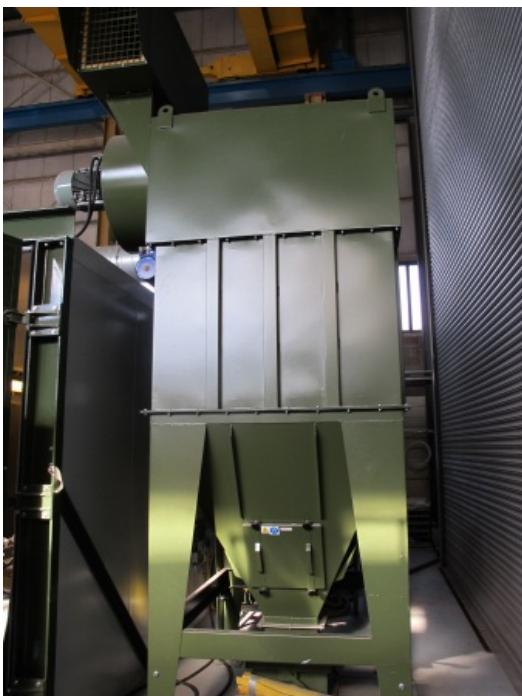
7.1.1. New Abrasive Blast Facility & Apprenticeships - Barrow-in-Furness

As part of a painting and coating application improvement initiative at BAE Systems in Barrow-in-Furness, a new blast facility has been installed; this will facilitate the blasting of large components. Previously, parts such as strong backs, engine casings, seats or frames have been painted in the build hall, which has required the erection of plywood containment around the component to prevent the egress of blast media during surface preparation or the ingress of arisings from build activities during painting. With the installation of the new facility, parts of up to 5 metres length and 2.5 metres height can be prepared. In addition to freeing up space in the build hall, and saving money on both materials and construction costs, for temporary containment, having a dedicated blast room removes the requirements for provision of services such as heating, ventilation and electrical supplies, which can then be used for construction activities.



New blast room installed at BAE's site in Barrow-in-Furness. The facility was built and installed by Hodge-Clemco at a total cost of over £100,000. The reduction in cost associated with purchasing and building temporary enclosures means that the facility will have paid for itself within four years.

The principal benefits, however, lie in the ability to properly manage the blast media. Chilled iron grit is second to none for efficient and high quality blast cleaning, but the overall process requires tight management to maintain the medium at its optimum condition. During blasting, the grit particles, which are initially of the order of 0.6 – 0.4mm mesh size, gradually reduce in size as the particles split apart when impacting the substrate. This is of positive benefit, as when the grit splits it produces new cutting edges. Eventually, the material will degrade past a useful size (typically < 0.15mm mesh) at which point it begins to have a detrimental effect on the process, contaminating the substrate and inhibiting visibility in the blast room. These small particles are referred to as 'fines'.



Extraction (left) and recovery (right) systems installed on the new blast facility. The combination of efficient extraction and air-wash ensure that the blast media is maintained at optimum conditions at all times. This ensures a high quality blast finish (SA 2.5 – SA 3) with minimal clean down time.

Very efficient extraction is required to remove the fines from the atmosphere in the blast room, and additionally cleaning the recovered grit by means of an air-wash ensures that the quantity of fines is kept to a minimum. This in turn reduces clean down time as larger particles of grit are easily removed from the substrate; which concomitantly negates the requirement for time consuming and subjective dust tests. Clearly, achieving similar levels of efficiency within a temporary enclosure would be expensive and time consuming.

It is something of a truism to state that even with the best equipment available, there is no guarantee of getting a quality job done and this requires a properly trained workforce. Following the conclusion of the build program for the Vanguard class boats, Vickers Shipbuilding and Engineering Ltd (as was) lost many experienced personnel as a result of redundancies and decommissioned all its coating facilities. In the interim years, the coating industry has undergone a ‘sea change’ in the materials used. Gone are paint systems such as red lead, coal tar epoxy and chromates to be replaced with high performance materials with useful coating lifetimes running into decades. Whereas the older materials were more forgiving in their preparation and application requirements newer materials require considerably more stringent surface preparation and process management to achieve their optimum performance. This requires a trained workforce with the requisite skill to ensure the correct surface preparation standards are achieved, the application process is correctly managed and that all associated equipment is being operated correctly. BAES have recently made the decision to bring the majority of painting and coating activities in-house and as of this year will be running painting apprenticeships. The training will consist of a year spent at the local college studying engineering subjects, followed by two and a half years working with the Yard’s current paint team. We will be reporting on the progress of the scheme in subsequent issues of WARPAINT.

Author: - Dr Byron Williams (BAES).

7.1.2 Mobile Abrasive Blast Recycling Plant - Devonport Dockyard

HMS ALBION (LPD) is currently in refit which, following survey, includes re-preserving most of the sea water ballast tanks following 10 years service life. Approximately 20,000m² surface area required blasting back to bare before represervation. In order to reduce costs, Babcock's sub-contractor looked at mobile abrasive blast recycling plants. They found such equipment and rented it from a French firm called Phenics. The following youtube video and picture gives a good idea of the system used: - www.youtube.com/watch?v=MEY7SplQ6h0



Utilising the new high grade abrasive - 'Profilium' Steel Grit – the positives were a massive reduction in waste, quality of the surface preparation (Sa3 – see pictures above of actual grit blasted steel structure) and surface profile (50 - 100microns). It was not without complication however. Plant equipment did have down time and subsequent repairs. Magnetised dust was a severe issue early on which required thorough QC and post cleaning to achieve acceptable limits. This issue steadily improved as the work progressed but the plant equipment could possibly be improved to better extract and clean these particles from the work area/system.

7.1.3 Abrasive Blasting GFRP – ASRY, Portsmouth & Rosyth Dockyards

Remaining on the subject of abrasive blast but looking at a far more fragile substrate of resin and glass fibre composite. These materials were used in the construction of our HUNT and SANDOWN Class minehunter hulls and require a different approach when it comes to surface preparation.

BR3939 Para's (0412 – 0417) and Def Stan 02-752 Part 2 Para 25.4.2 (b) refers. The content in both standards requires an update but remains relevant to the work being undertaken i.e. due care and attention required to prevent damage to the substrate.

Abrasive Blast Media selection is based on Size / Hardness / Density / Shape but every selection must be trialled on a mock up to assess the choice and tailor it for the task in hand i.e. careful selection of the blast media and equipment used i.e. finer grade, less hard, using smaller pots with lower pressures & less water. This also provides the SQEP with invaluable time to practice, prior to attempting the actual task.

- Angular steel grit abrasive has a hardness value of 8. It is recyclable & creates extremely sharp abrasive edges over and over during the blasting process. Not suitable for GFRP.
- Garnet and Oviline has a hardness value of 7.5 and has routinely been used in a low pressure slurry mix. However the size selection, or grade (sometimes a mixture of grades), has been chosen for speed of removal rather than fully protecting the delicate substrate. The risk, as witnessed over the years, is the creation of a lot of re-work.
- Walnut or Coconut shell is; organic, biodegradable, extremely durable, angular in shape yet considered a soft abrasive. Utility in applications such as cleaning hard woods and aircraft and automotive stripping. Hardness 4.5-5; Grit size range Extra Coarse to Extra Fine; Angular shape. Coconut Shell has been successfully used by BASREC & ASRY dockyards in Bahrain to carefully remove SRMH coatings with little to no damage of the GFRP.

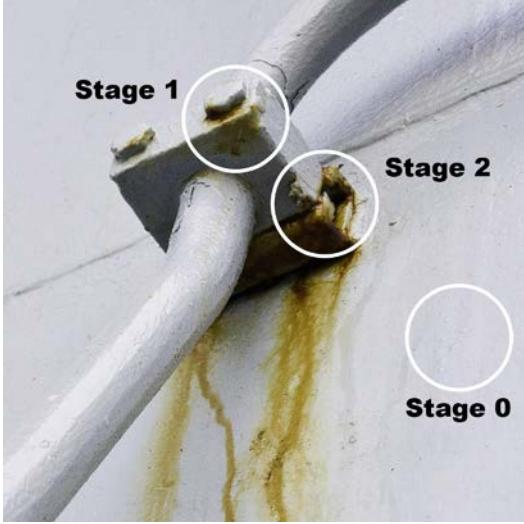
- Soda Crystals have a hardness value of 2.4 and are deemed non-abrasive. This medium not only removes coatings without damaging a GFRP substrate but also cleans the surface as well. The coating removal is accomplished via the transfer of energy when the crystal impacts/exploses on the substrate – ASRY have also used this medium to good effect where required.

7.2 MIXING OF PAINT SYSTEMS & USE OF CORROLESS QDR PRIMER

7.2.1 The mixing of different suppliers coatings in any given paint system is prohibited. If it becomes essential then it will only be permitted with the written approval of the relevant MOD Platform Project Group.

7.2.2 ***Corroless QDR primer is ONLY to be used for emergency repairs***, for example; when a vessel has to sail and welding of items has only just been completed or; there is insufficient time to apply the full WARPAINT specified paint system. Not more than 2 x 5 litre packs are to be carried onboard and ***general usage is forbidden***.

8. THE 4 STAGES OF CORROSION: How to identify through routine survey.

		
Stage 0	No visible signs of corrosion. No indications of paint system defects. No visible sign of oxidation products.	
Stage 1	General surface corrosion is visible. Small blisters or cracks in the paint coating. Red / Orange rust staining becoming evident & deposits from water run-offs developing.	
Stage 2	Heavy corrosion is visible. Severe blister or cracking in the paint coating. Prominent rust staining is now visible with medium to heavy deposits from water run-offs.	
Stage 3	Severe corrosion has resulted in visible metal loss at the point of attack to the point that structural integrity may have been compromised. Very prominent rust staining is visible, with heavy deposits from water run-offs	
Stage 4	Complete perforation of the base metal has occurred and structural integrity has been lost.	

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ANNEX A
WHOLE SHIP SPECIFICATION
Proposed by

CHUGOKU PAINTS (UK) Ltd

Proposed Systems/Materials	Number of coats	NDFT per coat Microns	Theo SR m ² /litre	Min@ 20° Recoat Interval	Max@ 20° Recoat Interval	VOC gms per ltr	NATO Stock Number
A. B/W HULL PRIMER (Re-blast) ~							
Standard: BANNOH 1500 Alternative: UMEGUARD HS SILVER	1 1	150 150	4.86 5.93	19 hrs 20 hrs	30 days 30 days	286 158	
Tie-coat (for C, E & F): BANNOH 1500 SZ	1	100	6.4	16 hrs	5 days	361	
B. B/W HULL PRIMER (Touch Up at Docking)							
Standard: BANNOH 1500 Alternative: UMEGUARD HS SILVER	1 1	150 150	4.86 5.93	19 hrs 20 hrs	30+ days 30 days	286 158	
Tie-coat (for C, E & F): BANNOH 1500 SZ	1	100	6.4	16 hrs	5 days	361	
C. ANTIFOULING FINISH (Self Polishing Copolymer - SPC)							
SEA GRANDPRIX 1000L silyl hydrolysis	2	150	3.4	8 hrs	#	436	
D. ANTIFOULING SYSTEM (Foul Release 5+ yr life)							
BIOCLEAN SG R BIOCLEAN R BIOCLEAN HB pure silicone finish	1 1 1	125 100 150	4.86 6.5 3.55	6 hrs 20 hrs	24 hrs # #	406 278 261	
Propeller & Rudder: BIOCLEAN SG R BIOCLEAN R single pack silicone finish	1 1	100 200	6 3.25	6 hrs	#	406 278	
E. ANTIFOULING FINISH (SPC 3+ yr life)							
SEA GRANDPRIX 660HS fusion	1	150	4.46	8 hrs	#	324	
F. BOOTTOP ANTIFOULING FINISH (SPC)							
SEAJET 33 / SEATENDER 10	2	125	3.52	5 hrs	#	485	
G. A/W HULL & SUPERSTRUCTURE PRIMER (Reblast)							
BANNOH 1500	1	150	4.86	19 hrs	30 days	286	
H. A/W HULL & SUPERSTRUCTURE PRIMER (Touch Up)							
Standard: BANNOH 1500 Alternative: UMEGUARD SX HS GREY Surface Tolerant	1 1	150 125	4.86 5.92	19 hrs 28 hrs	30 days 30 days	286 233	

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Proposed Systems/Materials	Number of coats	NDFT per coat Microns	Theo SR m ² /litre	Min @ 20° Recoat Interval	Max @ 20° Recoat Interval	VOC gms per ltr	NATO Stock Number
J. <u>A/W HULL & SUPERSTRUCTURE FINISH</u> Light Weatherwork Grey BS381C 676 CAMLAC HD WEATHERWORK FINISH silicone alkyd	1	40	11.80	16 hrs	#	400	
K. <u>FLIGHT & WEATHERDECK SYSTEMS – DEF STAN 80-134</u> <u>Primer:</u> UMEGUARD HS SILVER <u>(a).</u> <u>Hangar Doors Finish</u> Light Weatherwork Grey BS381C 676 [Factory finished - Interpon 610 – see International Paints WSS] <u>(b).</u> <u>Flight & Weatherdeck - Type 2 Non-skid Finish (coarse)</u> CAMIDECK FINISH TYPE 2 Extra Dark Sea Grey BS381C 640 CAMIDECK REPAIR KIT Type 2 available to order (2l) <u>(c).</u> <u>Hangar & Weatherdeck -Type 1 Non-skid Finish (fine)</u> CAMIDECK FINISH TYPE 1 Hangardeck: Dark Admiralty Grey BS381C 632 Weatherdeck: Extra Dark Sea Grey BS381C 640 CAMIDECK REPAIR KIT Type 1 available to order (2l) <u>(d).</u> <u>Gloss for Deck Margins:</u> Extra Dark Sea Grey BS381C 640 UMEGUARD HS GREY	1 2 2	125 208 190	7.40 2.83 2.84	20 hrs 16 hrs 16 hrs	30 days # #	158 374 374	
L. <u>INTERIOR DRY SPACES (Complete Represervation)</u> <u>Primer:</u> BANNOH 1500 <u>Finish:</u> AQUALIFE GLOSS FINISH BS4800 00A01	1 2	125 40	5.84 10	19 hrs 16 hrs	30 days 7 days	286 132	99-757-9334
M. <u>INTERIOR DRY SPACES (Touch up)</u> <u>Primer:</u> BANNOH 1500 <u>Finish:</u> AQUALIFE GLOSS FINISH BS4800 00A01	1 2	125 40	5.84 10	19 hrs 16 hrs	30 days 7 days	286 132	99-757-9334

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Proposed Systems/Materials	Number of coats	NDFT per coat Microns	Theo SR m ² /litre	Min@ 20° Recoat Interval	Max@ 20° Recoat Interval	VOC gms per ltr	NATO Stock Number
N. INTERIOR WET SPACES (Touch up)							
<u>Primer:</u> BANNOH 1500	1	125	5.84	19 hrs	30 days	286	
<u>Standard Finish:</u> AQUALIFE GLOSS FINISH Ash Grey BS4800 00A01	2	40	10	16 hrs	7 days	132	99-757-9334
<u>Citadel Lobby Finish:</u> AQUALIFE GLOSS FINISH - Colour either BS4800 00A01 or Grey BS381C 676	2	40	10	16 hrs	7 days	132	99-757-9334
<u>Cleansing Stations Finish:</u> AQUALIFE GLOSS FINISH White	2	40	10	16 hrs	7 days	132	
<u>Magazine Finish:</u> AQUALIFE GLOSS FINISH BS4800 00A01	2	40	10	16 hrs	7 days	132	99-757-9334
O. INTERIOR WET SPACES (Touch up)							
<u>Primer:</u> BANNOH 1500	1	125	5.84	19 hrs	30 days	286	
<u>Standard Finish:</u> AQUALIFE GLOSS FINISH Ash Grey BS4800 00A01	2	40	10	16 hrs	7 days	132	99-757-9334
<u>Citadel lobby Finish:</u> AQUALIFE GLOSS FINISH - Colour either BS4800 00A01 or Grey BS381C 676	2	40	10	16 hrs	7 days	132	99-757-9334
<u>Cleansing Stations Finish:</u> AQUALIFE GLOSS FINISH White	2	40	10	16 hrs	7 days	132	
<u>Magazine Finish:</u> AQUALIFE GLOSS FINISH BS4800 00A01	2	40	10	16 hrs	7 days	132	99-757-9334
P. INTERIOR DECKS Green 14C39							
<u>Standard Primer:</u> AQUALIFE WSE PRIMER <u>Finish:</u> AQUALIFE FINISH	2	50 40	9 10	16 hrs 16 hrs	# 7 days	0 132	99-398-1182 99-755-6242
<u>Cleansing Stations Primer:</u> BANNOH 1500 <u>Finish:</u> AQUALIFE GLOSS FINISH	1 2	125 40	5.84 10	19 hrs 16 hrs	30 days 7 days	286 132	99-755-6242
Q. BATTERY COMPARTMENTS							
<u>Primer:</u> BANNOH 1500 <u>Finish:</u> AQUALIFE GLOSS FINISH BS4800 00A01	1 2	125 40	5.84 10	19 hrs 16 hrs	30 days 7 days	286 132	99-757-9334
R. CABLE LOCKERS & COFFERDAMS							
BANNOH 1500	2	125	5.84	19 hrs	30 days	286	

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CHUGOKU PAINTS (UK) Ltd

Proposed Systems/Materials	Number of coats	NDFT per coat microns	Theo SP m ² /litre	Min@ 20° Recoat Interval	Max@ 20° Recoat Interval	VOC gms per ltr	NATO Stock Number
S. BLACK/GREY & WATER BALLAST TANKS IMO PSPC BANNOH 1500 red BANNOH 1500 grey	1 1	160 160	4.56 4.56	19 hrs 19 hrs	30 days 30 days	286 286	
T. MACHINERY SPACE BILGES BANNOH 1500	2	125	5.84	19 hrs	30 days	286	
U. AVCAT, DIESO, LUB & HYDRAULIC OIL TANKS SYSTEM DEF STAN 80-97 (HIGH SOLIDS) EPICON T-800 BANNOH 1500	2 2	125 125	5.2 5.84	24 hrs 19 hrs	28 days 30 days	359 286	
V. POTABLE WATER TANKS CLEANKEEP 5000	1(2)	300(150)	3.33	48 hrs	7 days	0	
W. AQUEOUS FILM-FORMING FOAM (AFFF) TANKS EPICON T-800	2	125	4.56	12 hrs	7 days	407	
X. DEMINERALISED WATER TANKS (Max Temperature 90°C) EPICON T-800 EPICON T-800 HS-GF glass flake	2 2	125 125	4.56 5.28	12 hrs 24 hrs	7 days 7 days	407 349	
Y. EPOXY HOLDING PRIMER NZ PRIMER S	1	25	15.9	16 hrs	#	641	
Z. PRIMERS FOR NON-FERROUS METALS Aluminium: ALP 500 Stainless Steel: BANNOH 1500 Zinc Spray & Galvanise: GALVANITE 200 FRP Indicator coat: CLEANKEEP 5000	1 1 1 1	50 125 30 150	11.6 5.84 14.10 6.66	10 hrs 19 hrs 4 hrs 48 hrs	# 30 days 30 days 7 days	414 286 587 0	99-967-8636 99-290-5829

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CHUGOKU PAINTS (UK) Ltd

Notes:

1. The recoat intervals published above are based on the manufacturer's figures quoted for 20°C
2. The number of coats stated in the above table, relate to airless spray application to achieve the stated dry film thickness (NDFT). Should brush application be required for touch up and repair then additional coats may be necessary to achieve the required NDFT.
3. # = No maximum recoat interval, see Manufacturer's Technical Data Sheet/Application Instructions for requirements.
4. It is important to ensure that surfaces are clean and free of contamination when overcoating materials, that have been left exposed, this is especially true for those products with an indefinite recoat interval.
5. The Theoretical Spreading Rate (TSR) quoted in the table above is calculated from the coatings physical constants and makes no allowance for loss and assumes a totally smooth surface. The actual spreading rate achieved Practical Spreading Rate (PSR) is dependent upon many factors and in practice the factor used may vary from as little as 1.05 up to as much as 4+. It is usual for paint manufacturers to use figures of 1.3 or 1.4 for estimating purposes but they always add the caveat that actual consumption achieved may vary due to such factors as surface profile, wastage due to material left in the can, weather conditions, skill of operator etc.
6. ~ = Use blast primer Y. when appropriate

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ANNEX B
WHOLE SHIP SPECIFICATION
Proposed by

HEMPPEL UK LTD

Proposed Systems/Materials	Number of Coats	NDFT per coat microns	Theo SR m ² /litre	Min@ 20° Recoat Interval	Max@ 20° Recoat Interval	VOC gms per ltr	NATO Stock Number
A. B/W HULL PRIMER (Re-blast) ~							
Standard: HEMPADUR 45880 MIO 12430	1	175	4.6	8 hrs	30 days	198	99-803-7233
Alternative: HEMPADUR QUATTRO 17634	1	175	4.1	6 hrs	90 days	275	
Tie Coat for C,E&F: HEMPADUR 47182	1	100	6.2	9 hrs	5 days	364	
Tie Coat for D: HEMPEL NEXUS 27310	1	100	5.6	6 hrs	20 hrs	388	
B. B/W HULL PRIMER (T/U at Docking)							
Standard: HEMPADUR 45880 MIO 12430	1	175	4.6	8 hrs	30 days	198	99-803-7233
Alternative: HEMPADUR QUATTRO 17634	1	175	4.1	6 hrs	90 days	275	
Tie Coat for C,E&F: HEMPADUR 47182	1	100	6.2	9 hrs	5 days	364	
Tie Coat For D: HEMPEL NEXUS 27500	1	125	5.2	8 hrs	48 hrs	259	
C. ANTIFOULING FINISH (Self Polishing Copolymer - SPC)							
5 year life: HEMPEL GLOBIC 6000 (75950)	2	120	5.8	10 hrs	#	383	
7 Year life: HEMPEL GLOBIC 9000 (78950)	2	140	4.1	10 hrs	#	367	
D. ANTIFOULING FINISH (Foul Release - FR 5+ yr life)							
HEMPASIL X3 87500 Silicone	1	150	4.7	6 hrs	#	265	
HEMPAGUARD X7 89900 Hydrogel c/w Biocides	1 *CW*	150	4.7	6 hrs	48 hrs	262	
Seek approval. Operational req'ment req'd due to additional H&S risks.	2 *WW*	100	7	6 hrs	48 hrs	262	
* Cold & Warm Water systems provided *							
E. ANTIFOULING FINISH (SPC - 3+ year life)							
Standard: GLOBIC 6000 (75950)	2	100	5.8	8 hrs	#	383	
Alternative: OLYMPIC + (72950)	2	100	5.0	8 hrs	#	367	
F. BOOTTOP ANTIFOULING FINISH (SPC)							
Standard: GLOBIC 6000 (75950)	2	100	5.8	8 hrs	#	383	
Alternative: OLYMPIC + (72950)	2	100	5.0	8 hrs	#	367	
G. A/W HULL & SUPERSTRUCTURE PRIMER (Reblast)							
Standard: HEMPADUR 45880 MIO 12430	1	150	4.6	8 hrs	30 days	198	99-803-7233
Alternative: HEMPADUR QUATTRO 17634	1	175	4.1	6 hrs	90 days	275	
H. A/W HULL & SUPERSTRUCTURE PRIMER (Touch Up)							
Standard: HEMPADUR 45880 MIO 12430	1	150	6.0	8 hrs	#	198	99-803-7233
Alternative: HEMUCRYL PRIMER 18100	2	30	15.7	4 hrs	#	61	99-909-6026

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Proposed by

HEMPEL UK LTD

Proposed Systems/Materials	Number of Coats	NDFT per coat microns	Theo SR m ² /litre	Min @ 20° Recoat Interval	Max @ 20° Recoat Interval	VOC gms per ltr	NATO Stock Number
J. A/W HULL & SUPERSTRUCTURE FINISH Light Weatherwork Grey BS 381C 676							
<u>Acrylic:</u> HEMPEL'S PRO ACRYLIC 55880	1	50	11.0	12 hrs	#	380	
<u>Silcone Alkyd:</u> HEMPEL'S SILICONE ALKYD FINISH	1	35	15.4	8 hrs	1-2 days	410	99-772-5448
<u>Tie Coat – (if req'd):</u> HEMPEL'S UNDERCOAT 424GB	1	40	12.5	8 hrs	7 days	385	99-224-6752
<u>Sealer for RASH:</u> HEMUCRYL 18100	1	30	15.7	4 hrs	#	61	99-909-6026
K. FLIGHT & WEATHERDECK SYSTEMS - DSTAN 80-134							
(a) Hangar Doors							
[Factory finished - Interpon 610 – see International Paints WSS]							
(b) Flight & Weatherdeck - Type 2 Non-skid Finish (coarse)							
<u>Primer:</u> HEMPADUR 45880 MIO 12430	1	100	8.0	7 hrs	#	198	99-803-7233
<u>Finish:</u> HEMPEL'S NON SKID 45710 Extra Dark Sea Grey BS 381C 640	2	400	1.9	6 hrs	30 days	206	99-831-0343
<u>Type 2 Repair Kit:</u> HEMPEL'S DECK REPAIR KIT 941 GB Extra Dark Sea Grey BS 381C 640							99-340-2100
(c) Hangar & Weatherdeck - Type 1 Non-skid Finish (fine)							
<u>Primer:</u> HEMPADUR 45880 MIO 12430	1	100	8.0	7 hrs	#	198	99-803-7233
<u>Hangar Deck – Finish:</u> HEMPEL'S NON SKID 45340 Dark Admiralty Grey BS 381C 632	2	200	3.2	6 hrs	30 days	335	99-670-9581
<u>Weatherdeck - Finish:</u> HEMPEL'S NON SKID 45340 Extra Dark Sea Grey BS 381C 640	2	200	3.2	6 hrs	30 days	335	99-213-1121
<u>Type 1 Repair Kit:</u> HEMPEL'S DECK REPAIR KIT 942GB Extra Dark Sea Grey BS 381C 640							99-471-2960
(d) Gloss for Deck Margins: HEMPADUR 45143 Extra Dark Sea Grey BS 381C 640	2	125	5.0	3 hrs	30 days	330	
L. INTERIOR DRY COMPARTMENTS (Full preservation)							
<u>Standard Primer:</u> HEMPADUR 45880	1	125	6.4	7 hrs	#	198	99-803-7233
<u>Alternative Primer:</u> HEMUCRYL High Build 18032	1	75	5.7	2 hrs	#	45	
<u>Standard Finish:</u> HEMUCRYL ENAMEL 58100 BS 4800 00A01	2	30	13.7	6 hrs	#	63	99-660-9288
<u>Alternative Finish:</u> HEMUDUR FC 48582 BS 4800 00A01	1	80	6.9	12 hrs	15 days	27	99-988-2715

ANNEX B
WHOLE SHIP SPECIFICATION
Proposed by

HEMPPEL UK LTD

Proposed Systems/Materials	Number of Coats	NDFT per coat microns	Theo SR m ² /litre	Min @ 20° Recoat Interval	Max @ 20° Recoat Interval	VOC gms per ltr	NATO Stock Number
M. INTERIOR DRY COMPARTMENTS (Touch up) White BS 4800 00A01							
<u>Standard Primer:</u> HEMPADUR 45880 MIO 12430 <u>Alternative Primer:</u> HEMUCRYL Primer High Build 18032	1 1	125 75	6.4 5.7	7 hrs 2 hrs	# #	198 45	99-803-7233
<u>Standard Finish:</u> HEMUCRYL ENAMEL 58100 <u>Alternative Finish:</u> HEMUDUR FC 48582	2 1	30 80	13.7 6.9	6 hrs 12 hrs	# 15 days	70 27	99-660-9288 99-988-2715
N. INTERIOR WET COMPARTMENTS (Full preservation)							
<u>Standard Finish:</u> HEMPADUR 45880 MIO 12430 <u>Alternative Finish:</u> HEMPADUR QUATTRO 17634	1 1	125 125	6.4 5.8	7 hrs 5 hrs	# #	198 275	99-803-7233
<u>Standard Areas Finish:</u> HEMUDUR FC 48582 BS 4800 00A01	1	80	6.9	12 hrs	15 days	27	99-988-2715
<u>Citadel Lobby Finish:</u> HEMUDUR FC 48582 BS 4800 00A01 or Grey BS 381C 676	1	80	6.9	12 hrs	15 days	27	99-988-2715
<u>Cleansing Stations Finish:</u> HEMPADUR 45143 White	1	100	6.0	8 hrs	#	375	99-602-7280
<u>Magazine Use Finish:</u> HEMUDUR FC 48582 BS 4800 00A01	1	80	6.9	1 hrs	15 days	27	99-988-2715
O. INTERIOR WET COMPARTMENTS (Touch up)							
<u>Primer:</u> HEMPADUR 45880 MIO 12430	1	125	6.4	7 hrs	#	198	99-803-7233
<u>Standard Areas Finish:</u> HEMUDUR FC 48582 BS 4800 00A01	1	80	6.9	12 hrs	15 days	27	99-988-2715
<u>Citadel Lobby Finish:</u> HEMUDUR FC 48582 BS 4800 00A01 or Grey BS 381C 676	1	80	6.9	12 hrs	15 days	27	99-988-2715
<u>Cleansing Stations Finish:</u> HEMPADUR 45143 White	1	100	6.0	8 hrs	#	375	99-602-7280
<u>Primer:</u> HEMPADUR 45880 MIO 12430	1	100	8.0	7 hrs	#	198	99-803-7233
<u>Magazine Use Finish:</u> HEMUDUR FC 48582 BS 4800 00A01	1	80	6.9	12 hrs	15 days	27	99-988-2715
P. INTERIOR DECKS BS 4800 Green 14C39							
<u>Primer:</u> HEMPADUR 45880 MIO 12430	1	125	6.4	7 hrs	#	198	99-803-7233
<u>Finish:</u> HEMUDUR FC 48582	1	80	6.9	12 hrs	15 days	27	99-279-8221
<u>Cleansing Station Finish:</u> HEMPADUR 45143	1	100	6.0	8 hrs	#	375	99-471-1920
Q. BATTERY COMPARTMENTS BS 4800 00A01							
<u>Primer:</u> HEMPADUR 45880 MIO 12430	1	150	6.0	8 hrs	#	198	99-803-7233
<u>Finish:</u> HEMUDUR FC 48582	1	80	6.9	12 hrs	15 days	27	99-988-2715

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Proposed Systems/Materials	Number of Coats	NDFT per coat microns	Theo SR m ² /litre	Min @ 20° Recoat Interval	Max @ 20° Recoat Interval	VOC gms per ltr	NATO Stock Number
R. CABLE LOCKERS & COFFERDAMS HEMPADUR 45880 White	1	150	6.0	8 hrs	#	217	99-264-0387
S. BLACK/GREY & WATER BALLAST TANKS IMO PSPC <u>Water Ballast Tanks:</u> HEMPADUR QUATTRO 17634 <u>Black & Grey Water Tanks:</u> HEMPADUR 85671	2	160	4.5	6 hrs	90 days	275	
3	100	6.8	36 hrs	5 days	320		
T. MACHINERY SPACE BILGES HEMPADUR 45880 White	2	125	6.4	7 hrs	#	217	99-264-0387
U. AVCAT, DIESO, LUB & HYDRAULIC OIL TANKS SYSTEM - DEF STAN 80-97 (HIGH SOLIDS) HEMPADUR 85671	3	100	6.8	36 hrs	21 days	320	
V. POTABLE WATER TANKS <u>Standard:</u> HEMPADUR MULTI STRENGTH 35530 <u>Alternative:</u> HEMPADUR MULTI STRENGTH 35560 <u>Alternative for touch up:</u> HEMPEL'S TAPECRETE 68180	2 2 1	200 200 500	5.0 5.0 1.9	24 hrs 24hrs 2-3 hrs	5 days 30 days #	10 0 0	99-302-2646
W. AQUEOUS FILM-FORMING FOAM (AFFF) TANKS HEMPADUR 85671	3	100	6.8	36 hrs	21 days	320	
X. DEMINERALISED WATER TANKS (Max Temperature 90°C) HEMPADUR 85671	3	100	6.8	36 hrs	21 days	320	
Y. EPOXY HOLDING PRIMER HEMPADUR 15570	1	40	13.5	#	#	420	99-943-1152
Z. PRIMERS FOR NON-FERROUS METALS <u>Aluminium, Stainless Steel, Zinc Spray & Galvanised surfaces:</u> <u>Standard:</u> HEMUCRYL TIE COAT 18200 (1 pack) <u>Alternative:</u> HEMPADUR 15553 (2 pack) <u>Indicator Coat for FRP:</u> GELPROTECT SFE200 35651 Cream	1 1 1	20 50 200	19 11 5	24 hrs 2 hrs 8 hrs	# # 5 days	40 400 10	99-199-2908 99-870-0653 99-517-4318

ANNEX B
WHOLE SHIP SPECIFICATION
Proposed by

HEMPEL UK LTD

Notes:

1. The recoat intervals published above are based on the manufacturer's figures quoted for 20°C
2. The number of coats stated in the above table, relate to airless spray application to achieve the stated Nominal Dry Film Thickness (NDFT). Should brush application be required for touch up and repair then additional coats may be necessary to achieve the required NDFT.
3. # See Manufacturer's Technical Data Sheet/Application Instructions for requirements.
4. It is important to ensure that surfaces are clean and free of contamination when overcoating materials, that have been left exposed, this is especially true for those products with an indefinite recoat interval.
5. The Theoretical Spreading Rate (Theo SR) quoted in the table above is calculated from the coatings physical constants and makes no allowance for loss and assumes a totally smooth surface. The actual spreading rate achieved (Practical SR) is dependent upon many factors and in practice the factor used may vary from as little as 1.05 up to as much as 4+. It is usual for paint manufacturers to use figures of 1.3 or 1.4 for estimating purposes but they always add the caveat that actual consumption achieved may vary due to such factors as surface profile, wastage due to material left in the can, weather conditions, skill of operator etc.
6. ~ = Use blast primer Y. when appropriate.

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ANNEX C
WHOLE SHIP SPECIFICATIONS
Proposed by

INTERNATIONAL PAINT LTD

Proposed Systems/Materials	Number of Coats	NDFT per coat microns	Theo SR m ² /litre	Min@ 20° Recoat Interval	Max@ 20° Recoat Interval	VOC gms Per ltr	NATO Stock Number
A. B/W HULL PRIMER (Re-blast) ~							
Standard: INTERGARD 5000 Alternative: INTERSHIELD 300 Foul Release only (Area D)	1 2	175 125	4.68 4.80	12 hrs 7 hrs	2 months 14 days	179 313	
Tie Coat for C: INTERGARD 263	1	75	7.60	8 hrs	5 days	379	99-133-3854
Tie Coat for D (if req'd): INTERSLEEK 737	1	100	6.5	4 hrs	7 days	325	
B. B/W HULL PRIMER (T/U at Docking)							
Standard: INTERGARD 5000 Alternative: INTERSHIELD 300 Foul Release only (Area D)	1 2	175 125	4.68 4.80	12 hrs 7 hrs	2 months 14 days	179 313	
Tie Coat for C: INTERGARD 263	1	75	7.60	8 hrs	5 days	379	99-133-3854
Tie Coat for D (if req'd): INTERSLEEK 737	1	100	6.5	4 hrs	7 days	325	
C. ANTIFOULING FINISH (Self Polishing Copolymer - SPC)							
5 year life: INTERSMOOTH 7460	2	125	3.20	12 hrs	28 days	425	
D. ANTIFOULING FINISH (Foul Release - FR 5+ yr life) Red							
INTERSLEEK 970 Fluoropolymer	1	150	4.8	24 hrs	#	248	
INTERSLEEK 1100SR Slime Release Fluoropolymer	1	150	4.8	24 hrs	#	248	
E. ANTIFOULING FINISH (SPC)							
3 year life: INTERSPEED 6400 Black	1	75	8	6 hrs	3 months	358	
F. BOOTTOP ANTIFOULING FINISH (SPC) Black							
INTERSPEED 6400	2	60	10	6 hrs	3 months	358	
BOOTTOP ANTIFOULING FINISH (FR) Black							
Standard: INTERSLEEK 970	1	150	4.8	24 hrs		248	
Repair: INTERSLEEK RAPID	1	150	4	24 hrs		350	99-358-0224
G. A/W HULL & SUPERSTRUCTURE PRIMER (Re-blast)							
INTERGARD 5000	1	150	5.47	12 hrs	14 days	179	
H. A/W HULL & SUPERSTRUCTURE PRIMER (Touch Up)							
INTERGARD 5000 Dawn Grey BS 4800 00A01	1	150	5.47	12 hrs	14 days	179	99-000-5256

ANNEX C
WHOLE SHIP SPECIFICATIONS
Proposed by

INTERNATIONAL PAINT LTD

Proposed Systems/Materials	Number of Coats	NDFT per coat microns	Theo SR m ² /ltr	Min @ 20° Recoat Interval	Max @ 20° Recoat Interval	VOC gms Per ltr	NATO Stock Number
J. A/W HULL & SUPERSTRUCTURE FINISH BS 381C 676							
<u>Epoxy Acrylic:</u> INTERFINE 691 HS	1	50	10.6	8 hrs	#	409	99-864-5322
<u>Polysiloxane:</u> INTERFINE 878	1	50	14.4	4 hrs	#	246	99-274-4682
<u>Undercoat / Tie Coat (if required):</u> INTERGARD 263	1	75	7.6	8 hrs	5 days	379	99-133-3854
K. FLIGHT & WEATHERDECK SYSTEMS – DEF STAN 80-134							
(a) Hangar Doors							
[Factory finished - Interpon 610 - powder coating]	1	100	N/A	N/A	N/A	0	
<u>Markings:</u> <u>Epoxy Acrylic:</u> INTERFINE 691 HS	1	50	10.6	8 hrs	#	409	
<u>Polysiloxane:</u> INTERFINE 878	1	50	14.4	4 hrs	#	246	
(b) Flight & Weatherdeck - Type 2 Non-skid Finish (coarse)							
<u>Primer:</u> INTERGARD 5000 Dawn Grey BS 4800 00A01	1	150	5.47	12 hrs	14 days	179	99-000-5256
<u>Finish:</u> INTERSHIELD 851 Extra Dark Sea Grey BS 381C 640	2	300	1.28	16 hrs	#	169	99-391-0953
<u>Type 2 Repair Kit:</u>							
INTERSHIELD 851 REP KIT – Extra Dark Sea Grey BS 381C 640							99-325-0579
(c) Hanger & Weatherdeck - Type 1 Non-skid Finish (fine)							
<u>Primer:</u> INTERGARD 5000 Dawn Grey BS 4800 00A01	1	150	5.47	12 hrs	14 days	179	99-000-5256
<u>Hanger Deck:</u> INTERSHIELD 852 Dark Admiralty Grey BS 381C 632	2	200	1.92	12 hrs	#	134	99-149-8996
<u>Weatherdeck:</u> INTERSHIELD 852 Extra Dark Sea Grey BS 381C 640	2	200	1.92	12 hrs	#	134	99-583-1344
<u>Type 1 Repair Kit:</u>							
INTERSHIELD 852 REPAIR KIT – Dark Admiralty Grey BS 381C 632							99-993-9328
(d) Gloss for Deck Margins							
INTERGARD 740 Extra Dark Sea Grey BS 381C 640	1	50	10.2	16 hrs	#	420	99-182-2627
L. INTERIOR DRY COMPARTMENTS (Complete Represervation)							
<u>Primer:</u> INTERGARD 5000 Dawn Grey	1	125	6.56	12 hrs	#	179	99-000-5256
<u>Finish:</u> INTERCRYL 700 BS 4800 00A01	1 or 2	35	11.42	60 mins	#	50	99-799-8832
<u>Alternative Finish:</u> INTERSHEEN 5579	1 or 2	35	11.29	60 mins	#	12	

ANNEX C
WHOLE SHIP SPECIFICATIONS
Proposed by

INTERNATIONAL PAINT LTD

Proposed system Materials	Number of Coats	NDFT per coat microns	Theo SR m ² /ltr	Min @ 20° Recoat Interval	Max @ 20° Recoat Interval	VOC gms per ltr	NATO Stock Number
M. INTERIOR DRY COMPARTMENTS (Touch up) BS 4800 00A01							
<u>Primer:</u> INTERGARD 5000 Dawn Grey <u>Finish:</u> INTERCRYL 700	1 1 or 2	125 35	6.56 11.42	12 hrs 60 mins	# #	179 50	99-000-5256 99-799-8832
<u>Alternative Finish:</u> INTERSHEEN 5579	1 or 2	35	11.29	60 mins	#	12	
N. INTERIOR WET COMPARTMENTS (Complete) Finish colour either White BS 4800 00A01 or Grey BS 381C 676							
<u>Primer:</u> INTERGARD 5000 Dawn Grey	1	125	6.56	24 hrs	#	179	99-000-5256
<u>Standard Areas Finish:</u> INTERGARD 1735	1 or 2	50	11.20	12 hrs	#	132	99-255-0527
<u>Citadel Lobby Finish:</u> INTERGARD 1735	1 or 2	50	11.20	12 hrs	#	132	99-255-0527
<u>Cleansing Stations Finish:</u> INTERFINE 979 (overcoat primer within 4 days)	1	125	7.60	4 hrs	#	165	99-168-7337
<u>Magazines Finish:</u> INTERGARD 1735	1 or 2	50	11.20	12 hrs	#	132	99-255-0527
O. INTERIOR WET COMPARTMENTS (Touch up) Finish Colour either: White BS 4800 00A01 or Grey BS 381C 676							
<u>Primer:</u> INTERGARD 5000 Dawn Grey	1	125	6.56	24 hrs	#	179	99-000-5256
<u>Finish:</u>							
<u>Standard Areas:</u> INTERGARD 1735	1 or 2	50	11.20	12 hrs	#	132	99-255-0527
<u>Citadel Lobby:</u> INTERGARD 1735	1 or 2	50	11.20	12 hrs	#	132	99-255-0527
<u>Cleansing Stations:</u> INTERFINE 979 (overcoat primer within 4 days)	1	125	7.60	4 hrs	#	165	99-168-7337
<u>Magazines:</u> INTERGARD 1735	1 or 2	50	11.20	12 hrs	#	132	99-255-0527
P. INTERIOR DECKS BS 4800 Green 14C39							
<u>Primer:</u> INTERGARD 5000 Dawn Grey	1	125	6.56	12 hrs	#	179	99-000-5256
<u>Standard Areas Finish:</u> INTERGARD 1735	1	50	11.20	12 hrs	#	132	99-483-1994
<u>Alternative 1 coat system:</u> INTERGARD 5000	1	150	6.56	#	#	179	99-555-1384
<u>Cleansing Stations Finish:</u> INTERFINE 979 (overcoat primer within 4 days)	1	125	7.60	4 hrs	#	165	99-729-7357
Q. BATTERY COMPARTMENTS							
<u>Primer:</u> INTERGARD 5000 Dawn Grey	1	125	6.56	12 hrs	#	179	99-000-5256
<u>Finish:</u> INTERGARD 1735 BS 4800 00A01	1	50	11.20	12 hrs	#	132	99-255-0527
R. CABLE LOCKERS & COFFERDAMS							
INTERGARD 5000	1	150	5.46	12 hrs	3 months	179	

ANNEX C
WHOLE SHIP SPECIFICATIONS
Proposed by

INTERNATIONAL PAINT LTD

Proposed Systems/Materials	Number of Coats	NDFT per coat microns	Theo SR m ² /litre	Min @ 20° Recoat Interval	Max @ 20° Recoat Interval	VOC gms Per	NATO Stock Number
S. BLACK/GREY & WATER BALLAST TANKS IMO PSPC							
Water Ballast Tanks: INTERGARD 5000	2	160	5.13	12 hrs	3 months	179	
Black & Grey Water Tanks: INTERLINE 850	2	125	6.08	8 hrs	30 days	212	
T. MACHINERY SPACE BILGES							
INTERGARD 5000 White	1	175	4.68	12 hrs	3 months	179	
U. AVCAT, DIESO, LUB & HYDRAULIC OIL TANKS SYSTEM - DEF STAN 80-97 (HIGH SOLIDS)							
INTERLINE 850	2	125	6.08	8 hrs	30 days	212	
V. POTABLE WATER TANKS							
INTERLINE 925	1	300	3.33	18 hrs	3 days	1	
W. AQUEOUS FILM-FORMING FOAM (AFFF) TANKS							
INTERLINE 704	2	125	4.24	23 hrs	21 days	385	
X. DEMINERALISED WATER TANKS (Max Temperature 90°C)							
INTERLINE 925 (up to 60°C only)	1	300	3.33	18 hrs	3 days	1	
Y. EPOXY HOLDING PRIMER							
Standard: INTERGARD 269 Alternative & Maintenance: INTERGARD 276	1 1	30 40	15.67 11.75	6 hrs 6 hrs	# #	411 411	99-983-0743
Z. PRIMERS FOR NON-FERROUS METALS & FRP							
Aluminium, Stainless steel, Zinc Spray or Galvanised surfaces:							
Standard: INTERGARD 269 Alternative: INTERGARD 276	1 1	30 40	15.67 11.75	6 hrs 6 hrs	# #	411 411	99-983-0743
Indicator Coat for FRP: INTERLINE 925 Cream	1	300	5.0	18 hrs	3 days	1	

ANNEX C
WHOLE SHIP SPECIFICATIONS
Proposed by

INTERNATIONAL PAINT LTD

Notes:

1. The recoat intervals published above are based on the manufacturer's figures quoted for 25°C
2. The number of coats stated in the above table, relate to airless spray application to achieve the stated Nominal Dry Film Thickness (NDFT). Should brush application be required for touch up and repair then additional coats may be necessary to achieve the required NDFT.
3. It is important to ensure that surfaces are clean and free of contamination when overcoating materials, that have been left exposed, this is especially true for those products with an indefinite recoat interval.
4. # See Manufacturer's Technical Data Sheet/Application Instructions for requirements.
5. The Theoretical Spreading Rate (Theo SR) quoted in the table above is calculated from the coatings physical constants and makes no allowance for loss and assumes a totally smooth surface. The actual spreading rate achieved (Practical SR) is dependent upon many factors and in practice the factor used may vary from as little as 1.05 up to as much as 4+. It is usual for paint manufacturers to use figures of 1.3 or 1.4 for estimating purposes but they always add the caveat that actual consumption achieved may vary due to such factors as surface profile, wastage due to material left in the can, weather conditions, skill of operator etc.
6. ~ = Use blast primer Y. when appropriate

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ANNEX D
WHOLE SHIP SPECIFICATIONS
Proposed by

JOTUN COATINGS (EUROPE) LTD

Proposed Systems /Materials	Number of Coats	NDFT per coat microns	Theo SR m ² /litre	Min @ 20° Recoat Interval	Max @ 20° Recoat Interval	VOC gms per litre	NATO Stock Number
A. B/W HULL PRIMER & TIE COAT (Re-Blast)							
Standard: JOTACOTE UNIVERSAL (alu. red toned) Alternative: MARATHON IQ (impact resistant - red)	1 1	200 500	3.6 2.0	4 hrs 10 hrs	# 3 days	240 30	
Tie Coat: SAFEGUARD UNIVERSAL ES (grey)	1	100	6.2	10 hrs	3 days	330	
B. B/W HULL PRIMER & TIE COAT (T/U at Docking)							
Standard: JOTAMASTIC 87 ALUMINIUM (red toned) Alternative: JOTACOTE UNIVERSAL (alu. red toned)	1 1	175 175	5.0 4.1	10 hrs 4 hrs	# #	110 240	
Tie Coat: SAFEGUARD UNIVERSAL ES (grey)	1	75	8.3	10 hrs	3 days	330	
C. ANTIFOULING (Self Polishing Copolymer - SPC 5 yr life)							
Standard: SEAQUANTUM PLUS (light red) Alternative: SEAQUANTUM ULTRA (dark red)	1 2	125 125	3.8 3.8	7 hrs 7 hrs	# #	460 460	
D. FOUL RELEASE (Foul Release - FR 5+ yr life)							
SEALION TIECOAT (if req'd - light red) SEALION REPULSE Nano Repellant Silicone FR Topcoat	1 1	90 150	6.6 4.8	15 hrs #	4 days #	406 230	
E. ANTIFOULING (SPC - 3 year life)							
SEAFORCE 90 (light red) SEAFORCE 90 (dark red)	1 1	105 105	5.5 5.5	7 hrs 7 hrs	# #	370 370	
F. BOOTTOP ANTIFOULING black							
Standard SPC: SEAQUANTUM CLASSIC Alternative FRC: SEALION TIECOAT (if req'd - light red) SEALION REPULSE	1 or 2 1 1	150 90 150	3.1 6.6 4.8	7 hrs 15 hrs #	# 4 days #	460 406 230	
G. A/W HULL & SUPERSTRUCTURE PRIMER (Re-blast)							
Standard: JOTACOTE UNIVERSAL (alu. red toned) Alternative: JOTAMASTIC 80 (alu. red toned)	1 1	200 200	3.6 4.0	4 hrs 10 hrs	# #	240 145	
H. A/W HULL & SUPERSTRUCTURE PRIMER (T/U)							
Standard: JOTAMASTIC 80 (alu. red toned) Alternative: JOTACOTE UNIVERSAL (alu. red toned) Repair Kit (1:1 mix): JOTAMASTIC SMART PACK (red)	1 1 2	150 150 70	5.3 4.8 10.7	10 hrs 4 hrs 7 hrs	# # #	145 240 230	

ANNEX D
WHOLE SHIP SPECIFICATIONS
Proposed by

JOTUN COATINGS (EUROPE) LTD

<u>Proposed Systems /Materials</u>	Number of Coats	NDFT per coat microns	Theo SR m ² /litre	Min @ 20° Recoat Interval	Max @ 20° Recoat Interval	VOC gms per litre	NATO Stock Number
J. A/W HULL & SUPERSTRUCTURE FINISH BS381C 676							
<u>Cured Acrylic:</u> HARDTOP CA	1	75	8	5 hrs	#	340	
<u>Polysiloxane:</u> HARDTOP OPTIMA	1	75	10.1	4 hrs	#	215	
K. FLIGHT & WEATHERDECK SYSTEMS – DEF STAN 80-134							
(a) Hanger Doors							
[Factory finished - Interpon 610 – see International Paints WSS]							
(b) Flight & Weatherdeck - Type 2 Non-skid Finish (coarse)							
<u>Primer:</u> JOTAMASTIC 87 (grey) <u>Finish:</u> JOTA ARMOUR (BS381C 640)	1 2	150 375	5.5 2.4	10 hrs 14 hrs	# #	150 70	
Type 2 Repair Kit: JOTA ARMOUR REPAIR KIT (640)	1	750	1.2	1.2	#	70	
(c) Hangar & weatherdeck - Type 1 Non-Skid Finish (fine)							
<u>Primer:</u> JOTAMASTIC 87 (grey) <u>Finish:</u> JOTA ARMOUR FINE (BS381C 632 or 640)	1 2	150 200	5.5 4.5	10 hrs 14 hrs	# #	150 70	
Type 1 Repair Kit: JOTA ARMOUR FINE REPAIR KIT (632 or 640)	1	400	2.2	14 hrs	#	70	
(d) GLOSS FOR DECK MARGINS							
<u>Cured acrylic:</u> HARDTOP CA (BS381C 676)	1	75	8	5 hrs	#	340	
<u>Polysiloxane:</u> HARDTOP OPTIMA (BS381C 676)	1	75	10.1	4 hrs	#	215	
L. INTERIOR DRY SPACES (Complete Represervation)							
<u>Standard Primer:</u> WATERFINE ACRYLIC PRIMER (white) <u>Alternative Primer(2 pack):</u> WATERFINE PRIMER (white)	1 1	80 80	5.8 5.8	1 hrs 1.5 hrs	# #	66 60	99-462-9708
<u>Finish:</u> WATERFINE TOPCOAT (BS4800 00A01)	1 or 2	40	9.2	8 hrs	#	105	99-272-2784
M. INTERIOR DRY SPACES (Touch up)							
<u>Standard Primer:</u> WATERFINE ACRYLIC PRIMER (white) <u>Alternative Primer(2 pack):</u> WATERFINE PRIMER (white)	1 1	80 80	5.8 4.6	1 hr 1.5 hrs	# #	66 60	99-462-9708
<u>Finish:</u> WATERFINE TOPCOAT (BS4800 00A01)	1 or 2	40	9.2	8 hrs	#	105	99-272-2784

ANNEX D
WHOLE SHIP SPECIFICATIONS
Proposed by

JOTUN COATINGS (EUROPE) LTD

<u>Proposed Systems /Materials</u>	Number of Coats	NDFT per coat microns	Theo SR m ² /litre	Min @ 20° Recoat Interval	Max @ 20° Recoat Interval	VOC gms per litre	NATO Stock Number
N. INTERIOR WET SPACES INC. MAGAZINE AND CITADEL LOBBY (Complete Represervation)							
Primer: WATERFINE PRIMER (white) Finish: WATERFINE PRIMER (BS4800 00A01) (BS381C 676)	1 or 2	100 40	4.6 11.6	1.5 hrs 1.5 hrs	# #	60 60	99-462-9708
Cleansing Stations - Primer: AMERLOCK 400C (Marker Coatings) Finish: AMERON PSX 700 White	1 1	125 125	7 7.2	16 hrs 4.5 hrs	# #	106 120	99-974-7400 17-113-5689
O. INTERIOR WET SPACES INC. MAGAZINE AND CITADEL LOBBY (Touch up)							
Primer: WATERFINE PRIMER (white) Finish: WATERFINE PRIMER (BS4800 00A01) (BS381C 676)	1 or 2	100 40	4.6 11.6	1.5 hrs 1.5 hrs	# #	60 60	99-462-9708
Cleansing Stations - Primer: AMERLOCK 400C (Marker Coatings) Finish: AMERON PSX 700 White	1 1	125 125	7 7.2	16 hrs 4.5 hrs	# #	106 120	99-974-7400 17-113-5689
P. INTERIOR DECKS							
Primer: WATERFINE PRIMER (white) Finish: WATERFINE PRIMER (BS4800 14C39)	1 or 2	100 40	4.6 11.6	1.5 hrs 1.5 hrs	# #	60 60	99-462-9708
Cleansing Stations - Primer: AMERLOCK 400C (Marker Coatings) Finish: AMERON PSX 700 BS4800 14C39	1 2	125 125	7 7.2	16 hrs 4.5 hrs	# #	106 120	99-974-7400 17-113-6169
Q. BATTERY COMPARTMENTS							
Primer: WATERFINE PRIMER (white) Finish: WATERFINE PRIMER (BS4800 00A01)	1 1 or 2	100 40	4.6 11.6	1.5 hrs 1.5 hrs	# #	60 60	99-462-9708
R. CABLE LOCKERS & COFFERDAMS							
Standard: JOTAMASTIC 80 (alu. red toned) Alternative: JOTACOTE UNIVERSAL (alu. red toned)	1 1	175 200	4.6 3.6	10 hrs 4 hrs	# #	145 240	
S. BLACK/GREY & WATER BALLAST TANKS IMO PSPC							
<u>Water Ballast Tanks</u>							
Standard: BALLOXY HB LIGHT (green) BALLOXY HB LIGHT (beige or grey)	1 1	160 160	5.1 5.1	10 hrs 10 hrs	# #	150 150	
Alternative: JOTACOTE UNIVERSAL (alu. red toned) JOTACOTE UNIVERSAL (grey)	1 1	160 160	4.5 4.5	4 hrs 4 hrs	# #	240 240	
<u>Black & Grey Water Tanks</u>							
Standard: TANKGUARD STORAGE (light red) TANKGUARD STORAGE (red)	1 1	150 150	4.2 4.2	10 hrs 10 hrs	30 days 30 days	310 310	
Alternative: TANKGUARD DW (light grey) TANKGUARD DW (white)	1 1	150 150	6.7 6.7	12 hrs 12 hrs	5 days 5 days	2 2	

ANNEX D
WHOLE SHIP SPECIFICATIONS
Proposed by

JOTUN COATINGS (EUROPE) LTD

<u>Proposed Systems /Materials</u>	<u>Number of Coats</u>	<u>NDFT per coat microns</u>	<u>Theo SR m²/litre</u>	<u>Min@ 20° Recoat Interval</u>	<u>Max@ 20° Recoat Interval</u>	<u>VOC gms per litre</u>	<u>NATO Stock Number</u>
T. MACHINERY SPACE BILGES Primer: JOTACOTE UNIVERSAL (alu. red toned) Finish: HARDTOP CA (BS4800 00A01)	1 1 or 2	125 75	5.8 10.1	4 hrs 4 hrs	# #	240 215	
U. AVCAT, DIESEL, LUB & HYDRAULIC OIL TANKS SYSTEM DEF STAN 80-97 (HIGH SOLIDS) TANKGUARD STORAGE (light red) TANKGUARD STORAGE (light grey)	1 1	125 125	5.0 5.0	10 hrs 10 hrs	30 days 30 days	310 310	
V. POTABLE WATER TANKS TANKGUARD DW (light grey) TANKGUARD DW (white)	1 1	150 150	6.7 6.7	12 hrs 12 hrs	5 days 5 days	2 2	
W. AQUEOUS FILM-FORMING FOAM (AFFF) TANKS TANKGUARD DW (light grey) TANKGUARD DW (white)	1 1	150 150	6.7 6.7	12 hrs 12 hrs	5 days 5 days	2 2	
X. DEMINERALISED WATER TANKS (Max Temperature 90 °C) <u>Standard:</u> TANKGUARD STORAGE (light grey) TANKGUARD STORAGE (light red) TANKGUARD STORAGE (light grey) <u>Alternative:</u> TANKGUARD PLUS (white) TANKGUARD PLUS (buff) TANKGUARD PLUS (white)	1 1 1 1 1	125 125 125 100 100 100	5.0 5.0 5.0 7.0 7.0 7.0	10 hrs 10 hrs 10 hrs 20 hrs 20 hrs 20 hrs	30 days 30 days 30 days 21 days 21 days 21 days	310 310 310 300 300 300	
Y. EPOXY HOLDING PRIMER MUKI EPS (red)	1	20	12.5	7 hrs		610	
Z. PRIMERS FOR NON-FERROUS METALS <u>Aluminium, Stainless steel, Zinc Spray or Galvanised surfaces:</u> WATERFINE PRIMER (white) <u>FRP Indicator Coat:</u> PENGUARD HB (White)							99-462-9708

ANNEX D
WHOLE SHIP SPECIFICATIONS
Proposed by

JOTUN COATINGS (EUROPE) LTD

NOTES:-

1. The recoat intervals published above are based on the Manufacturer's figures quoted for 23°C
2. The number of coats stated in the above table, relate to airless spray application to achieve the stated Nominal Dry Film Thickness (NDFT). Should brush application be required for touch up and repair then additional coats may be necessary to achieve the required NDFT.
3. # = See Manufacturer's Technical Data Sheet / Application instructions for requirements.
4. It is important to ensure that surfaces are clean and free of contamination when overcoating materials, that have been left exposed, this is especially true for those products with an indefinite recoat interval.
5. The Theoretical Spreading Rate (Theo SR) quoted in the table above, per coat, is calculated from the coatings physical constants and makes no allowance for loss and assumes a totally smooth surface. The actual spreading rate achieved (Practical SR) is dependent upon many factors and in practice the factor used may vary from as little as 1.05 up to as much as 4+. It is usual for Paint Manufacturers to use figures of 1.3 or 1.4 for estimating purposes but they always add the caveat that actual consumption achieved may vary due to such factors as surface profile, wastage due to material left in the can, weather conditions, skill of operator etc.
6. ~ = Use blast primer Y. when appropriate

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ANNEX E
WHOLE SHIP SPECIFICATION
Proposed by

MAKER COATING SYSTEMS LTD.
Incorporating: PPG, Ameron, Sigma & CORROLESS

Proposed Systems/Materials	Number of Coats	NDFT per coat microns	Theo SR m ² /litre	Min @ 20° Recoat Interval	Max @ 20° Recoat Interval	VOC gms per ltr	NATO Stock Number
A. B/W HULL PRIMER (Re-blast)							
Standard: SIGMASHIELD 220 7922 Alternative: SIGMASHIELD 420 7951	1 1	125 150	6.4 5.6	3½ hrs 3½ hrs	14 days 14 days	262 239	99-403-5015 99-723-3658
Tie-Coat (if req'd): SIGMACOVER 525 7902	1	100	6.1	12 hrs	14 days	365	
B. B/W HULL PRIMER (T/U at Docking)							
Standard: SIGMASHIELD 220 7922 Alternative: SIGMASHIELD 420 7951	1 1	125 150	6.4 5.6	3½ hrs 3½ hrs	14 days 14 days	262 239	99-403-5015 99-723-3658
Tie-Coat (if req'd): SIGMACOVER 525 7902	1	100	6.1	12 hrs	14 days	365	
C. ANTIFOULING (Self Polishing Copolymer – SPC 5yr life)							
SIGMA ECOFLEET 530 (red brown) 7385 SIGMA ECOFLEET 530 (brown) 7385	1 1	110 110	5.4 5.4	6 hrs 6 hrs	# #	339 339	
D. ANTIFOULING SYSTEM (Foul Release - FR 5yr + life)							
SIGMACOVER 295 7947 SIGMASHIELD 610 7978 SIGMAGLIDE 790 7386	1 1 1	100 150 150	5.5 3.8 5.3	16 hrs 12 hrs 12 hrs	10 days 5 days 5 days	436 436 187	
SIGMAGLIDE 890: Silicone FR Finish 7399	1	150	3.4	20 mins	#	215	
SIGMAGLIDE 990: High Efficiency FR Finish 7397	1	180	4.4	2 hrs	#	248	
E. ANTIFOULING FINISH (SPC 3yr + life)							
SIGMA ECOFLEET 530 (red brown) 7385 SIGMA ECOFLEET 530 (brown) 7385	1 1	110 110	5.4 5.4	6 hrs 6 hrs	# #	339 339	
F. BOOTTOP ANTIFOULING FINISH (SPC)							
SIGMA ECOFLEET 530 (black) 7385	1	110	5.4	6 hrs	#	339	
G. A/W HULL & SUPERSTRUCTURE PRIMER (Reblast)							
Standard: AMERLOCK 400C Alternative: SIGMA AQUACOVER 25 7150	1 2	125 75	7 6.6	16 hrs 4 hrs	# #	106 37	99-974-7400 99-321-6318
H. A/W HULL & SUPERSTRUCTURE PRIMER (Touch Up)							
Standard: AMERLOCK 400C Alternative: SIGMASHIELD 220 7922	1 1	125 125	7 6.4	16 hrs 3½ hrs	# 14 days	106 262	99-974-7400 99-403-5015

ANNEX E
WHOLE SHIP SPECIFICATION
Proposed by

MAKER COATING SYSTEMS LTD.
Incorporating: PPG, Ameron, Sigma & CORROLESS

Proposed Systems/Materials	Number of Coats	NDFT per coat microns	Theo SR m ² /litre	Min @ 20° Recoat Interval	Max @ 20° Recoat Interval	VOC gms per ltr	NATO Stock Number
J. <u>A/W HULL & SUPERSTRUCTURE FINISH</u> Lt Weatherwork Grey <u>Polysiloxane:</u> AMERON PSX700 <u>Epoxy Acrylic:</u> SIGMADUR 540 7740	1	75	12	3 hrs	#	164	
	1	50	10.8	8 hrs	#	411	
K. <u>FLIGHT & WEATHERDECK SYSTEMS - DEFSTAN 80-134</u> (a) <u>Hangar Doors</u> [Factory finished - Interpon 610 – see International Paints WSS] (b) <u>Flight & Weatherdeck - Type 2 Non-skid Finish (coarse)</u> <u>Primer:</u> AMERLOCK 400C <u>Finish:</u> AMERLOCK 400 NS Extra Dark Sea Grey BS381C 640 <u>Type 2 Repair Kit:</u> AMERLOCK 400 NS T2R (c) <u>Hanger & Weatherdeck - Type 1 Non-skid Finish (fine)</u> <u>Primer:</u> AMERLOCK 400C <u>Hangar Deck:</u> AMERLOCK 400 NS Dark Admiralty Grey BS 381C 632 <u>Weatherdeck:</u> AMERLOCK 400 NS Extra Dark Sea Grey BS 381C 640 <u>Type 1 Repair Kit:</u> AMERLOCK 400 NS T1R (d) <u>Gloss for Deck Margins:</u> AMERLOCK 400C BS 381C 640	1	125	7	16 hrs	#	106	99-974-7400
	2	400	2.3	16 hrs	#	106	99-940-6452
L. <u>INTERIOR DRY COMPARTMENTS (Complete Represervation)</u> <u>Primer:</u> AMERLOCK 400C <u>Finish:</u> AMERLOCK 400C BS4800 00A01	1	100	7	16 hrs	#	106	99-974-7400
	1	100	7	16 hrs	#	106	99-958-6062
M. <u>INTERIOR DRY COMPARTMENTS (Touch up)</u> <u>Standard Primer:</u> AMERLOCK 400C <u>Finish:</u> AMERLOCK 400C BS4800 00A01 <u>Alternative Primer:</u> SIGMA AQUACOVER 25 7150 <u>Finish:</u> SIGMA AQUACOVER 45 7250	1	100	7	16 hrs	#	106	99-974-7400
	1	100	7	16 hrs	#	106	99-958-6062
	1	75	5.7	4 hrs	#	25	
	1	50	6.8	24 hrs	#	10	99-236-5744

ANNEX E
WHOLE SHIP SPECIFICATION
Proposed by

MAKER COATING SYSTEMS LTD.
Incorporating: PPG, Ameron, Sigma & CORROLESS

Proposed Systems/Materials	Number of Coats	NDFT per coat microns	Theo SR m ² /litre	Min@ 20° Recoat Interval	Max@ 20° Recoat Interval	VOC gms per ltr	NATO Stock Number
N. INTERIOR WET COMPARTMENTS (Complete Represervation) BS4800 00A01							
Primer: AMERLOCK 400C	1	100	7	16 hrs	#	106	99-974-7400
Standard Finish: AMERLOCK 400C	1	100	7	16 hrs	#	106	99-958-6062
Citadel Lobby Finish: AMERLOCK 400C or Grey BS381C 676	1	100	7	16 hrs	#	106	99-958-6062
Magazines Finish: AMERLOCK 400C	1	100	7	16 hrs	#	106	99-958-6062
Cleansing Stations Primer: AMERLOCK 400C Finish: AMERON PSX 700	1 1	125 125	7 7.2	16 hrs 4.5 hrs	# #	106 120	99-974-7400 17-113-5689
O. INTERIOR WET COMPARTMENTS (Touch-up) BS4800 00A01							
Primer: AMERLOCK 400C	1	100	7	16 hrs	#	106	99-974-7400
Standard Finish: AMERLOCK 400C	1	100	7	16 hrs	#	106	99-958-6062
Citadel Lobby Finish: AMERLOCK 400C or Grey BS381C 676	1	100	7	16 hrs	#	106	99-958-6062
Magazines Finish: AMERLOCK 400C	1	100	7	16 hrs	#	106	99-958-6062
Cleansing Stations Primer: AMERLOCK 400C Finish: AMERON PSX 700	1 1	125 125	7 7.2	16 hrs 4.5 hrs	# #	106 120	99-974-7400 17-113-5689
P. INTERIOR DECKS BS4800 14C39							
Primer: AMERLOCK 400C	1	125	7	16 hrs	#	106	99-974-7400
Finish: AMERCOAT 300A	1	50	10.4	16 hrs	#	0	17-113-5690
Cleansing Stations Finish: AMERON PSX 700	1	125	7.2	4.5 hrs	#	120	17-113-6169
Q. BATTERY COMPARTMENTS BS4800 00A01							
Primer: AMERLOCK 400C	1	100	7	16 hrs	#	106	99-974-7400
Finish: AMERLOCK 400C	1	100	7	16 hrs	#	106	99-958-6062
R. CABLE LOCKERS & COFFERDAMS							
SIGMAGUARD CSF 650 7443	1	350	2.9	24 hrs	20 days	143	
S. BLACK, GREY & SEAWATER BALLAST TANKS							
CORROLESS EPF	1	200	4.8	16 hrs	#	80	25-150-0972
CORROLESS RF35	1	200	4.8	16 hrs	#	93	99-337-0778

ANNEX E
WHOLE SHIP SPECIFICATION
Proposed by

MAKER COATING SYSTEMS LTD.
Incorporating: PPG, Ameron, Sigma & CORROLESS

Proposed Systems/Materials	Number of Coats	NDFT per coat microns	Theo SR m ² /litre	Min @ 20° Recoat Interval	Max @ 20° Recoat Interval	VOC gms per ltr	NATO Stock Number
T. MACHINERY SPACE BILGES AMERLOCK 400C WHITE	2	125	7	16 hrs	#	106	17-108-8248
U. AVCAT, DIESEL, LUB & HYDRAULIC OIL TANKS SYSTEM DEF-STAN 80-97 (HIGH SOLIDS) CORROLESS EPF CORROLESS RF35	1 1	200 200	4.8 4.8	16 hrs 16 hrs	3 days 3 days	80 93	25-150-0972 25-150-0973
V. POTABLE WATER TANKS CORROLESS EPF CORROLESS RF35	1 1	200 200	4.8 4.8	16 hrs 16 hrs	3 days 3 days	80 93	25-150-0972 99-337-0778
W. AQUEOUS FOAM FORMING FLUID (AFFF) TANKS <u>Standard:</u> CORROLESS EPF CORROLESS RF35 <u>Alternative:</u> SIGMAGUARD CSF 650 7443	1 1 1	200 200 350	4.8 4.8 2.9	16 hrs 16 hrs 24 hrs	3 days 3 days 20 days	80 93 143	25-150-0972 99-337-0778
X. DEMINERALISED WATER TANKS (Max Temperature 60°C) <u>Standard:</u> CORROLESS EPF CORROLESS RF35 <u>Alternative:</u> SIGMAGUARD CSF 650 7443	1 1 1	200 200 350	4.8 4.8 2.9	16 hrs 16 hrs 24 hrs	3 days 3 days 20 days	80 93 143	25-150-0972 99-337-0778
Y. EPOXY HOLDING PRIMER SIGMACOVER 280 7417	1	50	11.4	8 hrs	6 months	432	99-569-7697
Z. PRIMERS FOR NON-FERROUS METALS & FRP <u>Stainless Steel:</u> SIGMACOVER 280 <u>Aluminium / Zinc Spray / Galvanise:</u> AMERLOCK 400C <u>Indicator coat for FRP:</u> AMERLOCK 400C Green RAL 6011	1 1 1	50 125 125	11.4 7 7	8 hrs 16 hrs 16 hrs	# # #	432 106 106	99-974-7400 17-120-4829

ANNEX E
WHOLE SHIP SPECIFICATION
Proposed by

MAKER COATING SYSTEMS LTD.
Incorporating: PPG, Ameron, Sigma & CORROLESS

Notes:

1. The recoat intervals published above are based on the manufacturer's figures quoted for 20°C
2. The number of coats stated in the above table, relate to airless spray application to achieve the stated Nominal Dry Film Thickness (NDFT). Should brush application be required for touch up and repair then additional coats may be necessary to achieve the required NDFT.
3. # = No maximum recoat interval, see Manufacturer's Technical Data Sheet/Application Instructions for requirements.
4. It is important to ensure that surfaces are clean and free of contamination when overcoating materials, that have been left exposed, this is especially true for those products with an indefinite recoat interval.
5. The Theoretical Spreading Rate (TSR) quoted in the table above is calculated from the coatings physical constants and makes no allowance for loss and assumes a totally smooth surface. The actual spreading rate achieved Practical Spreading Rate (PSR) is dependent upon many factors and in practice the factor used may vary from as little as 1.05 up to as much as 4+. It is usual for paint manufactures to use figures of 1.3 or 1.4 for estimating purposes but they always add the caveat that actual consumption achieved may vary due to such factors as surface profile, wastage due to material left in the can, weather conditions, skill of operator etc.
6. ~ = Use blast primer Y. when appropriate

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ANNEX F
WHOLE SHIP SPECIFICATIONS
Proposed by

PPG Protective & Marine Coatings

Proposed Systems/Materials	Number of Coats	NDFT per coat microns	Theo SR m ² /litre	Min @ 20° Recoat Interval	Max @ 20° Recoat Interval	VOC gms per ltr	NATO Stock Number
A. B/W HULL PRIMER (Re-blast) ~							
Standard: SIGMAHIELD 240 7991	1	175	5	5hrs	30 days	153	
Tie Coat (for C, E & F if req'd): SIGMACOVER 525 7902	1	75	8.2	12 hrs	14 days	365	
B. B/W HULL PRIMER (T/U at Docking)							
Standard: SIGMAHIELD 240 7991	1	175	5	5hrs	30 days	153	
Tie Coat (for C, E & F if req'd): SIGMACOVER 525 7902	1	75	8.2	12 hrs	14 days	365	
C. ANTIFOULING FINISH (Self Polishing Copolymer - SPC 5yr life)							
SIGMA ECOFLEET 530 (red brown) 7385	1	175	3.4	6 hrs	#	339	
SIGMA ECOFLEET 530 (brown) 7385	1	175	3.4	6 hrs	#	339	
D. ANTIFOULING SYSTEM (Foul Release - FR 5yr + life)							
SIGMAHIELD 240 7991	1	125	7	5hrs	30 days	153	
SIGMAHIELD 610 7978	1	150	3.8	12 hrs	5 days	437	
SIGMAGLIDE 790 7386	1	150	5.3	12 hrs	5 days	187	
SIGMAGLIDE 890: Silicone FR Finish 7399	1	150	3.4	20 mins	#	215	
SIGMAGLIDE 990: High Efficiency FR Finish 7397	1	180	4.4	2 hrs	#	248	
SIGMAGLIDE 1290: Low-speed Slime Release Finish	1	180	4.8	#	#	118	
Seek approval. Operational req'ment req'd due to additional H&S risks.							
E. ANTIFOULING (SPC 3yr life)							
SIGMA ECOFLEET 530 (red brown) 7385	1	110	5.4	6 hrs	#	339	
SIGMA ECOFLEET 530 (brown) 7385	1	110	5.4	6 hrs	#	339	
F. BOOTTOP ANTIFOULING (SPC)							
SIGMA ECOFLEET 530 (black) 7385	1	110	5.4	6 hrs	#	339	
G. A/W HULL & SUPERSTRUCTURE PRIMER (Re-blast)							
Standard: SIGMAHIELD 240 7991	1	150	5.8	5hrs	30 days	153	
Alternative: SIGMA AQUACOVER 25 7150	2	75	6.6	4 hrs	#	31	99-321-6318
H. A/W HULL & SUPERSTRUCTURE PRIMER (Touch Up)							
Standard: SIGMAHIELD 240 7991	1	150	5.8	5hrs	30 days	153	
Alternative: SIGMAHIELD 220 7922	1	150	5.3	3½ hrs	14 days	262	99-403-5015

ANNEX F
WHOLE SHIP SPECIFICATIONS
Proposed by

PPG Protective & Marine Coatings

<u>Proposed Systems/Materials</u>	Number of Coats	NDFT per coat microns	Theo SR m ² /litre	Min @ 20° Recoat Interval	Max @ 20° Recoat Interval	VOC gms per ltr	NATO Stock Number
J. <u>A/W HULL & SUPERSTRUCTURE FINISH</u> BS 381C 676 Light Weatherwork Grey							
<u>Polysiloxane:</u> SIGMA PSX700 7777	1	75	12	3 hrs	#	164	
<u>Epoxy Acrylic:</u> SIGMADUR 540 7740	1	50	10.8	8 hrs	#	411	
<u>Urethane Polyester:</u> SIGMADUR ONE 7533	1	50	10.6	8 hrs	#	400	
K. <u>FLIGHT & WEATHERDECK SYSTEMS – DEF STAN 80-134</u>							
(a) <u>Hangar Doors</u> [Factory finished - Interpon 610 – see International Paints WSS]							
(b) <u>Flight Deck - Type 2 Non-skid Finish</u>							
<u>Primer:</u> AMERCOAT 137	1	125	3.9	12 hrs	3 days	264	
<u>Finish:</u> AMERCOAT 138L Extra Dark Sea Grey BS 381C 640	1	1300	0.6	24 hrs	#	168	1 coat?
<u>Type 2 Repair Kit:</u>							
(c) <u>Hanger Deck & Weatherdeck - Type 1 Non-Skid Finish</u>							
<u>Primer:</u> AMERCOAT 137 DECK PRIMER	1	125	3.9	12 hrs	3 days	264	
<u>Hangar Deck:</u> AMERCOAT 138G Dark Admiralty Grey BS 381C 632	1	1300	0.6	24 hrs	#	168	1 coat?
<u>Weatherdeck:</u> AMERCOAT 138G Extra Dark Sea Grey BS 381C 640	1	1300	0.6	24 hrs	#	168	1 coat?
<u>Type 1 Repair Kit:</u>							
(d) <u>Gloss for Deck Margins:</u> SIGMADUR 540 7740	1	50	12	8 hrs	#	411	
L. <u>INTERIOR DRY SPACES (Complete Represerve)</u> BS 4800 00A01							
<u>Standard Primer:</u> SIGMA AQUACOVER 25 7150	1	75	6.6	4 hrs	#	31	99-321-6318
<u>Finish:</u> SIGMA AQUACOVER 45 7250	1	50	6.8	6 hrs	#	17	99-277-8693
<u>Alternative Primer:</u> SIGMACOVER 240 7991	1	75	11.6	5 hrs	30 days	153	
<u>Finish:</u> SIGMACOVER 240 7991	1	75	11.6	5 hrs	30 days	153	
M. <u>INTERIOR DRY SPACES (Touch up)</u> BS 4800 00A01							
<u>Standard Primer:</u> SIGMA AQUACOVER 25 7150	1	75	6.6	4 hrs	#	31	99-321-6318
<u>Finish:</u> SIGMA AQUACOVER 45 7250	1	50	6.8	6 hrs	#	17	99-277-8693
<u>Alternative Primer:</u> SIGMACOVER 240 7991	1	75	11.6	5 hrs	30 days	153	
<u>Finish:</u> SIGMACOVER 240 7991	1	75	11.6	5 hrs	30 days	153	

ANNEX F
WHOLE SHIP SPECIFICATIONS
Proposed by

PPG Protective & Marine Coatings

Proposed Systems/Materials	Number of Coats	NDFT per coat microns	Theo SR m ² /litre	Min @ 20° Recoat Interval	Max @ 20° Recoat Interval	VOC gms per ltr	NATO Stock Number
N. INTERIOR WET SPACES (Complete Represerve) BS 4800 00A01							
Standard Areas <u>Primer:</u> SIGMACOVER 240 7991	1	100	8.7	5 hrs	30 days	153	
<u>Finish:</u> SIGMACOVER 240 7991	1	100	8.7	5 hrs	30 days	153	
Citadel Lobby <u>Primer:</u> SIGMACOVER 240 7991	1	75	11.6	5 hrs	30 days	153	
& Magazine <u>Finish:</u> SIGMAHIELD 420 7951	1	150	5.6	3½ hrs	14 days	212	99-549-3974
or Grey BS 381C 676							
Cleansing Stations: SIGMAGUARD CSF 650 7443	1	350	2.9	24 hrs	20 days	143	
O. INTERIOR WET SPACES (Touch-up) BS 4800 00A01							
Standard Areas <u>Primer:</u> SIGMACOVER 240 7991	1	100	8.7	5 hrs	30 days	153	
<u>Finish:</u> SIGMACOVER 240 7991	1	100	8.7	5 hrs	30 days	153	
Citadel Lobby <u>Primer:</u> SIGMACOVER 240 7991	1	75	11.6	5 hrs	30 days	153	
& Magazine <u>Finish:</u> SIGMAHIELD 420 7951	1	150	5.6	3½ hrs	14 days	212	99-549-3974
or Grey BS 381C 676							
Cleansing Stations: SIGMAGUARD CSF 650 7443	1	350	2.9	24 hrs	20 days	143	
P. INTERIOR DECKS BS 4800 Green 14C39							
Standard & Cleansing Stations							
<u>Primer:</u> SIGMACOVER 240 7991	1	100	8.7	5 hrs	30 days	153	
<u>Finish:</u> SIGMACOVER 400 7988	1	100	8.5	16 hrs	30 days	180	
Q. BATTERY COMPARTMENTS BS4800 00A01							
<u>Primer:</u> SIGMACOVER 240 7991	1	100	8.7	5 hrs	30 days	153	
<u>Finish:</u> SIGMACOVER 400 7988	1	100	8.5	16 hrs	30 days	180	
R. CABLE LOCKERS & COFFERDAMS							
SIGMACOVER 240 7991	1	150	5.8	5 hrs	30 days	153	
S. BLACK, GREY & SEAWATER BALLAST TANKS IMO PSPC							
Water Ballast Tanks: SIGMACOVER 240 7991	2	160	5.4	5 hrs	30 days	153	
Black / Grey Water Tanks: SIGMAGUARD CSF650 7443	1	350	2.9	24 hrs	20 days	143	
T. MACHINERY SPACE BILGES							
SIGMACOVER 240 7991	1	175	5	5 hrs	30 days	153	

ANNEX F
WHOLE SHIP SPECIFICATIONS
Proposed by

PPG Protective & Marine Coatings

Proposed Systems/Materials	Number of Coats	NDFT per coat microns	Theo SR m ² /litre	Min @ 20° Recoat Interval	Max @ 20° Recoat Interval	VOC gms per ltr	NATO Stock Number
U. <u>AVCAT, DIESO, LUB & HYDRAULIC OIL TANKS SYSTEM</u> DEF STAN 80-97 (HIGH SOLIDS) SIGMAGUARD CSF 650 7443	1	350	2.9	24 hrs	20 days	143	
V. <u>POTABLE WATER TANKS</u> SIGMAGUARD CSF 585 7785	1	300	3.3	24 hrs	20 days	6	
W. <u>AQUEOUS FILM-FORMING FOAM (AFFF) TANKS</u> SIGMAGUARD CSF 650 7443	1	350	2.9	24 hrs	20 days	143	
X. <u>DEMINERALISED WATER TANKS (Max Temperature 60°C)</u> SIGMAGUARD CSF 650 7443	1	350	2.9	24 hrs	20 days	143	
Y. <u>REFIT / MAINTENANCE EPOXY HOLDING PRIMER</u> SIGMACOVER 280 7417	1	50	11.4	8 hrs		430	99-569-7697
Z. <u>PRIMERS FOR NON-FERROUS METALS & FRP</u> <u>Aluminium / Stainless Steel / Zinc Spray / Galvanise:</u> SIGMACOVER 280 7417 <u>Indicator coat for FRP:</u> AMERLOCK 400C Green RAL 6011	1	50	11.4	8 hrs	3 months	432	99-569-7697
	1	125	7	16 hrs	#	106	17-120-4829

ANNEX F
WHOLE SHIP SPECIFICATIONS
Proposed by

PPG Protective & Marine Coatings

Notes:

1. The recoat intervals published above are based on the manufacturer's figures quoted for 20°C
2. The number of coats, stated in the above table, relate to airless spray application to achieve the stated Nominal Dry Film Thickness (NDT). Should brush application be required for touch up and repair then additional coats may be necessary to achieve the required NDFT.
3. # = No maximum recoat interval, see Manufacturer's Technical Data Sheet/Application Instructions for requirements.
4. It is important to ensure that surfaces are clean and free of contamination when overcoating materials, that have been left exposed, this is especially true for those products with an indefinite recoat interval.
5. The Theoretical Spreading Rate (TSR) quoted in the table above is calculated from the coatings physical constants and makes no allowance for loss and assumes a totally smooth surface. The actual spreading rate achieved Practical Spreading Rate (PSR) is dependent upon many factors and in practice the factor used may vary from as little as 1.05 up to as much as 4+. It is usual for paint manufacturers to use figures of 1.3 or 1.4 for estimating purposes but they always add the caveat that actual consumption achieved may vary due to such factors as surface profile, wastage due to material left in the can, weather conditions, skill of operator etc.
6. ~ = Use blast primer Y. when appropriate

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ANNEX G
WHOLE SHIP SPECIFICATIONS
Proposed by

SHERWIN WILLIAMS Protective & Marine Coatings

Proposed Systems/Materials	Number of Coats	NDFT per coat microns	Theo SR m ² /litre	Min @ 20° Recoat Interval	Max @ 20° Recoat Interval	VOC gms per ltr	NATO Stock Number
A. B/W HULL PRIMER (Re-blast) ~							
EPIGRIP C425V2	1	175	4.3	8 hrs	#	186	99-786-7949
<u>Tie Coat (if req'd): RESISTEX M535</u>	1	50	8.0	2 hrs	#	502	99-453-1479
B. B/W HULL PRIMER (T/U at Docking)							
EPIGRIP C425V2	1	175	4.3	8 hrs	#	186	99-786-7949
<u>Tie Coat (if req'd): RESISTEX M535</u>	1	50	8.0	2 hrs	#	502	99-453-1479
C. ANTIFOULING FINISH (Self Polishing Copolymer - SPC 5yr life)							
TBC							
D. ANTIFOULING SYSTEM (Foul Release - FR 5yr + life)							
TBC							
E. ANTIFOULING (SPC 3yr + life)							
ENVOY TF 500 Brown	1	75	8.4	6 hrs	#	390	
ENVOY TF 500 Red	1	75	8.4	6 hrs	#	390	
F. BOOTTOP ANTIFOULING (SPC)							
ENVOY TF 500 Black	2	75	8.4	6 hrs	#	390	99-423-7738
G. A/W HULL & SUPERSTRUCTURE PRIMER (Re-blast) ~							
EPIGRIP C425V2	1	100	7.5	4 hrs	#	186	99-786-7949
H. A/W HULL & SUPERSTRUCTURE PRIMER (Touch-up)							
EPIGRIP C425V2	1	100	7.5	4 hrs	#	186	99-786-7949

ANNEX G
WHOLE SHIP SPECIFICATIONS
Proposed by

SHERWIN WILLIAMS Protective & Marine Coatings

Proposed Systems/Materials	Number of Coats	NDFT per coat microns	Theo SR m ² /litre	Min @ 20° Recoat Interval	Max @ Recoat Interval	VOC gms per ltr	NATO Stock Number
J. A/W HULL & SUPERSTRUCTURE FINISH BS 381C 676							
<u>Silicone Alkyd:</u> LEIGHS A165	1	35	14.6	16 hrs	#	407	99-982-2604
<u>Acrylic Epoxy:</u> EPIGRIP C750V2	1	50	10.6	3 hrs	#	364	99-212-2175
<u>Tie Coat (if req'd):</u> LEIGHS M671	1	35	14.9	4 hrs	#	380	99-872-1746
<u>Sealer for RASH:</u> ENVIROGARD M260	1	35	12.5	2 hrs	#	49	99-660-9717
K. FLIGHT & WEATHERDECK SYSTEMS – DEF STAN 80-134							
(a) Hangar Doors							
[Factory finished - Interpon 610 – see International Paints WSS]							
(b) Flight & Weatherdeck - Type 2 Non-skid Finish (Coarse) BS 381C 640							
<u>Primer:</u> EPIGRIP C425V2	1	125	6.0	4 hrs	#	186	99-786-7949
<u>Finish:</u> EPIDEK M339 Extra Dark Sea Grey	2	200	1.8	4 hrs	#	250	99-215-4495
<u>Type 2 Repair Kit:</u> EPIDEK F339							99-383-4334
(c) Hanger & Weatherdeck - Type 1 Non-skid Finish (fine) BS 381C 640							
<u>Primer:</u> EPIGRIP C425V2	1	125	6.0	4 hrs	#	186	99-786-7949
<u>Hangar Deck:</u> EPIDEK M377 Dark Admiralty Grey BS 381C 632	2	250	2.5	4 hrs	#	330	99-777-8689
<u>Weatherdeck:</u> EPIDEK M377	2	250	2.5	4 hrs	#	330	
<u>Type 1 Repair Kit:</u> EPIDEK F377							99-087-4902
(d). Gloss for Deck Margins: EPIGRIP M262	1	75			#	354	99-133-8713
L. INTERIOR DRY COMPARTMENTS (Complete Represervation)							
<u>Primer:</u> EPIGRIP C425V2	1	125	6.0	5 hrs	#	186	99-786-7949
<u>Finish:</u> ENVIROGARD M770 BS 4800 00A01	1	25	15.6	3 hrs	#	78	99-517-5228
M. INTERIOR DRY COMPARTMENTS (Touch up)							
<u>Primer:</u> EPIGRIP C425V2	1	125	6.0	5 hrs	#	186	99-786-7949
<u>Finish:</u> ENVIROGARD M770 BS 4800 00A01	2	25	15.6	3 hrs	#	78	99-517-5228

ANNEX G
WHOLE SHIP SPECIFICATIONS
Proposed by

SHERWIN WILLIAMS Protective & Marine Coatings

Proposed Systems/Materials	Number of Coats	NDFT per coat microns	Theo SR m ² /litre	Min@ 20° Recoat Interval	Max@ 20° Recoat Interval	VOC gms per ltr	NATO Stock Number
N. INTERIOR WET COMPARTMENTS (Complete Represervation)							
<u>Primer:</u> EPIGRIP C425V2	1	125	6.0	5 hrs	#	186	99-786-7949
<u>Standard Areas Finish:</u> BIOGARD M630V2 BS 4800 00A01	1	75	6.8	24 hrs	#	0	99-535-5105
<u>Citadel lobby Finish:</u> BIOGARD M630V2 - Colour either: White BS 4800 00A01 or Grey BS 381C 676	1	75	6.8	24 hrs	#	66	99-535-5105
<u>Cleansing Stations Finish:</u> EPIGRIP H766 White	1	40	14.0	5 hrs	#	395	99-623-9946
<u>Magazine Finish:</u> BIOGARD M630V2 BS 4800 00A01	1	75	6.8	24 hrs	#	0	99-535-5105
O. INTERIOR WET COMPARTMENTS (Touch-up)							
<u>Primer:</u> EPIGRIP C425V2	1	125	6.0	5 hrs	#	186	99-786-7949
<u>Standard Areas Finish:</u> BIOGARD M630V2 BS 4800 00A01	1	75	6.8	24 hrs	#	0	99-535-5105
<u>Citadel lobby Finish:</u> BIOGARD M630V2 - Colour either: White BS 4800 00A01 or Grey BS 381C 676	1	75	6.8	24 hrs	#	66	99-535-5105
<u>Cleansing Stations Finish:</u> EPIGRIP H766 White	1	40	14.0	5 hrs	#	395	99-623-9946
<u>Magazine Finish:</u> BIOGARD M630V2 BS 4800 00A01	1	75	6.8	24 hrs	#	0	99-535-5105
P. INTERIOR DECKS Green BS 4800 14C39							
<u>Standard Primer:</u> EPIGRIP C425V2	1	125	6.0	5 hrs	#	186	99-786-7949
<u>Finish:</u> BIOGARD M630V2	1	75	6.8	24 hrs	#	0	99-255-5237
<u>Cleansing Stations Finish:</u> EPIGRIP H766	1	40	14.0	5 hrs	#	395	99-501-4661
Q. BATTERY COMPARTMENTS							
<u>Primer:</u> EPIGRIP C425V2	1	100	7.5	4hrs	#	197	99-786-7949
<u>Finish:</u> BIOGARD M630V2 BS 4800 00A01	1	75	6.8	24 hrs	#	0	99-535-5105
R. CABLE LOCKERS & COFFERDAMS							
EPIGRIP L524 WHITE	2	125	5.1	12 hrs	#	296	99-564-2934
S. BLACK/GREY & WATER BALLAST TANKS							
<u>Water Ballast Tanks:</u> EPIGRIP L524 (typical dft 125. care req'd on overlap at 160)	2	160	3.9	12 hrs	#	296	99-564-2934
<u>Black & Grey Water Tanks:</u> EPIGRIP C251	2	125	5.9	24 hrs	28 days	235	99-284-3464

ANNEX G
WHOLE SHIP SPECIFICATIONS
Proposed by

SHERWIN WILLIAMS Protective & Marine Coatings

Proposed Systems/Materials	Number of Coats	NDFT per coat microns	Theo SR m ² /litre	Min@ 20° Recoat Interval	Max@ 20° Recoat Interval	VOC gms per ltr	NATO Stock Number
T. MACHINERY SPACE BILGES BS 4800 00A01 EPIGRIP L524 Optional Hygiene Coat: BIOGARD M630V2	2 1	125 75	5.1 6.8	12 hrs 12 hrs	# #	296 0	99-564-2934 99-535-5105
U. AVCAT, DIESO, LUB & HYDRAULIC OIL TANKS SYSTEM DEF STAN 80-97 (HIGH SOLIDS) EPIGRIP M922	2	200	5.4	4 hrs	14 days	143	99-834-8384
V. POTABLE WATER TANKS WATERLINE P300	1	500	2.0	6 hrs	36 hrs	0	
W. AQUEOUS FILM-FORMING FOAM (AFFF) TANKS EPIGRIP C251	2	125	5.9	24 hrs	28 days	235	99-284-3464
X. DEMINERALISED WATER TANKS (Max Temperature 90°C) EPIGRIP C251	2	125	5.9	24 hrs	28 days	235	99-284-3464
Y. EPOXY HOLDING PRIMER METAGARD L574 Alternative & maintenance: EPIGRIP M111	1 1	25 60	11.6 9.0	3 hrs 4 hrs	# #	594 383	99-895-9894 99-884-5957
Z. PRIMERS FOR NON-FERROUS METALS Aluminium / Galvanise / Stainless Steel: EPIGRIP H795 Zinc Spray: METAGARD L574 Indicator Coat for FRP: EPIGRIP C425V2 Off white	1 1 1	35 25 100	10.9 11.6 7.5	4 hrs 3 hrs 4 hrs	# # #	575 594 186	99-225-0195 99-895-9894 99-133-8714

ANNEX G
WHOLE SHIP SPECIFICATIONS
Proposed by

SHERWIN WILLIAMS Protective & Marine Coatings

Notes:

1. The recoat intervals published above are based on the manufacturer's figures quoted for 23°C
2. The number of coats stated in the above table, relate to airless spray application to achieve the stated Nominal Dry Film Thickness (NDFT). Should brush application be required for touch up and repair then additional coats may be necessary to achieve the required NDFT.
3. # = Indefinite but see Manufacturer's Technical Data Sheet/Application Instructions for requirements.
4. It is important to ensure that surfaces are clean and free of contamination when overcoating materials, that have been left exposed, this is especially true for those products with an indefinite recoat interval.
5. The Theoretical Spreading Rate (TSR) quoted in the table above is calculated from the coatings physical constants and makes no allowance for loss and assumes a totally smooth surface. The actual spreading rate achieved Practical Spreading Rate (PSR) is dependent upon many factors and in practice the factor used may vary from as little as 1.05 up to as much as 4+. It is usual for paint manufactures to use figures of 1.3 or 1.4 for estimating purposes but they always add the caveat that actual consumption achieved may vary due to such factors as surface profile, wastage due to material left in the can, weather conditions, skill of operator etc.
6. ~ = Use blast primer Y. when appropriate.

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ANNEX H
WHOLE SHIP STOCK NUMBERS (NSNs)

1. WHOLE SHIP MATERIALS

Material	Supplier	Pack size	NSN
REMOVAL 510	Cirrus Systems Ltd	5 US gal	0810-99-871-5945
ALP 500	Chugoku Paints (UK) Ltd	5 litres	8010-99-967-8636
AQUALIFE GLOSS FINISH Ash Grey BS4800 00A01	Chugoku Paints (UK) Ltd	5 litres	8010-99-757-9334
AQUALIFE GLOSS FINISH BS381C 676 Light Weatherwork Grey	Chugoku Paints (UK) Ltd	5 litres	8010-99-375-9367
AQUALIFE GLOSS FINISH Green BS4800 14C39	Chugoku Paints (UK) Ltd	5 litres	8010-99-755-6242
AQUALIFE GLOSS FINISH White	Chugoku Paints (UK) Ltd	5 litres	8010-99-371-8400
AQUALIFE WSE PRIMER Grey	Chugoku Paints (UK) Ltd	5 litres	8010-99-398-1182
CAMACRYL FINISH MAC Ash Grey BS4800 00A01	Chugoku Paints (UK) Ltd	5 litres	8010-99-676-4126
CAMACRYL FINISH MAC Azure Blue BS381C 104	Chugoku Paints (UK) Ltd	5 litres	8010-99-366-5444
CAMACRYL FINISH MAC Canary BS381C 309	Chugoku Paints (UK) Ltd	5 litres	8010-99-446-0554
CAMACRYL FINISH MAC Dark Blue BS4800 18C39	Chugoku Paints (UK) Ltd	5 litres	8010-99-862-0034
CAMACRYL FINISH MAC Mid Brunswick Green BS381C 226	Chugoku Paints (UK) Ltd	5 litres	8010-99-794-2129
CAMACRYL FINISH MAC Wedgwood Blue BS4800 18D43	Chugoku Paints (UK) Ltd	5 litres	8010-99-665-3660
CAMACRYL FINISH MAC White	Chugoku Paints (UK) Ltd	5 litres	8010-99-380-7010
CAMSIL WB Black	Chugoku Paints (UK) Ltd	5 litres	8010-99-397-4388
CAMSIL WB GREY 541W 0224 Lt Weatherwork Grey BS381C 676	Chugoku Paints (UK) Ltd	5 litres	8010-99-327-9058
CAMSIL WB Lt Brunswick Green BS381C 225	Chugoku Paints (UK) Ltd	5 litres	8010-99-250-1029
CAMSIL WB Signal Red BS381C 537	Chugoku Paints (UK) Ltd	5 litres	8010-99-225-7163
GALVANITE 200 White	Chugoku Paints (UK) Ltd	5 litres	8010-99-995-4247
GALVANITE 200 White	Chugoku Paints (UK) Ltd	20 litres	8010-99-290-5829
NZ PRIMER S Red Oxide	Chugoku Paints (UK) Ltd	20 litres	8010-99-595-6056
UMEGUARD HS Grey	Chugoku Paints (UK) Ltd	5 litres	8010-99-126-9478
UMEGUARD HS White	Chugoku Paints (UK) Ltd	5 litres	8010-99-564-2409
BLAKES GELPROTECT SFE200 Cream	Hempel Paints Limited	2½ litres	8010-99-517-4318
HEMPADUR 15550 Off White 11630	Hempel Paints Limited	5 litres	8010-99-870-0653
HEMPADUR 15550 Off White 11630	Hempel Paints Limited	20 litres	8010-99-700-4191
HEMPADUR 15570 Light Grey 12430	Hempel Paints Limited	5 litres	8010-99-943-1152

ANNEX H
WHOLE SHIP STOCK NUMBERS (NSNs)

Material	Supplier	Pack size	NSN
HEMPADUR 15570 Light Grey 12430	Hempel Paints Limited	20 litres	8010-99-170-5097
HEMPADUR 45143 White 10000	Hempel Paints Limited	5 litres	8010-99-602-7280
HEMPADUR 45143 Red 50630	Hempel Paints Limited	5 litres	8010-99-535-5832
HEMPADUR 45880 White	Hempel Paints Limited	5 litres	8010-99-264-0387
HEMPADUR 45880 MIO 12430	Hempel Paints Limited	5 litres	8010-99-803-7233
HEMPADUR 45880 MIO 12430	Hempel Paints Limited	20 litres	8010-99-479-5449
HEMPADUR LTC 45143 GREEN BS4800 14C39	Hempel Paints Limited	5 litres	8010-99-471-1920
HEMPEL'S NON SKID (NO AGGREGATE) 45710 BS381C 640 (Extra dark sea grey)	Hempel Paints Limited	5 litres	8010-99-879-5150
HEMPEL'S NON SKID 45710 BS381C 640 (Extra dark sea grey) Type 2	Hempel Paints Limited	20 litres	8010-99-831-0343
HEMPEL'S NON SKID 45340 BS381C 640 (Extra dark sea grey) Type 1	Hempel Paints Limited	20 litres	8010-99-213-1121
HEMPELS NON SKID 457GB BLACK	Hempel Paints Limited	20 Kg	8010-99-507-2851
HEMPELS DECK MARKING 453GB Black	Hempel Paints Limited	20 litres	8010-99-480-7979
HEMPELS ANTIFOULING OLYMPIC 8695 Black	Hempel Paints Limited	20 litres	8010-99-147-9828
HEMPELS UNDERCOAT 424GB Grey	Hempel Paints Limited	2½ litres	8010-99-244-6752
HEMPELS SILICONE ALKYD FINISH 536GB Light Weatherwork Grey BS381C 676	Hempel Paints Limited	2½ litres	8010-99-772-5448
HEMPELS DECK MARKING 453GB White	Hempel Paints Limited	5 litres	8010-99-323-1118
HEMPELS DECK MARKING 453GB Green BS381C 225	Hempel Paints Limited	5 litres	8010-99-986-6762
HEMPELS DECK MARKING 453GB Red BS381C 537	Hempel Paints Limited	5 litres	8010-99-724-9085
HEMPELS DECK MARKING 453GB Black	Hempel Paints Limited	5 litres	8010-99-351-4222
HEMPELS DECK REPAIR KIT 941GB Type 2	Hempel Paints Limited	Pack	8010-99-340-2100
HEMPELS DECK REPAIR KIT 942GB Type 1	Hempel Paints Limited	Pack	8010-99-471-2960
HEMPELS NON SKID 45340 Grey BS3813 632 Type 1	Hempel Paints Limited	20 litres	8010-99-670-9581
HEMPELS WATER BASED EPOXY 48582 Black	Hempel Paints Limited	5 Litres	8010-99-864-5046
HEMPELS WATER BASED EPOXY 48582 BS4800 00A01 (Ash Grey)	Hempel Paints Limited	5 litres	8010-99-988-2715
HEMPELS WATER BASED EPOXY 48582 BS4800 14C39 (Green)	Hempel Paints Limited	5 litres	8010-99-279-8221
HEMPELS WATER BASED EPOXY 48582 BS381C 676 (Light Weatherwork Grey)	Hempel Paints Limited	5 litres	8010-99-976-9118
HEMUCRYL ENAMEL 58100 Azure Blue BS381C 104	Hempel Paints Limited	5 litres	8010-99-382-4025
HEMUCRYL ENAMEL 58100 Black	Hempel Paints Limited	5 litres	8010-99-175-1334
HEMUCRYL ENAMEL 58100 Canary BS381C 309	Hempel Paints Limited	5 litres	8010-99-858-1263
HEMUCRYL ENAMEL 58100 Dark Blue BS4800 18C39	Hempel Paints Limited	5 litres	8010-99-290-5925
HEMUCRYL ENAMEL 58100 Lt Brunswick Green BS381C 225	Hempel Paints Limited	5 litres	8010-99-831-8959

ANNEX H
WHOLE SHIP STOCK NUMBERS (NSNs)

Material	Supplier	Pack size	NSN
HEMUCRYL ENAMEL 58100 Mid Brunswick Green BS381C 226	Hempel Paints Limited	5 litres	8010-99-162-2531
HEMUCRYL ENAMEL 58100 Signal Red BS381C 537	Hempel Paints Limited	5 litres	8010-99-250-8046
HEMUCRYL ENAMEL 58100 Wedgwood Blue BS4800 18D43	Hempel Paints Limited	5 litres	8010-99-317-6235
HEMUCRYL ENAMEL 58100 Ash Grey BS4800 00A01	Hempel Paints Limited	5 litres	8010-99-660-9288
HEMUCRYL ENAMEL 58100 Golden Brown BS381C 414	Hempel Paints Limited	5 litres	8010-99-562-6381
HEMUCRYL ENAMEL 58100 White	Hempel Paints Limited	5 litres	8010-99-299-0228
HEMUCRYL TI-COAT 18200 Red 50710	Hempel Paints Limited	5 litres	8010-99-199-2908
HEMUDUR 18500 Grey 12170	Hempel Paints Limited	20 litres	8010-99-867-8090
INTERCRYL 506 GREY WPA300	International Coatings Ltd	5 litres	8010-99-147-1269
INTERCRYL 507 Grey BS 4800 00A01	International Coatings Ltd	5 litres	8010-99-365-4243
INTERCRYL 700 Grey BS 4800 00A01	International Coatings Ltd	5 litres	8010-99-7998832
INTERCRYL 700 Azure Blue BS381C 104	International Coatings Ltd	5 litres	8010-99-551-3792
INTERCRYL 700 Golden Brown BS381C 414	International Coatings Ltd	5 litres	8010-99-314-8294
INTERCRYL 700 Mariner Blue BS4800 18C39	International Coatings Ltd	5 litres	8010-99-551-3791
INTERCRYL 700 Mid Brunswick Green BS381C 226	International Coatings Ltd	5 litres	8010-99-812-5614
INTERCRYL 700 Wedgewood Blue BS4800 18D43	International Coatings Ltd	5 litres	8010-99-248-4598
INTERCRYL 700 White QYZ028	International Coatings Ltd	5 litres	8010-99-979-7888
INTERCRYL 700 Yellow RAL 1018	International Coatings Ltd	5 litres	8010-99-774-1224
INTERFINE 629 HS Black	International Coatings Ltd	5 litres	8010-99-375-3200
INTERFINE 629 HS Signal Red BS 381C 537	International Coatings Ltd	5 litres	8010-99-535-9034
INTERFINE 629 HS Lt Brunswick Green BS 381C 225	International Coatings Ltd	5 litres	8010-99-957-7410
INTERFINE 629 Light Weatherwork Grey BS381C 676	International Coatings Ltd	5 litres	8010-99-664-5391
INTERFINE 878 Light Weatherwork Grey BS381C 676	International Coatings Ltd	5 litres	8010-99-274-4682
INTERFINE 878 Black	International Coatings Ltd	5 litres	8010-99-907-6683
INTERFINE 979 GREEN	International Coatings Ltd	5 litres	8010-99-729-7357
INTERFINE 979 WHITE	International Coatings Ltd	5 litres	8010-99-168-7337
INTERGARD 263 Tie Coat Light Grey	International Coatings Ltd	20 litres	8010-99-133-3854
INTERGARD 269 PROTECTIVE PRIMER	International Coatings Ltd	20 litres	8010-99-983-0743
INTERGARD1735 WB Dark Sea Grey BS381C 640	International Coatings Ltd	5 litres	8010-99-702-0607
INTERGARD 1735 WB Green BS4800 14C39	International Coatings Ltd	5 litres	8010-99-483-1994
INTERGARD 1735 WB Ash Grey BS4800 00A01	International Coatings Ltd	5 litres	8010-99-255-0527
INTERGARD 740 Dark Sea Grey BS381C 640	International Coatings Ltd	5 litres	8010-99-182-2627
INTERGARD 740 Black	International Coatings Ltd	5 litres	8010-99-488-7443

ANNEX H
WHOLE SHIP STOCK NUMBERS (NSNs)

Material	Supplier	Pack size	NSN
INTERGARD 740 Red	International Coatings Ltd	5 litres	8010-99-377-5457
INTERGARD 740 White	International Coatings Ltd	5 litres	8010-99-773-8674
INTERGARD 740 Black	International Coatings Ltd	20 litres	8010-99-285-3824
INTERGARD 840 Series Buff	International Coatings Ltd	20 litres	8010-99-909-6023
INTERGARD 840 White	International Coatings Ltd	5 litres	8010-99-279-8277
INTERGARD 5000 Ash Grey BS 4800 00A01	International Coatings Ltd	5 litres	8010-99-000-5256
INTERLAC 846 Light Weatherwork Grey BS381C 676	International Coatings Ltd	2½ litres	8010-99-700-8410
INTERSHEEN AQUACOAT Ash Grey BS4800 00A01	International Coatings Ltd	5 litres	8010-99-365-4243
INTERSHIELD 851 Black	International Coatings Ltd	10 litres	8010-99-371-6753
INTERSHIELD 851 Extra Dark Sea Grey BS381C 640	International Coatings Ltd	20 litres	8010-99-391-0953
INTERSHIELD 852 Black	International Coatings Ltd	5 litres	8010-99-250-1864
INTERSHIELD 852 White	International Coatings Ltd	5 litres	8010-99-968-9269
INTERSHIELD 852 Red	International Coatings Ltd	5 litres	8010-99-666-9269
INTERSHIELD 852 Green	International Coatings Ltd	5 litres	8010-99-871-6360
INTERSHIELD 852 Dark Admiralty Grey BS 381C 632	International Coatings Ltd	5 litres	8010-99-149-8996
INTERSHIELD 852 Extra Dark Sea Grey BS 381C 640	International Coatings Ltd	5 litres	8010-99-149-8996
INTERSLEEK RAPID Black	International Coatings Ltd	2.5 litre	8010-99-358-0224
INTERSPEED 340 Black	International Coatings Ltd	20 litres	8010-99-874-3193
INTERSPEED 642 Black	International Coatings Ltd	20 litres	8010-99-792-1990

ANNEX H
WHOLE SHIP STOCK NUMBERS (NSNs)

Material	Supplier	Pack size	NSN
VINYGUARD SILVERGREY	Jotun Paints (Europe) Limited	5 litres	8010-99-212-5888
JOTA-ARMOUR AS Extra Dark Sea Grey BS381C 640	Jotun Paints (Europe) Limited	20 litres	8010-99-226-7300
WATERFINE PRIMER Lt Grey	Jotun Paints (Europe) Limited	5 litres	8010-99-462-9708
WATERFINE TOPCOAT Azure Blue BS381C 104	Jotun Paints (Europe) Limited	5 litres	8010-99-186-9127
WATERFINE TOPCOAT Black	Jotun Paints (Europe) Limited	5 litres	8010-99-877-1641
WATERFINE TOPCOAT Dark Blue BS4800 18C39	Jotun Paints (Europe) Limited	5 litres	8010-99-347-9130
WATERFINE TOPCOAT Lt Brunswick Green BS381C 225	Jotun Paints (Europe) Limited	5 litres	8010-99-131-6457
WATERFINE TOPCOAT Lt Weatherwork Grey BS381C 676	Jotun Paints (Europe) Limited	5 litres	8010-99-989-6214
WATERFINE TOPCOAT Mid Brunswick Green BS381C 226	Jotun Paints (Europe) Limited	5 litres	8010-99-873-4271
WATERFINE TOPCOAT Signal Red BS381C 537	Jotun Paints (Europe) Limited	5 litres	8010-99-921-4654
WATERFINE TOPCOAT Wedgwood Blue BS4800 18D43	Jotun Paints (Europe) Limited	5 litres	8010-99-212-5714
WATERFINE TOPCOAT White	Jotun Paints (Europe) Limited	5 litres	8010-99-372-9140
WATERFINE TOPCOAT Golden Brown	Jotun Paints (Europe) Limited	5 litres	8010-99-997-4563
AMERCOAT 300A Black	Maker Coating Systems Ltd	5 litres	8010-17-115-8450
AMERCOAT 300A White	Maker Coating Systems Ltd	5 litres	8010-17-108-8249
AMERCOAT 300A BS4800 00A01	Maker Coating Systems Ltd	5 litres	8010-99-535-8577
AMERCOAT 5105 Light Grey	Maker Coating Systems Ltd	5 litres	8010-17-117-4697
AMERCOAT 300A BS4800 14C39 Green	Maker Coating Systems Ltd	5 litres	8010-17-113-5690
AMERON ABC #3 Black	Maker Coating Systems Ltd	20 litres	8010-17-113-7497
AMERON PSX 700 Green BS4800 14C39	Maker Coating Systems Ltd	5 litres	8010-17-113-6169
AMERON PSX 700 White	Maker Coating Systems Ltd	5 litres	8010-99-858-1159
AMERLOCK 400C White	Maker Coating Systems Ltd	5 litres	8010-17-108-8248
AMERLOCK 400C Ash Grey BS4800 00A01	Maker Coating Systems Ltd	5 litres	8010-99-958-6062
AMERLOCK 400C SAXE BLUE	Maker Coating Systems Ltd	5 litres	8010-17-117-6678
AMERLOCK 400C OXFORD BLUE	Maker Coating Systems Ltd	5 litres	8010-17-117-6677
AMERCOAT 65 THINNER	Maker Coating Systems Ltd	5 litres	8010-17-117-6680
AMERCOAT 911 THINNER	Maker Coating Systems Ltd	5 litres	8010-17-117-6681
NU-KLAD 114A FILLER	Maker Coating Systems Ltd	7.24 kg unit	8010-17-117-6679
SPC-203 (Sea To Sky) Paint Remover	Maker Coating Systems Ltd	5 litres	8010-20-003-3432
SIGMA EDGEGUARD 5428 White	Maker Coating Systems Ltd	5 litres	8010-99-495-3513
SIGMASHIELD 420 7951 Ash Grey BS4800 00A01	Maker Coating Systems Ltd	5 litres	8010-99-549-3974
SIGMASHIELD 420 7951 Light Weatherwork Grey BS381C 676	Maker Coating Systems Ltd	5 litres	8010-99-723-3658
SIGMASHIELD 220 7922 Light Green	Maker Coating Systems Ltd	5 litres	8010-99-403-5015
SIGMASHIELD 280 7417 Yellow	Maker Coating Systems Ltd	5 litres	8030-99-354-0443

ANNEX H
WHOLE SHIP STOCK NUMBERS (NSNs)

Material	Supplier	Pack size	NSN
SIGMACOVER 280 LT 7417 Yellow	Maker Coating Systems Ltd	20 litres	8010-99-569-7697
AQUACOVER 45 7250 Azure Blue BS381C 104	Maker Coating Systems Ltd	5 litres	8010-99-863-5457
AQUACOVER 45 7250 Ash Grey B4800 00A01	Maker Coating Systems Ltd	5 litres	8010-99-277-8693
AQUACOVER 45 7250 Black	Maker Coating Systems Ltd	5 litres	8010-99-500-7412
AQUACOVER 45 7250 Canary BS381C 309	Maker Coating Systems Ltd	5 litres	8010-99-182-2670
AQUACOVER 45 7250 Dark Blue BS4800 18C39	Maker Coating Systems Ltd	5 litres	8010-99-957-7697
AQUACOVER 45 7250 Lt Brunswick Green BS381C 225	Maker Coating Systems Ltd	5 litres	8010-99-338-4734
AQUACOVER 45 7250 Lt Weatherwork Grey B381C 676	Maker Coating Systems Ltd	5 litres	8010-99-236-5744
AQUACOVER 45 7250 Mid Brunswick Green BS381C 226	Maker Coating Systems Ltd	5 litres	8010-99-269-1301
AQUACOVER 45 7250 Signal Red BS381C 537	Maker Coating Systems Ltd	5 litres	8010-99-880-0100
AQUACOVER 45 7250 Wedgwood Blue BS4800 18D43	Maker Coating Systems Ltd	5 litres	8010-99-471-2071
AQUACOVER 45 7250 White	Maker Coating Systems Ltd	5 litres	8010-99-225-7360
AQUACOVER 25 7150 Buff	Maker Coating Systems Ltd	5 litres	8010-99-321-6318
SIGMA ALPHAGEN 20 Series Black 7384	Maker Coating Systems Ltd	20 litres	8010-99-280-8371
BIOGARD M630V2 Light Weatherwork Grey BS381C 676	Sherwin-Williams Protective & Marine Coatings	5 litres	8010-99-131-6908
BIOGARD M630V2 Green BS4800 14C39	Sherwin-Williams Protective & Marine Coatings	5 litres	8010-99-255-5237
BIOGARD M630V2 Ash Grey BS4800 00A01	Sherwin-Williams Protective & Marine Coatings	5 litres	8010-99-535-5105
BIOGARD M630V2 Black	Sherwin-Williams Protective & Marine Coatings	5 litres	8010-99-739-8402
BIOGARD M630V2 White	Sherwin-Williams Protective & Marine Coatings	5 litres	8010-99-313-4440
ENVIROGARD M770 Ash Grey BS4800 00A01	Sherwin-Williams Protective & Marine Coatings	5 litres	8010-99-517-5228
ENVIROGARD M770 Black	Sherwin-Williams Protective & Marine Coatings	5 litres	8010-99-768-1426
ENVIROGARD M770 Azure Blue BS381C 104	Sherwin-Williams Protective & Marine Coatings	5 litres	8010-99-878-8150
ENVIROGARD M770 Canary BS381C 309	Sherwin-Williams Protective & Marine Coatings	5 litres	8010-99-726-4136
ENVIROGARD M770 Dark Blue BS4800 18C39	Sherwin-Williams Protective & Marine Coatings	5 litres	8010-99-723-3650
ENVIROGARD M770 Lt Brunswick Green BS381C 225	Sherwin-Williams Protective & Marine Coatings	5 litres	8010-99-313-9445
ENVIROGARD M770 Mid Brunswick Green BS381C 226	Sherwin-Williams Protective & Marine Coatings	5 litres	8010-99-862-5170
ENVIROGARD M770 Signal Red BS381C 537	Sherwin-Williams Protective & Marine Coatings	5 litres	8010-99-225-7155
ENVIROGARD M770 Light Weatherwork Grey BS381C 676	Sherwin-Williams Protective & Marine Coatings Paints	5 litres	8010-99-833-4765
ENVIROGARD M770 Wedgwood Blue BS4800 18D43	Sherwin-Williams Protective & Marine Coatings	5 litres	8010-99-723-3651
ENVIROGARD M770 White	Sherwin-Williams Protective & Marine Coatings	5 litres	8010-99-231-3852
ENVOY TF500 Black	Sherwin-Williams Protective & Marine Coatings	15 litres	8010-99-423-7738
EPIDEK M339NA	Sherwin-Williams Protective & Marine Coatings	5 litres	8010-99-845-5203
EPIGRIP C425V2 Light Grey	Sherwin-Williams Protective & Marine Coatings	5 litres	8010-99-786-7949

ANNEX H
WHOLE SHIP STOCK NUMBERS (NSNs)

Material	Supplier	Pack size	NSN
EPIGRIP C425 Light Grey	Sherwin-Williams Protective & Marine Coatings	20 litres	8010-99-126-6377
EPIGRIP C425V2 Off White	Sherwin-Williams Protective & Marine Coatings	20 litres	8010-99-133-8714
EPIGRIP H766 Green BS4800 14C39	Sherwin-Williams Protective & Marine Coatings	5 litres	8010-99-501-4661
EPIGRIP H766 White	Sherwin-Williams Protective & Marine Coatings	5 litres	8010-99-623-9946
EPIGRIP L524 Aluminium	Sherwin-Williams Protective & Marine Coatings	5 litres	8010-99-216-0021
EPIGRIP L524 White	Sherwin-Williams Protective & Marine Coatings	5 litres	8010-99-564-2934
EPIGRIP M111 Red	Sherwin-Williams Protective & Marine Coatings	5 litres	8010-99-884-5957
EPIGRIP M902 Aluminium	Sherwin-Williams Protective & Marine Coatings	2.5 litres	8010-99-421-0972
EPIGRIP C251 White	Sherwin-Williams Protective & Marine Coatings	5 litres	8010-99-284-3464
LEIGHS A165 Silicone Alkyd Light Weatherwork Grey BS381C 676	Sherwin-Williams Protective & Marine Coatings	5 litres	8010-99-982-2604
LEIGHS M255 BLACK	Sherwin-Williams Protective & Marine Coatings	20 litres	8010-99-417-8341
LEIGHS M255 VANDYKE BROWN BS4800 08B29	Sherwin-Williams Protective & Marine Coatings	5 litres	8010-99-905-0772
LEIGHS C750V2 Light Weatherwork Grey BS381C 676	Sherwin-Williams Protective & Marine Coatings	5 litres	8010-99-212-2175
LEIGHS M671 Medium Grey	Sherwin-Williams Protective & Marine Coatings	5 litres	8010-99-872-1746
LEIGHS M671 Medium Grey	Sherwin-Williams Protective & Marine Coatings	20 litres	8010-99-862-7354

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ANNEX J
SUBMARINES

Proposed Systems/Materials	Number of Coats	NDFT per coat microns	Theo SR m ² /litre	Min @ 20° Recoat Interval	Max @ 20° Recoat Interval	VOC gms per ltr	NATO Stock Number
S1. AREAS BELOW THE WATERLINE							
a) <u>General and Untiled areas</u>							
<u>Chugoku Paints (UK) Ltd</u>							
UMEGUARD SX HS Black	1	150	5.13	28 hrs	7 days	232	
<u>Hempel Paints Ltd</u>							
HEMPADUR 45880 MIO Black	2	175	4.6	8 hrs	30 days	198	99-149-2439
<u>Antifouling Primer:</u> HEMPADUR 15570	2	125	4	8 hrs	30 days	414	
<u>Antifouling Tie coat:</u> HEMPASIL NEXUS X-SEAL 27600	1	120	4.5	TBC	TBC	405	
<u>International Paint Ltd</u>							
INTERGARD 5000	1	175	4.68	12 hrs	2 months	179	99-000-5256
<u>Antifouling Primer:</u> INTERSHIELD 300	2	125	4.8	7 hrs	14 days	313	
<u>Antifouling Tie coat:</u> INTERSLEEK 737	1	100	6.5	4 hrs	7 days	325	
<u>Jotun Paints (Europe) Limited</u>							
PRIMASTIC UNIVERSAL R/T (STD)	1	200	3.75	10 hrs	#	194	99-509-7172
<u>Maker Coating Systems Ltd</u>							
CORROLESS EPF	2	200	4.8	16 hrs	3 days	80	25-150-0972
<u>PPG Protective & Marine Coatings</u>							
SIGMA SHIELD 240 7991	1	175	5	5 hrs	30 days	153	
<u>Antifouling Primer:</u> SIGMA SHIELD 240 7991	1	125	7	5 hrs	30 days	153	
<u>Antifouling Mid coat:</u> SIGMA SHIELD 610 7978	1	150	3.8	12 hrs	5 days	437	
<u>Antifouling Tie coat:</u> SIGMAGLIDE 790 7386	1	150	5.3	12 hrs	5 days	187	
<u>Sherwin-Williams Protective & Marine Coatings</u>							
EPIGRIP M922M Mastic Aluminium	2	200	4.2	4hrs	#	146	99-495-3873
RESISTEX M535 Black	1	75	5.3	2	#	502	99-453-1479
S2. ANTIFOULING FINISH Black							
<u>Foul Release / Defence</u> Sonar Dome							
HEMPAGUARD X7 89900 Hydrogel c/w Biocides	2	150	4.7	6 hrs	48hrs	262	
INTERSLEEK 1100SR Slime Release Fluoropolymer	1	150	4.8	24 hrs	#	248	
SIGMAGLIDE 1290 Low-speed slime release Silicone	1	180	4.8	#	#	118	

ANNEX J
SUBMARINES

Proposed Systems/Materials	Number of Coats	NDFT per coat microns	Theo SR m ² /litre	Min@ 20° Recoat Interval	Max@ 20° Recoat Interval	VOC gms per ltr	NATO Stock Number
S3. HULL & SUPERSTRUCTURE Untiled areas							
<i>Hempel Paints Ltd</i>							
HEMPADUR 45880 MIO 12430 HEMPADUR 47182 Black	2 1	175 125	4.6 6	8 hrs 9 hrs	30 days 5 days	198 364	99-803-7233
<i>International Paint Ltd</i>							
INTERGARD 5000 INTERGARD 740M Black	1 1	175 50	4.68 10.02	12 hrs 16 hrs	2 months #	179 420	99-488-7443
<i>Sherwin-Williams Protective & Marine Coatings</i>							
EPIGRIP M922M Mastic Aluminium RESISTEX M535 Black	2 1	200 75	4.2 5.3	4hrs 2	# #	146 502	99-495-3873 99-453-1479
<i>Marker Coating Systems Ltd/PPG</i>							
CORROLESS EPF	2	200	4.8	16 hrs	3 days	80	25-150-0972
S4. PERISCOPE & Masts							
Visible portions outside the submarine							
EPIGRIP H795 IRR Matt BS285	1 3	35	10.9	4 hrs	#	572	99-225-0195
S5. SUPERSTRUCTURE CASING General steelwork							
<i>Hempel Paints Ltd</i>							
HEMPADUR 45880 MIO 12430 HEMPADUR 47132 Black	1 1	175 125	4.6 5	8 hrs 9 hrs	30 days 5 days	198 364	99-149-2439
<i>International Paint Ltd</i>							
INTERGARD 5000 INTERGARD 740M Black	1 1	250 50	3.28 10.02	12 hrs 16 hrs	2 months #	179 420	99-000-5256 99-488-7443
<i>Sherwin-Williams Protective & Marine Coatings</i>							
EPIGRIP M922M Mastic Aluminium RESISTEX M535 Black	2 2	200 75	4.2 5.3	4hrs 2	# #	146 502	99-495-3873 99-453-1479
<i>Marker Coating Systems Ltd/PPG</i>							
AMERLOCK 400C Black	2	125	7	16 hrs	#	106	17-106-6001

ANNEX J
SUBMARINES

Proposed Systems/Materials	Number of Coats	NDFT per coat microns	Theo SR m ² /litre	Min@ 20° Recoat Interval	Max@ 20° Recoat Interval	VOC gms per ltr	NATO Stock Number
S6. WALKWAYS ON STEEL CASING Black							
<i>Chugoku Paints (UK) Ltd</i>							
UMEGUARD HS SILVER CAMIDECK FINISH TYPE 1	1 2	125 190	7.4 2.84	20 hrs 16 hrs	30 days #	158 374	
<i>Hempel Paints Ltd</i>							
HEMPADUR 45880 MIO 12430 HEMPEL'S NON SKID 45340 TYPE 1	1 2	100 200	8.2 3.2	7hrs 6 hrs	6 hrs* 30 days	168 347	99-803-7233 99-480-7979
<i>International Paint Ltd</i>							
INTERGARD 5000 INTERSHIELD 852 TYPE 1	1 2	150 200	5.47 1.92	12 hrs 12 hrs	4 days #	179 134	99-000-5256 99-250-1864
<i>Maker Coating Systems Ltd</i>							
AMERLOCK 400C AMERLOCK 400 NS TYPE 1	1 2	125 300	7 4	16 hrs 16 hrs	# #	106 106	99-974-7400 99-184-8542
<i>Sherwin-Williams Protective & Marine Coatings</i>							
EPIGRIP C425V2 EPIDEK M377 TYPE 1	1 2	125 250	76.0 2.5	5 hrs 4 hrs	# #	186 330	99-786-7949 99-777-8692
<i>PPG Protective & Marine Coatings</i>							
AMEROCAUT 137 AMEROCAUT 138G	1 1	125 1300	3.9 0.6	12 hrs 24 hrs	3 days #	264 168	
S7. INTERNAL DRY SPACES White							
<i>Chugoku Paints (UK) Ltd</i>							
UMEGUARD HS SILVER CAMACRYL FINISH	1 2	125 40	7.4 11	20 hrs 24 hrs	30 days #	158 33	99-380-7010
<i>Hempel Paints Ltd</i>							
HEMUDUR PRIMER 18500 HEMUCRYL ENAMEL 58100	1 2	60 30	8.8 13.7	6 hrs 6 hrs	1 week 2 hrs	25 150	99-876-8090 99-229-0228
<i>International Paint Ltd</i>							
INTERGARD 5000 INTERCRYL 700 Alternative Finish: INTERSHEEN 5579	1 2 2	125 35 35	6.56 11.42 11.29	12 hrs 60 mins 60 mins	# # #	179 50 12	99-000-5256 99-979-7888
<i>Jotun Paints (Europe) Limited</i>							
WATERFINE PRIMER WATERFINE TOPCOAT	2 2	100 50	4.6 7.2	1.5 hrs 1.5 hrs	# #	100 195	99-462-9708 99-372-9140
<i>Maker Coating Systems Ltd</i>							
AMERLOCK 400C AMEROCAUT 300A	1 2	125 50	7 10.4	16 hrs 16 hrs	# #	106 0	99-974-7400 17-108-8249
<i>PPG Protective & Marine Coatings</i>							
SIGMA AQUACOVER 257150 SIGMA AQUACOVER 457520	2 2	75 50	6.6 6.8	4 hrs 6 hrs	# #	31 17	99-321-6318 99-225-7360
<i>Sherwin-Williams Protective & Marine Coatings</i>							
EPIGRIP C425V2 ENVIROGARD M770	1 2	125 25	6.0 15.6	5 hrs 3 hrs	# #	186 78	99-786-7949 99-231-3852

ANNEX J
SUBMARINES

Proposed Systems/Materials	Number of Coats	NDFT per coat microns	Theo SR m ² /litre	Min @ 20° Recoat Interval	Max @ 20° Recoat Interval	VOC gms per ltr	NATO Stock Number
S8. INTERIOR WET COMPARTMENTS (Complete Represervation) <i>Chugoku Paints (UK) Ltd</i> White UMEGUARD HS SILVER AQUALIFE GLOSS FINISH	1 2	125 40	7.4 10	20 hrs 16 hrs	30 days 7 days	158 132	99-371-8400
<i>Hempel Paints Ltd</i> HEMUDUR 45880 MIO 12430 HEMPEL'S WATER BASED EPOXY 48580	1 1	125 80	6.5 6.7	5 hrs 12 hrs	# 15 days	198 36	99-803-7233
<i>International Paint Ltd</i> INTERGARD 5000 Grey INTERGARD 1735	1 1	125 50	6.56 11.2	24 hrs 12 hrs	# #	179 132	99-000-5256
<i>Jotun Paints (Europe) Limited</i> WATERFINE PRIMER Grey WATERFINE PRIMER	1 1 or 2	100 40	4.6 11.6	1.5 hrs 1.5 hrs	# #	60 60	99-462-9708
<i>Maker Coating Systems Ltd</i> AMERLOCK 400C AMERCOAT 300A	1 1	125 50	7 10.4	16 hrs 16 hrs	# #	106 0	99-974-7400 17-108-8249
<i>PPG Protective & Marine Coatings</i> SIGMACOVER 456 HS 7712 SIGMA SHIELD 420	2 1	75 150	9.7 5.6	8 hrs 3½ hrs	# 14 days	277 239	
<i>Sherwin-Williams Protective & Marine Coatings</i> EPIGRIP C425V2 BIOGARD M630V2	1 1	125 75	6.0 6.8	5 hrs 24 hrs	# #	186 0	99-786-7949 99-313-4440
S9. GROUP EXHAUST VALVES <i>Sherwin-Williams Protective & Marine Coatings</i> DOX-ANODE 5V2	1	75	8.7	24 hrs	#	470	
S10. DSRV SEATING <i>Sherwin-Williams Protective & Marine Coatings</i> EPIGRIP C425V2 EPIDECK L716	1 2	175 75	4.3 6.8	8 hrs 4 hrs	# #	186 420	99-786-7949 99-225-0689

ANNEX J
SUBMARINES

Proposed Systems/Materials	Number of Coats	NDFT per coat microns	SR m ² /litre	Theo Min@ 20° Recoat Interval	Max@ 20° Recoat Interval	VOC gms per ltr	NATO Stock Number
S11. INTERIOR PRESSURE HULL SURFACE <u>Emergency Cooling Tanks (NP approval req'd)</u>							
a) S Class Soft and Saddle Tanks							
<i>Hempel Paints Ltd</i>							
GALVOSIL 15700 – Approved by Rolls Royce	1	75	8.53	36 hrs	#	535	99-593-8923
<i>International Paint Ltd</i>							
INTERGARD 5000 – Pending Approval	2	125	6.56	12 hrs	3 months	179	99-000-5256
b) Trafalgar Class Hard Tank							
<i>International Paint Ltd</i>							
INTERGARD 5000 – Pending Approval	2	125	6.56	12 hrs	3 months	179	99-000-5256
<i>Sherwin-Williams Protective & Marine Coatings</i>							
EPIGRIP C251 – Pending Approval	2	125	5.9	24 hrs	28 days	235	99-284-3464
<i>PPG Protective & Marine Coatings</i>							
SIGMA PHENGUARD 930 Primer - Approved by Rolls Royce	1	100	6.6	36 hrs	21 days	300	99-667-6118
SIGMA PHENGUARD 935 Coating - Approved by Rolls Royce	1	100	6.6	24 hrs	21 days	300	99-925-0882
SIGMA PHENGUARD 940 Finish - Approved by Rolls Royce	1	100	6.6	24 hrs	21 days	300	99-976-1657
SIGMAGUARD 795 (Maintenance)	2	150	5.0	10hrs	21 days	273	
<i>Marker Coating Systems Ltd</i>							
CORROLESS EPF – Approved by Rolls Royce	1	200	4.8	16hrs	3 days	80	25-150-0972
CORROLESS RF35 – Approved by Rolls Royce	1	200	4.8	16hrs	3 days	93	99-337-0778
c) Trafalgar Class Jacket Tank							
<i>International Paint Ltd</i>							
INTERGARD 5000 - Approved by Rolls Royce	2	125	6.56	12 hrs	3 months	179	99-000-5256
<i>Marker Coating Systems Ltd</i>							
CORROLESS EPF – Approved by Rolls Royce	1	200	4.8	16hrs	3 days	80	25-150-0972
CORROLESS RF35 – Approved by Rolls Royce	1	200	4.8	16hrs	3 days	93	99-337-0778
AMERLOCK 400C – Approved by Rolls Royce	2	125	7	16 hrs	3 days	106	17-108-8248
<i>Sherwin-Williams Protective & Marine Coatings</i>							
EPIGRIP M922	2	200	4.2	4hrs	#	143	99-834-8384
EPIGRIP C251 – Pending Approval	2	125	5.9	24 hrs	28 days	235	99-284-3464

ANNEX J
SUBMARINES

Proposed Systems/Materials	Number of Coats	NDFT per coat microns	Theo SR m ² /litre	Min@ 20° Recoat Interval	Max@ 20° Recoat Interval	VOC gms per ltr	NATO Stock Number
S11. (cont) INTERIOR SURFACES							
d) Vanguard Class High Pressure Decay Heat Removal Tank (HPDR)							
<i>International Paint Ltd</i>							
INTERGARD 5000 – Pending Approval	2	125	6.56	12 hrs	3 months	179	99-000-5256
<i>Sherwin-Williams Protective & Marine Coatings</i>							
EPIGRIP C251 – Pending Approval	2	125	5.9	24 hrs	28 days	235	99-284-3464
<i>Maker Coating Systems Ltd</i>							
CORROLESS EPF – Pending Approval	1	200	4.8	16hrs	3 days	80	25-150-0972
CORROLESS RF35 – Pending Approval	1	200	4.8	16hrs	3 days	93	99-337-0778
AMERLOCK 400C – Pending Approval	2	125	7	16 hrs	3 days	106	17-108-8248
<i>PPG Protective & Marine Coatings</i>							
SIGMA PHENGUARD 930 Primer – Approved by Rolls Royce	1	100	6.6	36 hrs	21 days	315	99-667-6118
SIGMA PHENGUARD 935 Coating – Approved by Rolls Royce	1	100	6.6	24 hrs	21 days	315	99-925-0882
SIGMA PHENGUARD 940 Finish – Approved by Rolls Royce	1	100	6.6	24 hrs	21 days	315	99-976-1657
SIGMAGUARD 795 (Maintenance)	2	150	5.0	10hrs	21 days	273	
EXTERNAL SURFACES							
<i>International Paint Ltd</i>							
INTERGARD 5000 – Pending Approval	2	125	6.56	12 hrs	3 months	179	99-000-5256
<i>Sherwin-Williams Protective & Marine Coatings</i>							
EPIGRIP C251 – Pending Approval	2	125	5.9	24 hrs	28 days	235	99-284-3464
<i>Maker Coating Systems Ltd</i>							
CORROLESS EPF	1	200	4.8	16hrs	3 days	80	25-150-0972
CORROLESS RF35	1	200	4.8	16hrs	3 days	93	99-337-0778
AMERLOCK 400C	2	125	7	16 hrs	3 days	106	17-108-8248
<i>PPG Protective & Marine Coatings</i>							
SIGMA PHENGUARD 930 Primer - Approved by Rolls Royce	1	100	6.6	36 hrs	21 days	315	99-667-6118
SIGMA PHENGUARD 935 Coating - Approved by Rolls Royce	1	100	6.6	24 hrs	21 days	315	99-925-0882
SIGMA PHENGUARD 940 Finish - Approved by Rolls Royce	1	100	6.6	24 hrs	21 days	315	99-976-1657
SIGMAGUARD 795 (Maintenance)	2	150	5.0	10hrs	21 days	273	
e) Astute Class							
<i>Advanced Polymer Coatings</i>							
SILOXIRANE 2031LE – Approved by Rolls Royce	2	150	1.72	24 hrs	3 days	102	
<i>Sherwin-Williams Protective & Marine Coatings</i>							
DURAGLASS 41V – Approved by Rolls-Royce	2	500	0.84	2½ hrs	#	150	

ANNEX J
SUBMARINES

Proposed Systems/Materials	Number of Coats	NDFT per coat microns	Theo SR m ² /litre	Min@ 20° Recoat Interval	Max@ 20° Recoat Interval	VOC gms per ltr	NATO Stock Number
S12. REACTOR COMPARTMENT White							
a) Interior surfaces							
<i>Hempel Paints Ltd</i>							
HEMPADUR NPP 55672-10000	3	75	8.5	24 hrs	21 days	327	
<i>International Paint Ltd</i>							
INTERGARD 5000	1	125	6.56	12 hrs	#	179	99-000-5256
INTERGARD 1735	2	50	11.20	12 hrs	#	132	
<i>Maker Coating Systems Ltd/PPG</i>							
AMERLOCK 400C	1	125	7	16 hrs	#	106	99-974-7400
AMEROAT 300A	2	50	10.4	16 hrs	#	0	17-108-8249
<i>Sherwin-Williams Protective & Marine Coatings</i>							
EPIGRIP C400V3	1	200	9.3	5 hrs	#	257	
EPIGRIP H766	1	50	14	5 hrs	#	395	99-623-9946
HEAT RESISTANT ALUMINIUM >250°C							
<i>Firwood Paints Ltd</i>							
FIRGLO 64	1-2	25	15	4 hrs	#	620	
<i>International Paint Ltd</i>							
INTERTHERM 50	1-2	25	18	12hrs	#	495	99-257-1455
b) External surfaces							
Refer to S1. NOTE: - DFT not to exceed that stated in BR3939 Section 12.							
S13. INTERIOR DECKS							
<i>Sherwin-Williams Protective & Marine Coatings</i>							
EPIGRIP C425V2	1	175	4.3	8 hrs	#	186	99-786-7949
BIOGARD M630V2	1	75	6.8	24 hrs	#	0	99-255-5237
<i>International Paint Ltd</i>							
INTERGARD 5000	1	125	6.56	12 hrs	#	179	99-000-5256
INTERGARD 1735	1	50	11.2	12 hrs	#	132	99-255-0527
<i>Maker Coating Systems Ltd/PPG</i>							
AMERLOCK 400C	2	125	7	16 hrs	#	106	99-383-2335

ANNEX J
SUBMARINES

Proposed Systems/Materials	Number of Coats	NDFT per coat microns	Theo SR m ² /litre	Min@ 20° Recoat Interval	Max@ 20° Recoat Interval	VOC gms per ltr	NATO Stock Number
S14. BATTERY COMPARTMENTS BS4800 00A01							
<i>Chugoku Paints (UK) Ltd</i>							
UMEGARD HS SILVER AQUALIFE GLOSS FINISH	1 2	125 40	7.12 10	20 hrs 16 hrs	7 days 7 days	108 132	99-757-9334
<i>Hempel Paints Ltd</i>							
HEMPADUR 45880 MIO 12430 HEMPEL'S WATERBASED EPOXY 48580	1 1	150 80	5.5 6.7	5 hrs 12 hrs	# 15 days	198 36	99-803-7233 99-988-2715
<i>International Paint Ltd</i>							
INTERGARD 5000	1	125	6.56	12 hrs	#	179	99-000-5256
<i>Jotun Paints (Europe) Limited</i>							
POLYMASTIC 2000 POLYMASTIC 2000	1 1	200 200	4.8 4.8	9 hrs 9 hrs	# #	80 80	99-395-8448 99-665-9772
<i>Maker Coating Systems Ltd/PPG</i>							
AMERLOCK 400C AMERCOAT 300A	1 1	125 50	7 10.4	16 hrs 16 hrs	# #	106 0	99-974-7400 99-535-8577
<i>Sherwin-Williams Protective & Marine Coatings</i>							
EPIGRIP C425V2 BIOGARD M630V2	1 1	100 75	7.5 6.8	4 hrs 24 hrs	# #	186 0	99-786-7949 99-535-5105
S15. MACHINERY SPACE BILGES & MOUNTED MACHINERY RAFTS							
<i>Chugoku Paints (UK) Ltd</i>							
UMEGARD HS SILVER UMEGARD HS GREY	1	125 125	6.5 6.5	15 hrs 15 hrs	10 days 10 days	108 158	99-126-9478
<i>Finish for Mounted Machinery Rafts</i>							
CAMACRYL FINISH MAC Canary BS381C 309	1	40	11	24 hrs	#	33	99-446-0554
<i>Hempel Paints Ltd</i>							
HEMPADUR 45880 WHITE	1	150	5.5	5 hrs	#	220	99-264-0387
<i>Finish for Mounted Machinery Rafts</i>							
HEMUCRYL ENAMEL 58100 Canary BS381C 309	1	30	13.7	6 hrs	#	70	99-858-1263
<i>International Paint Ltd</i>							
INTERGARD 5000	1	175	4.68	12 hrs	3 months	179	99-000-5256
<i>Finish for Mounted Machinery Rafts</i>							
INTERCRYL 700 Yellow RAL 1018	1	35	11.42	6 hrs	#	50	99-774-1224
<i>Jotun Paints (Europe) Limited</i>							
JOTACOTE UNIVERSAL JOTAPROOF TOPCOAT	1 1	125 60	5.8 10.5	4 hrs 4 hrs	# #	240 310	
<i>Finish for Mounted Machinery Rafts</i>							
WATERFINE TOPCOAT Canary BS381C 309	1	40	9.2	8 hrs	#	105	99-352-4369

ANNEX J
SUBMARINES

Proposed Systems/Materials	Number of Coats	NDFT per coat microns	Theo SR m ² /litre	Min@ 20° Recoat Interval	Max@ 20° Recoat Interval	VOC gms per ltr	NATO Stock Number
S15. MACHINERY SPACE BILGES & MOUNTED MACHINERY RAFTS (cont.)							
<i>Maker Coating Systems Ltd</i>							
CORROLESS EPF	1	200	4.8	16 hrs	3 days	80	25-150-0972
<i>Finish for Mounted Machinery Rafts</i>							
AMERLOCK 400C YELLOW	1	125	7	16 hrs	#	106	
<i>PPG Protective & Marine Coatings</i>							
SIGMA NOVAGARD 840 7468	1	400	2.5	24 hrs	2 months	13	
<i>Finish for Mounted Machinery Rafts</i>							
SIGMA AQUACOVER 45 7250 Canary BS381C 309	1	50	6.8	6 hrs	#	17	99-182-2670
<i>Sherwin-Williams Protective & Marine Coatings</i>							
EPIGRIP M902 EPIGRIP L524	1 1	125 125	6.0 5.1	6.5 hrs 12 hrs	# #	219 296	99-421-0972 99-564-2934
<i>Finish for Mounted Machinery Rafts</i>							
ENVIROGARD M770 Canary BS381C 309	1	25	15.6	3 hrs	#	78	99-726-4136
S16. BULK FUEL & OIL, LUBE OIL, HYDRAULIC & LP AIR TANKS - DEF STAN 80-97 (HIGH SOLIDS)							
<i>Chugoku Paints (UK) Ltd</i>							
CLEANKEEP 5000	1	300	3.33	48 hrs	14 days	0	
<i>Hempel Paints Ltd</i>							
HEMPADUR 85671	3	100	6.8	36 hrs	5 days	320	
<i>International Paint Ltd</i>							
INTERLINE 850 (TLA850/A)	2	125	6.08	8 hrs	30 days	212	
<i>Jotun Paints (Europe) Limited</i>							
TANKGUARD STORAGE	2	125	5.0	10 hrs	30 days	261	
<i>Maker Coating Systems Ltd</i>							
CORROLESS EPF CORROLESS RF35 Off White	1 1	200 200	4.8 4.8	16 hrs 16 hrs	3 days 3 days	80 93	25-150-0972 25-150-0973
<i>PPG Protective & Marine Coatings</i>							
SIGMAGUARD CSF 650 7443	1	300	3.3	24 hrs	20 days	17	
<i>Sherwin-Williams Protective & Marine Coatings</i>							
EPIGRIP M922	2	200	5.4	4 hrs	14 days	143	99-834-8384

ANNEX J
SUBMARINES

Proposed Systems/Materials	Number of Coats	NDFT per coat microns	Theo SR m ² /litre	Min@ 20° Recoat Interval	Max@ 20° Recoat Interval	VOC gms per ltr	NATO Stock Number
S17. POTABLE WATER TANKS							
<i>Chugoku Paints (UK) Ltd</i>							
CLEENKEEP 5000	1	300	3.33	48 hrs	7 days	0	
<i>Hempel Paints Ltd</i>							
HEMPADUR MULTI STRENGTH 35530	2	200	5	24 hrs	5 days	0	
<i>International Paint Ltd</i>							
INTERLINE 925	1	300	3.35	48 hrs	3 days	1	
<i>Jotun Paints (Europe) Limited</i>							
TANKGUARD DW	2	150	6.7	12 hrs	5 days	2	
<i>Marker Coating Systems Ltd</i>							
CORROLESS EPF	1	200	4.8	16 hrs	3 days	80	25-150-0972
CORROLESS RF35	1	200	4.8	16 hrs	3 days	93	99-337-0778
<i>PPG Protective & Marine Coatings</i>							
SIGMAGUARD CSF 650 7443	1	300	3.3	24 hrs	20 days	17	
<i>Sherwin-Williams Protective & Marine Coatings</i>							
HYDROGARD H20V2	1	400	2.5	12hrs	36 hrs	0	
S18. SLOP DRAIN TANKS							
<i>Sherwin-Williams Protective & Marine Coatings</i>							
EPIGRIP C251	2	125	5.9	24 hrs	28 days	235	99-284-3464
S19. AFFF TANKS (supplied with Demin Water?)							
<i>Chugoku Paints (UK) Ltd</i>							
CLEENKEEP 5000	1	300	3.33	48 hrs	14 days	0	
<i>Hempel Paints Ltd</i>							
HEMPADUR MULTI STRENGTH 35530	2	250	5.0	24 hrs	5 days	0	
<i>International Paint Ltd</i>							
INTERLINE 704	2	125	4.24	23 hrs	21 days	385	
<i>Jotun Paints (Europe) Limited</i>							
TANKGUARD DW	2	150	6.7	12 hrs	5 days	2	
<i>Marker Coating Systems Ltd</i>							
CORROLESS EPF	1	200	4.8	16 hrs	3 days	80	25-150-0972
CORROLESS RF35	1	200	4.8	16 hrs	3 days	93	99-337-0778
<i>PPG Protective & Marine Coatings</i>							
SIGMAGUARD CSF 585 7785	1	300	3.33	24 hrs	20 days	5	
<i>Sherwin-Williams Protective & Marine Coatings</i>							
EPIGRIP C251	2	125	5.9	24 hrs	28 days	235	99-284-3464

ANNEX J
SUBMARINES

Proposed Systems/Materials	Number of Coats	NDFT per coat microns	Theo SR m ² /litre	Min@ 20° Recoat Interval	Max@ 20° Recoat Interval	VOC gms per ltr	NATO Stock Number
S20. DEMINERALISED WATER TANKS (Max Temperature 90°C) (Inc. Hotwells, Surge, Reserve Feed, Made Water, Reactor Water Storage Tanks) Consult 'DES SM PG-NavArch3b' for latest approved coatings.							
<i>Chugoku Paints (UK) Ltd</i>							
CLEENKEEP 5000 – RR approval requested by DRDL	1	300	3.33	48 hrs	14 days	0	
<i>Hempel Paints Ltd</i>							
HEMPADUR 85671 – RR to approve	3	100	6.8	36 hrs	21 days	320	
<i>International Paint Ltd</i>							
INTERLINE 925(THA127/A) – RR approval requested by DRDL	1	300	3.33	18 hrs	3 days	1	
<i>Jotun Paints (Europe) Limited</i>							
TANKGUARD STORAGE – RR to approve	3	125	5.0	10 hrs	30 days	1	
<i>Maker Coating Systems Ltd Limited to 60°C</i>							
CORROLESS EPF – Approved by Rolls Royce	1	200	4.8	16 hrs	3 days	80	25-150-0972
CORROLESS RF35 – Approved by Rolls Royce	1	200	4.8	16 hrs	3 days	93	99-337-0778
<i>PPG Protective & Marine Coatings (specialist coating)</i>							
SIGMA PHENGUARD 930 Primer – Approved by Rolls Royce	1	100	6.6	36 hrs	21 days	315	99-667-6118
SIGMA PHENGUARD 935 Coating – Approved by Rolls Royce	1	100	6.6	24 hrs	21 days	315	99-925-0882
SIGMA PHENGUARD 940 Finish – Approved by Rolls Royce	1	100	6.6	24 hrs	21 days	315	99-976-1657
SIGMAGUARD 795 (Maintenance) – RR to approve	2	150	5.0	10hrs	21 days	273	
<i>Sherwin-Williams Protective & Marine Coatings</i>							
EPIGRIP C254 – Current performance issues yet to be resolved - Previously approved by Rolls Royce	2	125	5.9	24 hrs	28 days	235	99-284-3464
S21. HOLDING PRIMER							
a) Blasted Steelwork							
<i>Chugoku Paints (UK) Ltd</i>							
NZ PRIMER S	1	25	15.9	16 hrs	#	641	
<i>Hempel Paints Ltd</i>							
HEMPADUR 15570 (damp surface tolerant)	1	40	13.5	#	#	430	99-943-1152
<i>International Paint Ltd</i>							
INTERGARD 269	1	30	15.67	6 hrs	#	411	99-983-0743
<i>Jotun Paints (Europe) Limited</i>							
MUKI EPS	1	20	12.5	7 hrs	7 days	610	
<i>PPG Protective & Marine Coatings</i>							
SIGMACOVER 280 7417	1	50	11.4	8 hrs	3 months	432	99-569-7697
<i>Sherwin-Williams Protective & Marine Coatings</i>							
METAGARD L574 or EPIGRIP M111 (damp surface tolerant)	1	25	11.6	3 hrs	#	594	99-895-9894
	1	60	9.0	4 hrs	#	383	99-884-5957

ANNEX J
SUBMARINES

Proposed Systems/Materials	Number of Coats	NDFT per micron	Theo SR m ² /litre	Min @ Recoat Interval	Max @ Recoat Interval	VOC gms per ltr	NATO Stock Number
S22. PRIMERS FOR NON FERROUS METALS							
<u>Chugoku Paints (UK) Ltd</u>							
<u>Aluminium:</u> ALP 500	1	50	11.6	10 hrs	#	414	99-967-8636
<u>Stainless Steel:</u> UMEGUARD HS	1	125	7.40	20 hrs	30 days	158	99-126-9478
<u>Zinc Spray & Galvanise:</u> GALVANITE 200	1	30	14.10	4 hrs	30 days	587	99-290-5829
<u>Hempel Paints Ltd</u>							
<u>Aluminium, Stainless Steel, Zinc Spray & Galvanise:</u>							
HEMUCRYL TIE COAT 18200 (1 pack) or HEMPADUR 15553 (2 pack)	1	20	19.0	24 hrs	30 mins	40	99-199-2908
Indicator coat for FRP GELPROTECT SFE200 Cream	1	50	8.6	2 hrs	#	515	99-870-0653
Indicator coat for FRP GELPROTECT SFE200 Cream	1	200	5.0	8 hrs	5 days	10	99-517-4318
<u>International Paint Ltd</u>							
<u>Aluminium, Stainless steel, Zinc Spray & Galvanise:</u>							
INTERGARD 269 or INTERGARD 276	1	30	15.67	6 hrs	#	411	99-983-0743
Indicator Coat for FRP: INTERLINE 925 Cream	1	300	5	18 hrs	3 days	1	
<u>Jotun Paints (Europe) Limited</u>							
<u>Aluminium, Stainless Steel, Zinc Spray & Galvanise:</u>							
WATERFINE PRIMER	1	60	7.6	1.5 hrs	#	100	99-462-9708
FRP Indicator Coat: PENGUARD HB white	1	100	5.4	8 hrs	#	390	
<u>Maker Coating Systems Ltd / PPG</u>							
<u>Aluminium & Zinc Spray:</u> AMERLOCK 400C	1	125	7	16 hrs	#	106	99-974-7400
<u>Stainless Steel & Galvanise:</u> SIGMACOVER 280	1	50	11.4	8 hrs	6 months	432	99-569-7697
Indicator Coat for FRP: AMERLOCK 400C Green RAL	1	125	7	16 hrs	#	106	17-120-4829
<u>Sherwin-Williams Protective & Marine Coatings</u>							
<u>Aluminium, Stainless Steel & Galvanise:</u> EPIGRIP H795	1	35	10.9	4 hrs	#	575	99-225-0195
<u>Zinc Spray:</u> METAGARD L574	1	25	11.6	4 hrs	#	594	99-895-9894
Indicator Coat for FRP: EPIGRIP C425V2 Off White	1	100	7.5	4 hrs	#	186	99-133-8714

ANNEX J
SUBMARINES

Proposed Systems/Materials	Number of Coats	NDFT per coat microns	Theo SR m ² /litre	Min @ 20° Recoat Interval	Max @ 20° Recoat Interval	VOC gms per ltr	NATO Stock Number
S23. HIGH EROSION AREAS							
<i>Hempel Paints Ltd</i>							
HEMPADUR MULTISTRENGTH GF35970	1	300	2.9	16 hrs	30 days	180	
<i>International Paint Ltd</i>							
INTERZONE 505	1	300	3.0	6 hrs	4 days	157	
<i>Marker Coating Systems Ltd</i>							
CORROLESS EPF	2	200	4.8	16 hrs	3 days	80	99-212-7555
<i>Sherwin-Williams Protective & Marine Coatings</i>							
EPIGRIP M922	1	400	4.2	#	#	143	99-834-8384
S24. BEneath TILING							
<i>Wessex Resins</i> : UW46 Primer UW 46 Adhesive							99-593-3008 99-297-7593
S25. SYSTEM FOR COATING NATURAL RUBBER MOUNTS (applied by mount supplier not to be touched up once fitted)							
<i>Dunlop Precision Rubber Ltd</i> : DUNLOP NPL 100	2	25					
<i>Marker Coating Systems Ltd</i> : GUMMIPAIN - ORANGE	2	35					
S26. INTERNAL NUTS & BOLTS AND TO FILL GAPS BETWEEN CANNING PLATES & LEAD SHIELDING							
<i>Marker Coating Systems Ltd</i>							
CORROLESS CCI 355 CORROSION INHIBITOR (HD GREASE)	1	N/A			N/A	N/A	99-676-5736

ANNEX J
SUBMARINES

Proposed Systems/Materials	Number of Coats	NDFT per coat microns	Theo SR m ² /litre	Min @ 20° Recoat Interval	Max @ 20° Recoat Interval	VOC gms per ltr	NATO Stock Number
S27. SEA WATER TANKS							
<i>Chugoku Paints (UK) Ltd IMO PSPC</i>							
UMEGUARD HS or BANNOH 1500	2	160	5.08	15 hrs	10 days	108	
<i>Hempel Paints Ltd IMO PSPC</i>	2	160	4.56	19 hrs	30 days	286	
HEMPADUR QUATTRO	2	160	4.5	6 hrs	90 days	275	
<i>International Paint Ltd IMO PSPC</i>							
INTERGARD 5000	2	160	5.13	12 hrs	3 months	179	99-000-5256
<i>Jotun Paints (Europe) Limited IMO PSPC</i>							
BALLOXY HB LIGHT	2	160	5.16	10 hrs	#	150	17-108-7824
<i>Maker Coating Systems Ltd</i>							
CORROLESS EPF	2	200	4.8	16 hrs	3 days	80	25-150-0972
<i>Maker Coating Systems Ltd/ PPG IMO PSPC</i>							
SIGMACOVER 240 7991	2	160	5.4	5 hrs	30 days	153	
<i>Sherwin-Williams Protective & Marine Coatings</i>							
EPIGRIP L524 (typical dft 125. care req'd on overlap at 160)	2	160	3.9	12 hrs	#	296	99-564-2934
S28. CHALFONT / LILO / PAYLOAD BAY CHAMBER (Internal)							
Consult 'DES SM PG-NavArch3b' for latest approved coatings.							
'A'-Boat at build: -							
<i>Sherwin-Williams Protective & Marine Coatings</i>							
EPIGRIP C425V2	2	75	7.5	4 hrs	#	186	99-786-7949
EPIGRIP M262	1	75	8	4 hrs	#	354	-
Solvent free systems desirable. Seek alternatives.							

ANNEX J
SUBMARINES

Supplier	Material	BR Class	VOC Compliant	NSN
Chugoku Paints (UK) Ltd	CAMACRYL FINISH MAC White	See 4.3	86 g/l	8010-99-380-7010
Chugoku Paints (UK) Ltd	CAMACRYL FINISH MAC Ash Grey BS4800 00A01	See 4.3	86 g/l	8010-99-676-4126
Chugoku Paints (UK) Ltd	ALP 500	See 4.3	414 g/l	8010-99-967-8636
Chugoku Paints (UK) Ltd	GALVANITE 200 White	See 4.3	495 g/l	8010-99-995-4247
Chugoku Paints (UK) Ltd	GALVANITE 200 White	See 4.3	495 g/l	8010-99-290-5829
Chugoku Paints (UK) Ltd	UMEGUARD HS Grey	See 4.3	158 g/l	8010-99-126-9478
Chugoku Paints (UK) Ltd	UMEGUARD HS White	See 4.3	158 g/l	8010-99-564-2409
Chugoku Paints (UK) Ltd	CAMACRYL FINISH MAC Canary BS381C 309	See 4.3	86 g/l	8010-99-446-0554
Chugoku Paints (UK) Ltd	CAMACRYL FINISH MAC Wedgewood Blue BS4800 18D43	See 4.3	86 g/l	8010-99-665-3660
Chugoku Paints (UK) Ltd	CAMACRYL FINISH MAC Dark Blue BS4800 18C39	See 4.3	86 g/l	8010-99-862-0034
Chugoku Paints (UK) Ltd	CAMACRYL FINISH MAC Mid Brunswick Green BS381C 226	See 4.3	86 g/l	8010-99-794-2129
Chugoku Paints (UK) Ltd	CAMACRYL FINISH MAC Azure Blue BS381C 104	See 4.3	86 g/l	8010-99-366-5444
Hempel UK Limited	HEMPADUR 15570 LIGHT GREY 12430	See 4.3	430 g/l	8010-99-170-5097
Hempel UK Limited	HEMPADUR 15553 Off White 11630 5ltr	See 4.3	515 g/l	8010-99-870-0653
Hempel UK Limited	HEMPADUR 15553 Off White 11630 20ltr	See 4.3	515 g/l	8010-99-700-4191
Hempel UK Limited	HEMUDUR 18500 Grey 12170	See 4.3	85 g/l	8010-99-867-8090
Hempel UK Limited	HEMPELS WATER BASED EPOXY 48580 BS4800 14C39 (Green)	See 4.3	25 g/l	8010-99-279-8221
Hempel UK Limited	HEMPELS WATER BASED EPOXY 48580 BS381C 676 (Light Weatherwork Grey)	See 4.3	25 g/l	8010-99-976-9118
Hempel UK Limited	HEMPELS WATER BASED EPOXY 48580 Black	See 4.3	25 g/l	8010-99-864-5046
Hempel UK Limited	HEMPELS WATER BASED EPOXY 48580 BS4800 00A01	See 4.3	25 g/l	8010-99-988-2715
Hempel UK Limited	HEMPELS NON-SKID 45340 Type 1 Black	See 4.3	347 g/l	8010-99-351-4222
Hempel UK Limited	HEMUCRYL TIE-COAT 18200 Red 50710	See 4.3	118 g/l	8010-99-199-2908
Hempel UK Limited	HEMPELS GALVOSIL 15700	See 4.3	535 g/l	8010-99-593-8923
Hempel UK Limited	HEMUCRYL ENAMEL 58100 White	See 4.3	150 g/l	8010-99-299-0228
Hempel UK Limited	HEMUCRYL ENAMEL 58100 Dark Blue BS4800 18C39	See 4.3	150 g/l	8010-99-290-5925
Hempel UK Limited	HEMUCRYL ENAMEL 58100 Wedgewood Blue BS4800 18D43	See 4.3	150 g/l	8010-99-317-6235
Hempel UK Limited	HEMUCRYL ENAMEL 58100 Canary BS381C 309	See 4.3	150 g/l	8010-99-858-1263
Hempel UK Limited	HEMUCRYL ENAMEL 58100 Lt Brunswick Green BS381C 225	See 4.3	150 g/l	8010-99-831-8959
Hempel UK Limited	HEMUCRYL ENAMEL 58100 Azure Blue BS381C 104	See 4.3	150 g/l	8010-99-382-4025
Hempel UK Limited	HEMUCRYL ENAMEL 58100 Mid Brunswick Green BS381C 226	See 4.3	150 g/l	8010-99-162-2531
Hempel UK Limited	HEMUCRYL ENAMEL 58100 BS4800 00A01	See 4.3	150 g/l	8010-99-660-9288
Hempel UK Limited	HEMUCRYL ENAMEL 58100 Signal Red BS381C 537	See 4.3	150 g/l	8010-99-250-8046
Hempel UK Limited	HEMUCRYL ENAMEL 58100 Black	See 4.3	150 g/l	8010-99-175-1334
Hempel UK Limited	HEMUCRYL ENAMEL 58100 BS381C 676 (Light Weatherwork Grey)	See 4.3	150 g/l	8010-99-149-2439
Hempel UK Limited	HEMUCRYL PRIMER 18100	See 4.3	200 g/l	8010-99-909-6026
International Paint Ltd	INTERGARD FWA274/FWA278 Red	See 4.3	166 g/l	8010-99-337-6056
International Paint Ltd	INTERGARD 5000 BS4800 00A01 Dawn Grey	See 4.3	179 g/l	8010-99-000-5256
International Paint Ltd	INTERGARD 1735 WB QDE000/QDA049 BS4800 00A01	See 4.3	45 g/lt	8010-99-255-0527
International Paint Ltd	INTERGARD 1735 WB Dark Sea Grey BS381C 640	See 4.3	132 g/l	8010-99-702-0607
International Paint Ltd	INTERGARD 1735 WB Green BS4800 14C39	See 4.3	132 g/l	8010-99-483-1994
International Paint Ltd	INTERGARD 740 ECY999/A Black	See 4.3	420 g/l	8010-99-285-3824
International Paint Ltd	INTERCRYL 506 GREY WPA300	See 4.3	120 g/l	8010-99-147-1269
International Paint Ltd	INTERCRYL 700 White WXB000	See 4.3	50 g/l	8010-99-979-7888
International Paint Ltd	INTERCRYL 700 Yellow RAL 1018	See 4.3	50 g/l	8010-99-774-1224
International Paint Ltd	INTERSHIELD 852 NON-SKID Type 1 Black	See 4.3	134 g/l	8010-99-250-1864

ANNEX J
SUBMARINES

Supplier	Material	BR Class	VOC Compliant	NSN
Jotun Paints (Europe) Limited	PRIMASTIC UNIVERSAL MD	See 4.3	240 g/l	8010-99-509-7172
Jotun Paints (Europe) Limited	WATERFINE PRIMER Light Grey	See 4.3	50 g/l	8010-99-462-9708
Jotun Paints (Europe) Limited	WATERFINE TOPCOAT Signal Red BS381C 537	See 4.3	197 g/l	8010-99-921-4654
Jotun Paints (Europe) Limited	WATERFINE TOPCOAT Lt Brunswick Green BS381C 225	See 4.3	197 g/l	8010-99-131-6457
Jotun Paints (Europe) Limited	WATERFINE TOPCOAT White	See 4.3	197 g/l	8010-99-372-9140
Jotun Paints (Europe) Limited	WATERFINE TOPCOAT Wedgwood Blue BS4800 18D43	See 4.3	197 g/l	8010-99-212-5714
Jotun Paints (Europe) Limited	WATERFINE TOPCOAT Azure Blue BS381C 104	See 4.3	197 g/l	8010-99-186-9127
Jotun Paints (Europe) Limited	WATERFINE TOPCOAT Dark Blue BS4800 18C39	See 4.3	197 g/l	8010-99-347-9130
Jotun Paints (Europe) Limited	WATERFINE TOPCOAT Lt Weatherwork Grey BS381C 676	See 4.3	197 g/l	8010-99-989-6214
Jotun Paints (Europe) Limited	WATERFINE TOPCOAT CANARY BS381C 309	See 4.3	197 g/l	8010-99-352-4369
Jotun Paints (Europe) Limited	WATERFINE TOPCOAT Black	See 4.3	197 g/l	8010-99-877-1641
Jotun Paints (Europe) Limited	WATERFINE TOPCOAT Mid Brunswick Green BS381C 226	See 4.3	197 g/l	8010-99-873-4271
Jotun Paints (Europe) Limited	WATERFINE TOPCOAT Ash Grey BS4800 00A01	See 4.3	197 g/l	8010-99-272-2784
Maker Coating Systems Ltd	SIGMA AQUACOVER 45 7250 Black	See 4.3	17g/l	8010-99-500-7412
Maker Coating Systems Ltd	SIGMA AQUACOVER 45 7250 Mid Brunswick Green BS381C 226	See 4.3	17g/l	8010-99-269-1301
Maker Coating Systems Ltd	SIGMA AQUACOVER 45 7250 Wedgwood Blue BS4800 18D43	See 4.3	17g/l	8010-99-471-2071
Maker Coating Systems Ltd	SIGMA AQUACOVER 45 7250 Azure Blue BS381C 104	See 4.3	17g/l	8010-99-863-5457
Maker Coating Systems Ltd	SIGMA AQUACOVER 45 7250 Canary BS381C 309	See 4.3	17g/l	8010-99-182-2670
Maker Coating Systems Ltd	SIGMA AQUACOVER 45 7250 Dark Blue BS4800 18C39	See 4.3	17g/l	8010-99-957-7697
Maker Coating Systems Ltd	SIGMA AQUACOVER 25 7150 Buff	See 4.3	37g/l	8010-99-321-6318
Maker Coating Systems Ltd	SIGMA AQUACOVER 45 7250 Lt Brunswick Green BS381C 225	See 4.3	17g/l	8010-99-338-4734
Maker Coating Systems Ltd	SIGMA AQUACOVER 45 7250 Signal Red BS381C 537	See 4.3	17g/l	8010-99-880-0100
Maker Coating Systems Ltd	SIGMA AQUACOVER 45 7250 White	See 4.3	17g/l	8010-99-225-7360
Maker Coating Systems Ltd	AMERCOAT 300A Black	See 4.3	0 g/l	8010-17-115-8450
Maker Coating Systems Ltd	AMERCOAT 300A White	See 4.3	0 g/l	8010-17-108-8249
Maker Coating Systems Ltd	AMERCOAT 300A BS4800 00A01 Ash Grey	See 4.3	0 g/l	8010-99-535-8577
Maker Coating Systems Ltd	AMERCOAT 300A BS4800 14C39 Green	See 4.3	0 g/l	8010-17-113-5690
Maker Coating Systems Ltd	AMERLOCK 400C Grey	See 4.3	106 g/l	8010-99-974-7400
Maker Coating Systems Ltd	AMERLOCK 400C Black	See 4.3	106 g/l	8010-17-106-6001
Maker Coating Systems Ltd	AMERLOCK 400C White	See 4.3	106 g/l	8010-17-108-8248
Maker Coating Systems Ltd	AMERLOCK 400C RAL 6018 Yellow-Green	See 4.3	106 g/l	8010-99-383-2335
Maker Coating Systems Ltd	AMERLOCK 400C Non-Skid Type 1 Black	See 4.3	106 g/l	8010-99-184-8542
Maker Coating Systems Ltd	CORROLESS EPF Buff	See 4.3	80 g/l	8010-25-150-0972
Maker Coating Systems Ltd	CORROLESS EPF Black	See 4.3	80 g/l	8010-99-212-7555
Maker Coating Systems Ltd	CORROLESS RF 35 Off White	See 4.3	93 g/l	8010-25-150-0973
Maker Coating Systems Ltd	CORROLESS RF 35	See 4.3	93 g/l	8010-99-337-0778
Sherwin-Williams P&MC	ENVIROGARD M770 White	See 4.3	128 g/l	8010-99-231-3852
Sherwin-Williams P&MC	ENVIROGARD M770 Black	See 4.3	128 g/l	8010-99-768-1426
Sherwin-Williams P&MC	ENVIROGARD M770 Signal Red BS381C 537	See 4.3	128 g/l	8010-99-225-7155
Sherwin-Williams P&MC	ENVIROGARD M770 Canary BS381C 309	See 4.3	128 g/l	8010-99-726-4136
Sherwin-Williams P&MC	ENVIROGARD M770 Dark Blue BS4800 18C39	See 4.3	128 g/l	8010-99-723-3650
Sherwin-Williams P&MC	ENVIROGARD M770 Azure Blue BS381C 104	See 4.3	128 g/l	8010-99-878-8150
Sherwin-Williams P&MC	ENVIROGARD M770 Ash Grey BS4800 00A01	See 4.3	128 g/l	8010-99-517-5228
Sherwin-Williams P&MC	ENVIROGARD M770 Lt Brunswick Green BS381C 225	See 4.3	128 g/l	8010-99-313-9445
Sherwin-Williams P&MC	ENVIROGARD M770 Mid Brunswick Green BS381C 226	See 4.3	128 g/l	8010-99-862-5170
Sherwin-Williams P&MC	ENVIROGARD M770 Grey BS381C 676	See 4.3	128 g/l	8010-99-833-4765
Sherwin-Williams P&MC	ENVIROGARD M770 Wedgewood Blue BS4800 18D43	See 4.3	128 g/l	8010-99-723-3651
Sherwin-Williams P&MC	EPIDEK L716 Black	See 4.3	420 g/l	8010-99-225-0689
Sherwin-Williams P&MC	EPIDEK M377 Non-Skid Type 1 Black	See 4.3	330 g/l	8010-99-777-8692
Sherwin-Williams P&MC	EPIGRIP H795	See 4.3	575 g/l	8010-99-225-0195
Sherwin-Williams P&MC	EPIGRIP C251	See 4.3	235 g/l	8010-99-284-3464
Sherwin-Williams P&MC	EPIGRIP C425V2	See 4.3	186 g/l	8010-99-786-7949
Sherwin-Williams P&MC	EPIGRIP M111	See 4.3	383 g/l	8010-99-884-5957
Sherwin-Williams P&MC	EPIGRIP M902 Aluminium	See 4.3	219 g/l	8010-99-421-0972
Sherwin-Williams P&MC	EPIGRIP L524 Aluminium	See 4.3	296 g/l	8010-99-216-0021
Sherwin-Williams P&MC	EPIGRIP L524 White	See 4.3	296 g/l	8010-99-564-2934
Sherwin-Williams P&MC	EPIGRIP M922M Mastic Aluminium	See 4.3	146 g/l	8010-99-495-3873
Sherwin-Williams P&MC	BIOGARD M630V2 Black	See 4.3	0 g/l	8010-99-739-8402
Sherwin-Williams P&MC	BIOGARD M630V2 White	See 4.3	0 g/l	8010-99-313-4440
Sherwin-Williams P&MC	BIOGARD M630V2 Green BS4800 14C39	See 4.3	0 g/l	8010-99-255-5237
Sherwin-Williams P&MC	BIOGARD M630V2 Grey BS381C 676	See 4.3	0 g/l	8010-99-131-6908
Sherwin-Williams P&MC	RESISTEX M535 Black	See 4.3	502 g/l	8010-99453-1479

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