



Quotation sheet

Hempel (Croatia) Ltd.

Customer No: 4
Customer: PLOVPUT d.o.o.
 Obala Lazareta 1
 21000 Split
Project: Radna brodica od aluminijske legure

Date: 15.12.2014

Area: **PODVODNI DIO**

Area size: **43 sqm**

Surface preparation:

Povrsinu po potrebi odmastiti te oprati slatkom vodom visokim tlakom kako bi se uklonile sve površinske nečistoće i eventualni obrastaj.
 Stare slojeve boje ukloniti te površinu nahrapaviti pjeskarenjem nemetalnim (mineralnim) abrazivom do ujednaenog mat izgleda, alternativno za manje površine priprema površine može biti napravljena mehanickim brusenjem papirom granulacije 40-60. Povrsinu nako izvršene pripreme detaljno ocistiti od zaostalih kontaminacija.
 Bojanje ovako pripremljene površine izvršiti bez odgadanja.

F/C T/U(%) S/C	Product / shade:	Product name:	DFT (μ)	VS %	TSR sqm/ltr	Theo. total (ltr)	Unit price (HRK/ltr)	Total theo. price (HRK)	Theo. price (HRK/sqm)	Consump . factor	Calculated total (ltr)	Calculated price (HRK/sqm)	Total calc. price (HRK)
100 f/c	15570 50630	HEMPADUR 15570	125	55	4.40	9.77	63.00	615.51	14.31	1.30	12.70	18.61	800.10
100 f/c	15570 12170	HEMPADUR 15570	125	55	4.40	9.77	63.00	615.51	14.31	1.30	12.70	18.61	800.10
100 f/c	45182 19990	HEMPADUR 45182	100	46	4.60	9.35	58.00	542.30	12.61	1.30	12.16	16.40	705.28
100 f/c	7120D 31750	HEMPEL'S ALUSAFE 7120D	50	50	10.00	4.30	190.00	817.00	19.00	1.30	5.59	24.70	1,062.10
100 f/c	7120D 31750	HEMPEL'S ALUSAFE 7120D	50	50	10.00	4.30	190.00	817.00	19.00	1.30	5.59	24.70	1,062.10
100 f/c	7120D 31750	HEMPEL'S ALUSAFE 7120D	50	50	10.00	4.30	190.00	817.00	19.00	1.30	5.59	24.70	1,062.10
TOTAL:			500			41.79		4,224.32			54.33	127.72	5,491.78

This Quotation is governed by the applicable General Conditions for Sale, Delivery and Service of Hempel attached hereto. If General Conditions are not attached hereto, please refer to www.hempel.com from which you will be guided to the local website for the country of your purchase. The General Conditions can be found in the footer on each webpage.

Estimated consumption and - total prices are calculated on the consumption/loss factor and may vary subject to prevailing conditions during application.

Hempel's PreSale System 2.6.17 (Build 890) User name: Tomislav Pinteriæ T.S.R. : Theoretical Spreading rate.
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Remarks:

Preporučena minimalna ukupna debljina suhog filma antifoulinga je 120 mikrometara. Za plovila brzine korištenja iznad 15 èvorova preporuca se nanijeti dodatni premaz.

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Date: 15.12.2014

Summary:

Product no:	Can size: ltr	Product name:	Colour:	Calc. quantity ltr *	HRK per ltr	Total amount HRK	
15570 12170	20.00	HEMPADUR 15570	Grey	20.00	63.00	1,260.00	
15570 50630	20.00	HEMPADUR 15570	Red	20.00	63.00	1,260.00	
45182 19990	20.00	HEMPADUR 45182	Black	20.00	58.00	1,160.00	
7120D 31750	2.50	HEMPEL'S ALUSAFE 7120D	Blue	17.50	190.00	3,325.00	
Sub total :				77.50		7,005.00	*) Rounded off to can packing.

Thinner:

08080 00000	0.75	HEMPEL'S THINNER		1.50	29.00	43.50	
08450 00000	20.00	HEMPEL'S THINNER		20.00	32.00	640.00	
Thinner:				21.50		683.50	
Total :				99.00		7,688.50	*) Rounded off to can packing.

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General Conditions of Sale, Delivery and Service - effective June 2007

1. DEFINITIONS

- (a) "The Contract" means the agreement between the Seller and the Buyer as regards the Products named overleaf, including these General Conditions.
- (b) "The Products" means paints, coatings and related products and services as well as their packaging that form the subject-matter of the Contract.
- (c) "The Seller" means Hempel A/S ("Hempel") or alternatively the company named overleaf as the seller.
- (d) "The Buyer" means the company specified overleaf as the buyer.
- (e) "The Vessel(s)" means the vessel(s) named overleaf.

2. SCOPE

- (a) These General Conditions set out the standard terms on which the Seller supplies the Products to the Buyer and they shall apply to all quotations and sales unless otherwise agreed in writing. The Seller shall not be bound by conflicting purchasing conditions or reservations made by the Buyer even if the Seller has not explicitly contradicted the conditions or reservations. The Buyer may not assign his rights and obligations under these General Conditions.
- (b) The legality, validity and enforceability of other clauses in these General Conditions will not be affected if one of the clauses is or becomes illegal, invalid or unenforceable.

3. QUOTATIONS AND ORDERS

- (a) The Seller's quotation for goods or services is valid for 30 days from the date when the Buyer receives the quotation unless otherwise agreed in writing. The quotation shall be void if the Buyer does not accept the quotation unconditionally by placing a written order within 30 days.
- (b) The Seller is only bound by an order if he accepts it in writing or delivers the Products ordered to the Buyer.

4. PRICES

- (a) The prices in the Seller's price lists applicable on the date of conclusion of the Contract shall apply, unless otherwise agreed in writing.
- (b) Prices exclude taxes and duties as well as any loading and delivery costs that the Buyer must pay. All prices include the Seller's standard packing, but not pallets or crating for export goods.
- (c) Prices are based on present material, shop and freight costs. In the event of an increase of more than five per cent (5%) in aforementioned factors within the period between the conclusion of the Contract and the time of actual delivery, the Seller reserves the right to adjust the prices to directly reflect such changes.

5. PAYMENTS, TERMINATION, SUSPENSION AND LICENCES

- (a) Payment must be made in the currency specified in the invoice.
- (b) The Buyer must pay the full invoice amount within 30 days from the date of the invoice unless otherwise agreed in writing. The Seller is entitled to charge interest on overdue payments at the greater of the following two rates:
 - (i) 1.5% monthly above the current monthly base rate of the Seller's bank, or
 - (ii) 2% annually above the annual discount rate of the Central Bank in the country of the Seller's domicile.

The Buyer shall indemnify the Seller for all costs and expenses that the Seller incurs in collecting overdue amounts.

- (c) The Seller is entitled to terminate the Contract immediately by written notice to the Buyer if the Buyer is in material breach of his obligations under the Contract or any other agreement with the Seller. According to these General Conditions, material breach shall include, but not be limited to, situations where:
 - (i) the Buyer fails to meet his liabilities when they fall due,
 - (ii) the Buyer seeks a composition with his creditors,
 - (iii) all or part of the Buyer's property is subject to receivership, or
 - (iv) a petition for liquidation, winding-up or administration is filed in respect of the Buyer.
- (d) In the event that the Seller gives notice of termination according to the terms of Clause 5(c), all outstanding instalments shall be accelerated and deemed due and payable immediately and automatically. However, in such circumstances the Seller shall be obliged to give a discount for early payment of the accelerated instalments. The discount shall be calculated at the greater of the following two rates:
 - (i) 1.5% monthly above the current monthly base rate of the Seller's bank, or
 - (ii) 2% annually above the annual discount rate of the Central Bank in the country of the Seller's domicile.The Seller shall be released from his obligations under the Contract from the time he gives notice of termination, except for warranties for Products supplied and fully paid for before the date of termination.
- (e) The Buyer may not withhold, set off or deduct claims against the Seller from any amount that he owes the Seller under the Contract or any other agreement with the Seller.
- (f) The Seller's obligation to deliver the Products shall terminate if the Buyer fails to make due payment of all amounts that he owes the Seller at the date of delivery under the Contract or any other agreement with the Seller. Furthermore, the Seller shall be entitled to suspend delivery of the Products if the Buyer is in default and such suspension of delivery shall not affect the Seller's other rights under the Contract or any other agreement with the Buyer. The Seller is not obliged to resume deliveries until the Buyer has paid all overdue amounts, including all expenses and accrued interest.
- (g) It is the Buyer's exclusive responsibility to obtain all licences, exchange control documents and other consents needed for the export and import and use of the Products. The Buyer shall not be discharged from his obligations under these General Conditions if he fails to obtain a licence or other consents.

6. DELIVERY AND FORCE MAJEURE

- (a) The Products are delivered "Ex Works" (Incoterms 2000) at the place named overleaf.
- (b) The Buyer shall pay all costs incurred by the Seller as a result of the Buyer's failure to take delivery either:
 - (i) on the date stated in the invoice or the Seller's confirmation, or
 - (ii) when the Products are ready, if the Seller has notified the Buyer in writing of their readiness, and the Buyer has not taken delivery within seven days thereof, but never later than the date stated in (i) above, unless otherwise agreed in writing.
- (c) If the Seller agrees to deliver the Products on a specific date and fails to do so, the Buyer shall be entitled to cancel the whole order, or any part thereof, which has not been delivered. The Buyer accepts such right to cancel as his only remedy and expressly waives any other rights.
- (d) If agreed between the parties that the Products shall be transported at the Seller's risk, the Buyer must thoroughly inspect such Products upon delivery. The Buyer shall notify the Seller within 48 hours from delivery of any damage to, loss or shortage of the Products. If the Buyer does not receive the Products on the agreed date of delivery, he must notify the Seller within 48 hours of the agreed date of delivery. The Seller disclaims all liability, and the Buyer waives his rights of recovery, under this provision unless the Buyer's information is sufficient to allow the Seller to make a valid claim against the carrier of the Products for such damage, loss or shortage.
- (e) The Seller is released from his obligation to deliver the Products on the original delivery date, and is allowed to extend the date of delivery, if events beyond his reasonable control (force majeure) prevent him from performing the Contract. Should such events continue to prevent the Seller from performing the Contract, the Seller may cancel the Contract.
- (f) The Seller may withhold, reduce or suspend delivery of the Products to reasonably allocate his supply capacity between the Buyer and his other customers if events beyond his reasonable control prevent him from delivering all the Products and fully comply with orders from his other customers. In such event, the Buyer is entitled to cancel the undelivered order(s).

7. PASSING OF RISK AND TITLE AND RETURNS

- (a) The Seller's liability for the Products passes from the Seller to the Buyer at the earlier of the following two points in time:
 - (i) when the Products are delivered to the Buyer, the Buyer's agent, or a person that the Buyer has authorised to accept delivery, or
 - (ii) the agreed date of delivery, if the Buyer fails to take delivery as required under the Contract.
- (b) The Seller remains the owner of the Products until he receives full payment for all Products whether or not the Products have been delivered to the Buyer. If the Buyer resells the Products to a third party before the Seller receives full payment, the proceeds of the sale shall first apply to pay all amounts due to the Seller. In the event that the Buyer has not paid the full purchase price or if insolvency proceedings are commenced against the Buyer, the Seller or his representative is entitled to recover or resell the Products and to enter the Buyer's premises for that purpose and such steps shall not affect the Seller's other rights.
- (c) All sales are final. The Buyer is not entitled to credit for returned Products whether or not he has made a complaint or a claim, unless otherwise agreed in writing in which case the Buyer is obliged to return such Products promptly and in good condition, carriage-paid.

8. THE SELLER'S WARRANTY AND LIMITATIONS OF LIABILITY

The Seller's Liability for the Products

- (a) The Seller warrants that the Products are of sound material and workmanship and conform to the published product information that applies at the date of purchase. This Clause 8 provides the only warranty for the Products, and it replaces and supercedes all other warranties for the Products, whether express or implied. The Seller shall have no other liability under this Contract (express or implied), in tort or otherwise for the quality, performance, merchantability or fitness for any purpose of the Products.
- (b) The Seller's warranty does not include defects or damage that occur in areas that are not reasonably accessible through ordinary means of repair because of their shape or location. Nor does the Seller's warranty include damage which is caused by mechanical damage, welding or other heating, bacterial attack, pollution, electromechanical actions, damage during repair, deterioration beneath applied coatings or friction, except for ordinary wear and tear. The Seller is only liable under this warranty, if the Buyer has:
 - (i) prepared all surfaces before coating and maintained them after coating,
 - (ii) transported, stored, handled and used the Products in accordance with all information given to the Buyer by the Seller and any international customs of the trade,
 - (iii) made a written claim documenting the alleged defect in or damage to the Products within 10 days of the date when the Buyer first became aware or could reasonably have become aware of the defect or the damage,
 - (iv) allowed the Seller reasonable time to inspect the Products and the area of their application,
 - (v) complied with his obligations under the Contract, including making timely payment of the purchase price, and
 - (vi) stopped using the Products as soon as he detected or could have detected the defect.
- (c) In the event of a breach of warranty under this Clause 8, the Seller must at his own option either replace the Products or pay the costs of purchasing equivalent Hempel products elsewhere, but the Seller is not obliged to pay an amount above the invoiced price for the Products. The Buyer is not entitled to any other remedy once the Seller has replaced the Products or paid the costs of purchasing equivalent Hempel products elsewhere. The Seller may suspend subsequent deliveries of the Products or postpone corresponding dates of delivery accordingly until the validity of the Buyer's claim has been finally determined.
- (d) This warranty lapses automatically when the Products' shelf-life ends or 12 months after the date of delivery, whichever is the earlier.

The Seller's Liability for Technical Advice or Other Services

- (e) The Seller is only liable for technical advice, instructions and other information about the use of the Products or other services provided by himself or his representative if the Buyer can demonstrate that
 - (i) the Seller has given the advice or services negligently in light of the information, equipment and knowledge available to the Seller at the time, and
 - (ii) that the Buyer has suffered direct loss as a result. Consequently, the Seller is not liable for indirect losses, including loss of profit or earnings, loss of time or loss of use of the Vessel(s), machinery or equipment.

Limitation of Liability

- (f) The parties agree that the Seller's liability to the Buyer shall not exceed the invoiced price for the Products.
- (g) The Seller shall not be liable for any loss of profit or earnings, loss of time or loss of use of the Vessel(s), machinery or equipment. In no circumstances shall the Seller be liable for any special or indirect loss or damage whatsoever.
- (h) The Seller shall not be liable for any infringement of a third party's intellectual property rights caused by the Buyer's use of the Products.
- (i) Any exclusions or limitations of liability in this Contract in favour of the Seller are agreed to be extended for the benefit of all companies and/or individuals within the Hempel Group. The Buyer agrees in the appointment of the Seller as its agent or trustee solely for the extension of the benefit of the exclusions and limitations of liability. All duties, liabilities and obligations which would otherwise result from this agency are expressly excluded.

Limitation Period

- (j) Subject to law as regards personal injury and death, the Buyer shall have no claim against the Seller, in contract or in tort, in relation to anything performed or delivered under the Contract (including claims for defective products, services or goods), unless the Seller has been notified in writing of such claims within twenty-four (24) months of delivery.

9. CHOICE OF LAW AND JURISDICTION

- (a) For sales to Danish buyers, the laws of Denmark shall govern the Contract, and the Danish Maritime and Commercial Court shall have sole jurisdiction over disputes that arise from the Contract. For all other sales, the Contract shall be governed by and construed in accordance with English law, and the High Court of Justice in London shall have sole jurisdiction over disputes that arise from the Contract. However, the Buyer expressly agrees that the Seller may take action in another jurisdiction to obtain security for the Seller's claims under the Contract. The security also includes admiralty arrest proceedings against the Vessel(s), any sister ships or, if permitted under local law, other vessels under the same or associated management or control.
- (b) Neither the Uniform Law on the International Sale of Goods, the Uniform Law on the Formation of Contracts for the International Sale of Goods nor the Convention on Contracts for the International Sale of Goods applies to the Contract. Incoterms 2000 are to be considered an integral part of these General Conditions unless they are inconsistent with the above terms.
- (c) The Contract constitutes the entire agreement between the Seller and the Buyer concerning the supply of the Products. The Buyer agrees that he has no other rights of recourse against the Seller other than those expressly stated in these General Conditions. These General Conditions shall apply whether or not the Buyer has a cause of action based on negligence on the part of the Seller or his representative.



HEMPADUR 15570

15570: BASE 15579: CURING AGENT 95570

Description:	HEMPADUR 15570 is a two component, polyamide-adduct cured epoxy paint, which cures to a strong and highly corrosion resistant coating, at temperatures down to -10°C/14°F. The Micaceous Iron Oxide pigmented light grey 12430 shade is also well suited for application under humid conditions, on damp steel surfaces, and may be applied on moist surfaces. The greyish yellow 21780 shade contains zinc phosphate.
Recommended use:	As a maintenance and repair primer, intermediate, and/or finishing coat in HEMPADUR systems in severely corrosive environment. As a finishing coat where a cosmetic appearance is of less importance. As a low temperature curing epoxy primer, intermediate, and/or finishing coat in paint systems according to specification. Well suited as a (blast) primer in epoxy systems. Mist coat on GALVOSIL.
Service temperature:	Maximum, dry exposure only: 140°C/284°F Ballast water service. Resists normal ambient temperatures at sea (Avoid long-term exposure to negative temperature gradients). Other liquids: Contact HEMPEL
Certificates/Approvals:	Approved as a low flame spread material when used as part of a predefined paint system. Please refer to "Declaration of Conformity" on www.Hempel.com for further details. Complies with EU Directive 2004/42/EC: subcategory j. (see REMARKS overleaf)
Availability:	Part of Group Assortment. Local availability subject to confirmation.
PHYSICAL CONSTANTS:	
Shade nos/Colours:	12430 (MIO)* / Reddish grey
Finish:	Flat
Volume solids, %:	54 ± 1
Theoretical spreading rate:	5.4 m ² /l [216.5 sq.ft./US gallon] - 100 micron/4 mils
Flash point:	25 °C [77 °F]
Specific gravity:	1.4 kg/litre [11.6 lbs/US gallon]
Dry to touch:	3 - 4 approx. hour(s) 20°C/68°F
Fully cured:	7 day(s) 20°C/68°F
VOC content:	414 g/l [3.4 lbs/US gallon] <i>*other shades according to assortment list.</i>
	<i>The physical constants stated are nominal data according to the HEMPEL Group's approved formulas.</i>
APPLICATION DETAILS:	
Version, mixed product:	15570
Mixing ratio:	BASE 15579: CURING AGENT 95570 3 : 1 by volume
Application method:	Airless spray / Air spray / Brush
Thinner (max.vol.):	08450 (5%) / 08450 (15%) / 08450 (5%)
Pot life:	2 hour(s) 20°C/68°F
Nozzle orifice:	0.019 - 0.021 "
Nozzle pressure:	175 bar [2537.5 psi] (Airless spray data are indicative and subject to adjustment)
Cleaning of tools:	HEMPEL'S TOOL CLEANER 99610
Indicated film thickness, dry:	100 micron [4 mils] see REMARKS overleaf
Indicated film thickness, wet:	200 micron [8 mils]
Overcoat interval, min:	see REMARKS overleaf
Overcoat interval, max:	see REMARKS overleaf
Safety:	Handle with care. Before and during use, observe all safety labels on packaging and paint containers, consult HEMPEL Safety Data Sheets and follow all local or national safety regulations.



HEMPADUR 15570

SURFACE PREPARATION:

New steel: Abrasive blasting to Sa 2½ (ISO 8501-1:2007). For temporary protection, if required, use a suitable shopprimer. All damage of shopprimer and contamination from storage and fabrication should be thoroughly cleaned prior to final painting. For repair and touch-up use: HEMPADUR

Other metals and light alloys: Thorough degreasing and (light) abrasive sweeping to remove contamination and to secure adhesion - surface profile depending on later exposure.

Stainless steel: (eg. ballast tanks of chemical carriers) to be abrasive blast cleaned to a uniform, sharp, dense profile (Rugotest No. 3, BN9a, ISO Comparator Medium (G), Keane-Tator Comparator 2.0 G/S) corresponding to Rz minimum 50 micron. Any salts, grease, oil, etc. to be removed before abrasive blasting is commenced.

Maintenance: Remove oil and grease etc. thoroughly with suitable detergent. Remove salts and other contaminants by high pressure fresh water cleaning. Clean damaged areas thoroughly by power tool cleaning to St 3 (ISO 8501-1:2007) (minor areas) or by abrasive blasting to min. Sa 2, preferably to Sa 2½ (ISO 8501-1:2007). Improved surface preparation will improve the performance of the product. As an alternative to dry cleaning, water jetting to sound, well adhering coat and/or to steel. Intact coat must appear with roughened surface after the water jetting. By water jetting to steel, cleanliness shall be: Wa 2 -Wa 2½ (atmospheric exposure) / minimum Wa 2½ (immersion) (ISO 8501-4:2006). Acceptable flash-rust degree before application: maximum M (atmospheric exposure) / M, preferably L (immersion) (ISO 8501-4:2006). Feather edges to sound and intact areas. Dust off residues. Touch up bare spots to full film thickness. This should be done when the painted surface has reached the condition of being damp, possibly moist. In case of wet abrasive blasting a suitable inhibitor may be used. Surplus inhibitor and residual abrasives and sludge must be removed by (high pressure) fresh water cleaning before recoating. Cleaning with hot water is recommended.

Note 1: Inhibitors are generally not recommended for surfaces which will be immersed during service.

Note 2: Damp surfaces: water is not readily detectable, but the temperature of the surface is below the dew point. **Moist surfaces:** pools of water and droplets have been removed, but there is a noticeable film of water. **Wet surface:** droplets or pools of water are present.

APPLICATION CONDITIONS:

Use only where application and curing can proceed at temperatures above: -10°C/14°F. At the freezing point and below be aware of the risk of ice on the surface, which will hinder adhesion. The temperature of paint itself should be 15°C/59°F or above. In confined spaces provide adequate ventilation during application and drying. Occurrence of standing water or droplets on the painted surface immediately after application may result in discolouration.

PRECEDING COAT:

None, or as per specification.

SUBSEQUENT COAT:

None, or as per specification. Recommended systems are: HEMPADUR, HEMPATHANE, HEMPATEX

REMARKS:

VOC - EU Directive 2004/42/EC:

Product	As supplied	15 vol. % thinning	Limit phase II, 2010
1557012430	414 g/l	480 g/l	500 g/l

For VOC of other shades, please refer to Safety Data Sheet.

Weathering/service temperatures:

The natural tendency of epoxy coatings to chalk in outdoor exposure and to become more sensitive to mechanical damage and chemical exposure at elevated temperatures is also reflected in this product. May be specified in another film thickness than indicated depending on purpose and area of use. This will alter spreading rate and may influence drying time and overcoating interval. Normal range dry is: 50-125 micron/2-5 mils

Film thicknesses/thinning:

Overcoating:

Overcoating intervals related to later conditions of exposure: If the maximum overcoating interval is exceeded, roughening of the surface is necessary to ensure intercoat adhesion. Before overcoating after exposure in contaminated environment, clean the surface thoroughly with high pressure fresh water hosing and allow drying.

A specification supersedes any guideline overcoat intervals indicated in the table.

Environment	Atmospheric, medium					
	-10°C (14°F)		0°C (32°F)		20°C (68°F)	
	Min	Max	Min	Max	Min	Max
HEMPADUR	36 h	Ext.	18 h	Ext.	4 h	Ext.
HEMPATEX	18 h	3 d	9 h	36 h	2 h	8 h
HEMPATHANE	36 h	90 d	18 h	45 d	4 h	10 d
Environment	Immersion					
	HEMPADUR	3 d	Ext.	1½ d	Ext.	8 h

NR = Not Recommended, Ext. = Extended, m = minute(s), h = hour(s), d = day(s)

Note:

HEMPADUR 15570 For professional use only.

ISSUED BY:

HEMPEL A/S



HEMPADUR 15570

1557012430

This Product Data Sheet supersedes those previously issued.

For explanations, definitions and scope, see "Explanatory Notes" available on www.hempel.com. Data, specifications, directions and recommendations given in this data sheet represent only test results or experience obtained under controlled or specially defined circumstances. Their accuracy, completeness or appropriateness under the actual conditions of any intended use of the Products herein must be determined exclusively by the Buyer and/or User.

The Products are supplied and all technical assistance is given subject to HEMPEL's GENERAL CONDITIONS OF SALES, DELIVERY AND SERVICE, unless otherwise expressly agreed in writing. The Manufacturer and Seller disclaim, and Buyer and/or User waive all claims involving, any liability, including but not limited to negligence, except as expressed in said GENERAL CONDITIONS for all results, injury or direct or consequential losses or damages arising from the use of the Products as recommended above, on the overleaf or otherwise. Product data are subject to change without notice and become void five years from the date of issue.



Product Data

HEMPADUR 45182

45182: BASE 45187 : CURING AGENT 98180

Description:	HEMPADUR 45182 is a two-component, low-temperature curing, modified polyamide adduct cured epoxy.
Recommended use:	For marine and protective use as a "tiecoat" ("tackcoat") between epoxy and physically drying coatings. For marine use also as a "sealer" of old antifouling.
Service temperature:	Maximum, dry exposure only: 80°C/176°F
Availability:	Part of Group Assortment. Local availability subject to confirmation.

PHYSICAL CONSTANTS:

Shade nos/Colours:	25150 / Yellowish grey
Finish:	Flat
Volume solids, %:	46 ± 1
Theoretical spreading rate:	4.6 m ² /l [184.5 sq.ft./US gallon] - 100 micron/4 mils
Flash point:	23 °C [73.4 °F]
Specific gravity:	1.3 kg/litre [11.1 lbs/US gallon]
Dry to touch:	6 approx. hour(s) 20°C/68°F
Fully cured:	7 day(s) 20°C/68°F
VOC content:	483 g/l [4 lbs/US gallon]

The physical constants stated are nominal data according to the HEMPEL Group's approved formulas.

APPLICATION DETAILS:

Version, mixed product:	45182
Mixing ratio:	BASE 45187 : CURING AGENT 98180 4 : 1 by volume
Application method:	Airless spray / Brush
Thinner (max.vol.):	08450 (5%) / 08450 (5%)
Pot life:	3 hour(s) 20°C/68°F
Nozzle orifice:	0.023 "
Nozzle pressure:	200 bar [2900 psi] (Airless spray data are indicative and subject to adjustment)
Cleaning of tools:	HEMPEL'S TOOL CLEANER 99610
Indicated film thickness, dry:	100 micron [4 mils]
Indicated film thickness, wet:	225 micron [9 mils]
Overcoat interval, min:	see REMARKS overleaf
Overcoat interval, max:	see REMARKS overleaf
Safety:	Handle with care. Before and during use, observe all safety labels on packaging and paint containers, consult HEMPEL Safety Data Sheets and follow all local or national safety regulations.



HEMPADUR 45182

SURFACE PREPARATION:

New steel: Remove oil and grease etc. thoroughly with suitable detergent. Remove salts and other contaminants by high pressure fresh water cleaning. Abrasive blasting to minimum Sa 2½ (ISO 8501-1: 2007) with a surface profile corresponding to Rugotest No. 3, N9a to N10, preferably BN9a to BN10, Keane-Tator Comparator, 2.0 G/S or ISO Comparator, Medium (G). For temporary protection, if required, use a suitable shopprimer. All damage of shopprimer and contamination from storage and fabrication should be thoroughly cleaned prior to final painting.

Repair and maintenance: Remove oil and grease etc. thoroughly with suitable detergent. Remove salts and other contaminants by high pressure fresh water cleaning. When used as "tiecoat": Remove all rust and loose material by abrasive blasting or power tool cleaning. Dust off residues. Touch up bare spots to full film thickness.

When used as "sealer" on old antifouling: a very careful high pressure freshwater cleaning -or jetting, if needed - to remove possible leached layer of antifouling and make sure that old layers of weak intercoat adhesion ("sandwich structure") really are removed.

APPLICATION CONDITIONS:

Apply only on a dry and clean surface with a temperature above the dew point to avoid condensation. Use only where application and curing can proceed at temperatures above: -10°C/14°F. The temperature of the surface and that of the paint itself must also be above this limit. In confined spaces provide adequate ventilation during application and drying.

PRECEDING COAT:

According to specification. In case of an old antifouling system this must be well cleaned and in good condition.

SUBSEQUENT COAT:

According to specification.

REMARKS:

Film thicknesses/thinning:

The product is designed for overcoating with antifoulings in any normal specified total film thicknesses. The product is not designed for overcoating with heavy duty epoxy systems. Later maintenance of paint systems with the product as a part of the system is accordingly most conveniently carried out by touch-up with a "mastic" type epoxy and with a proper overlap of intact surrounding paint system. May be specified in another film thickness than indicated depending on purpose and area of use. This will alter spreading rate and may influence drying time and recoating interval. Normal range dry is: 75-125 micron/3-5 mils. As "sealer" typically to be specified in: 50-75 micron/2-3 mils dry film thickness. Thinning may be required to facilitate proper film formation.

Overcoating:

Overcoating intervals related to later conditions of exposure: If the maximum overcoating interval is exceeded, roughening of the surface is necessary to ensure intercoat adhesion.

Before overcoating after exposure in contaminated environment, clean the surface thoroughly with high pressure fresh water hosing and allow drying.

A specification supersedes any guideline overcoat intervals indicated in the table.

Environment	Immersion					
	-10°C (14°F)		0°C (32°F)		20°C (68°F)	
	Min	Max	Min	Max	Min	Max
Conventional A/F	54 h	45 d	27 h	22½ d	6 h	5 d

NR = Not Recommended, Ext. = Extended, m = minute(s), h = hour(s), d = day(s)

Overcoating note:

A completely clean surface is mandatory to ensure intercoat adhesion, especially at long overcoating intervals. Any dirt, oil, grease, and other foreign matter must be removed with suitable detergent followed by (high pressure) fresh water cleaning. Salts to be removed by fresh water hosing. Any degraded surface layer, as a result of a long exposure period, must be removed as well. Water jetting may be relevant to remove any degraded surface layer and may also replace the above mentioned cleaning methods when properly executed. To check whether the quality of the surface cleaning is adequate, a test patch may be relevant. A thin extra coat of the product may advantageously be applied if there is any doubt about suitability of cleaning process.

Note:

HEMPADUR 45182 For professional use only.

ISSUED BY:

HEMPEL A/S
4518225150

This Product Data Sheet supersedes those previously issued.

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HEMPEL'S ALUSAFE 7120D

Description: HEMPEL'S ALUSAFE 7120D is a copper-free self polishing antifouling with organic bioactive material. It changes to its final colour after approximately 1 week of exposure to water. Due to its self-renewing effect this product maintains an effective bioactive surface during its entire service life.

Recommended use: As an antifouling for boats of aluminium and other light-alloy metal. Primarily for use in water with relatively low fouling potential. Length of service may have a certain influence on colour. The antifouling may obtain a greenish tinge. For cold and temperate waters.

Certificates/Approvals:

Availability: Part of European Yacht assortment. Local availability subject to confirmation.

PHYSICAL CONSTANTS:

Shade nos/Colours: 10000*/ White.
Finish: Semi-flat
Volume solids, %: 54 ± 1
Theoretical spreading rate: 13.5 m²/l [541.4 sq.ft./US gallon] - 40 micron/1.6 mils
Flash point: 32 °C [89.6 °F]
Specific gravity: 1.5 kg/litre [12.6 lbs/US gallon]
Dry to touch: 4 approx. hour(s) 20°C/68°F
8 (approx.) hrs at 10°C/50°F
VOC content: 399 g/l [3.3 lbs/US gallon]

**other shades according to assortment list.*

The physical constants stated are nominal data according to the HEMPEL Group's approved formulas.

APPLICATION DETAILS:

Application method: Airless spray / Air spray / Brush/Roller/Paint pad
Thinner (max.vol.): 08081 (5%) / 08081 (15%) / 08081 (5%)
Nozzle orifice: 0.018 - 0.023 "
Nozzle pressure: 150 bar [2175 psi]
(Airless spray data are indicative and subject to adjustment)
Cleaning of tools: HEMPEL'S THINNER 08081
Indicated film thickness, dry: 40 micron [1.6 mils] see REMARKS overleaf
Indicated film thickness, wet: 75 micron [3 mils]
Recoat interval, min: According to specification.
Recoat interval, max: According to specification.

Safety: Handle with care. Before and during use, observe all safety labels on packaging and paint containers, consult HEMPEL Safety Data Sheets and follow all local or national safety regulations.



HEMPEL'S ALUSAFE 7120D

SURFACE PREPARATION:

Existing old self-polishing or ablative antifouling: Remove possible oil and grease etc. with suitable detergent (HEMPEL'S PRE-CLEAN 67602), followed by high pressure fresh water cleaning for a thorough removal of any possible weak structure of leached antifouling. Allow the surface to dry before coating.

Sealer: Whether to use a sealer coat/tiecoat or not depends on the type and condition of the existing antifouling.

APPLICATION CONDITIONS:

The surface must be completely clean and dry at the time of application and its temperature must be above the dew point to avoid condensation. The temperature of the paint itself should be above:

15°C/59°F. Do not apply in direct sunlight.

In confined spaces provide adequate ventilation during application and drying.

PRECEDING COAT

According to specification. Recommended systems are: HEMPEL'S UNDERWATER PRIMER 26030, HEMPEL'S LIGHT PRIMER 45551

SUBSEQUENT COAT:

None.

REMARKS:

This product contains heavy particles. Stir well before use.

Film thicknesses/thinning:

Keep thinning to a minimum to ensure that correct film thickness is obtained.

Recoating note:

Recommended number of coats:

Airless spray: 2-3 coats, Minimum: 120 micron total dry film thickness.

Air spray, Brush, Roller, Paint pad: 3-5 coats.

When used at speeds above 15 knots, an additional coat must be applied.

Launching: not before 24 hours after application of the last coat.

After painting, the product can be left out of water for up to: 3 months.

No maximum recoat interval, but after prolonged exposure to polluted atmosphere, remove accumulated contamination by high pressure fresh water cleaning and allow to dry before applying next coat.

Note:

HEMPEL'S ALUSAFE 7120D

The information given in the Product Data Sheet is intended for commercial use.

ISSUED BY:

HEMPEL A/S

7120D10000

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