

# APPLICATION INSTRUCTIONS

For product description refer to the product data sheet

## HEMPADUR\* MULTI-STRENGTH\* 35530

CURING AGENT 95530

### Scope:

These Application Instructions cover surface preparation, application equipment, and application details for HEMPADUR 3553.

### Surface preparation:

#### **When used as a heavy duty coating or in fresh water tanks:**

Abrasive blasting to min. Sa 2½, SSPC-SP-10. Surface profile corresponding to Rugotest No. 3, BN 11, Keane-Tator Comparator, 5.5 G/S, or ISO Comparator Coarse (G). Oil and grease must be removed with suitable detergent, salts and other contaminants by (high pressure) fresh water hosing prior to blasting. After blasting, clean the surface carefully from abrasives and dust.

**On old steel surfaces having been exposed to salt water**, excessive amounts of salt residues in fittings may call for dry abrasive blasting, high pressure fresh water hosing, drying, and finally, dry abrasive blasting again.

**Concrete:** The concrete must be of good quality and fully cured, eg 28 days for normal Portland cement, and completely dry with a humidity content in the surface below 4%. The concrete must also be controlled for absence of capillary water action or for subsoil water.

Minimum pull-off value should normally be 20 kilopond/cm² measured after surface preparation. Any cracks, crevices and voids must be repaired.

All possible slip agent, oil, grease and other contaminants must be removed by eg abrasive blasting, volatilizing by flame cleaning or treatment with HEMPEL'S NAVI WASH 9933. The last mentioned in the following way: Saturation of the surface with fresh water. Washing with HEMPEL'S NAVI WASH 9933 followed by fresh water hosing.

Depending on construction and purpose, abrasive blast, high pressure water jet or treat the concrete with power tools to obtain a rough and firm surface free of scum layer and other contamination. Remove dust and loose material. If mechanical treatment is impossible, the surface may be treated with acid etching. For this purpose an approx. 5% w/w nitric or phosphoric acid solution is recommended.

**Note:** Strong acids, take necessary precautions, make sure that safety regulations are obeyed!

Prior to etching the concrete should be saturated with fresh water to prevent acid corrosion of the reinforcement bars. Leave the acid to act for 3-4 minutes and hose down the surface with fresh water - preferably first a 5% w/w sodium hydroxide solution - and scrub carefully. After that the surface must dry homogeneously and appear as an even, rough surface free of a loose outer layer. The surface must have a pH reaction of between 6.5-8.0. If any of these conditions are not fulfilled, the process must be repeated. The surface must be dried with good ventilation for at least 2 days at 65% relative humidity and 20°C/68°F. The pretreatment is controlled by scraping with a strong knife. The surface must feel solid and hard, and the knife must only leave a clear scratch mark.

Seal the surface with HEMPADUR SEALER 0597 in such a way that the surface is just saturated. Surplus must be removed (do also see the Product Data sheet for HEMPADUR SEALER 0597).

### Application equipment:

HEMPADUR MULTI-STRENGTH 3553, being a solventfree, high viscosity material, requires special measures to be taken at application.

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**Standard airless heavy duty spray equipment:**

Pump ratio: min 45:1 (See Note below)  
Pump output: 12 litres/minute (theoretical)  
Input pressure: min 6 bar/90 psi  
Spray hoses: max 15 metres/50 feet, 3/8" internal diameter  
max 3 metres/10 feet, 1/4" internal diameter

Regular surfaces:  
Nozzle size: .023" through .031"  
Fan angle: 40-60°.

Complicated surfaces:  
Nozzle size: .019" through .023"  
Fan angle: 40°

**Note:** Avoid the use of a suction hose. Use an interchangeable pipe, which makes it possible to remove cured paint. If longer spray hoses are necessary the pump ratio must be raised to 60:1 or more, yet the high output capacity of the pump must be maintained.

**Thinning:**

Alternatively 1-2% THINNER 0845 may be added, but thinning must be done with care as the antisagging properties are drastically reduced by overthinning.

Airless spray data are indicative and subject to adjustment.

**Mixing:**

Stir the CURING AGENT 95530 well before mixing with BASE. Continue the mixing until a complete uniform colour is achieved.

**Hot airless spray equipment:**

Use the same airless spray pump as described above.

On the output side of the pump an electrically heated, explosion proof, high pressure, material heater is fitted. For instance GRACO Model No 6 773 338, 2500 Watt, max. working pressure 312 Bar (4-1 safety factor) or similar equipment.

Spray hoses: 45 metres/150 feet, 3/8" internal diameter.  
3 metres/10 feet, 1/4" internal diameter.

Regular surfaces:  
Nozzle size: .023" through .031"  
Fan angle: 40-60°

Complicated surfaces:  
Nozzle size: .019" through .023".  
Fan angle: 40°.

**Procedure for hot airless spray:**

- a) Follow the pump supplier's instructions for the use of the heater.
- b) At surrounding temperatures below approximately 15°C/59°F start by heating up the hoses by recirculation of THINNER 0845 or HEMPEL'S TOOL CLEANER 9961.
- c) Keep THINNER 0845 or HEMPEL'S TOOL CLEANER 9961 readily available for fast cleaning of the equipment.
- d) Start spraying immediately after proper mixing and mechanical stirring of BASE 35539 and CURING AGENT 95530.
- e) Adjust the heater to approximately 50°C/122°F and check this temperature at short intervals.
- f) The spraying should as far as possible run continuously. At any break longer than 2-3 minutes, switch off the heat and flush the equipment immediately and thoroughly with one of the solvents mentioned above under c).

- g) After finishing the application, switch off the heat and clean the equipment immediately with THINNER 0845 or HEMPEL'S TOOL CLEANER 9961. Continue the cleaning by re-circulation for at least 30 minutes.

**Pot life:**

When measured under standard conditions the pot life is one hour at 20°C/68°F. However, for a 20 litres/5 US gallons mix, the heat developed by the chemical reaction between BASE and CURING AGENT is so intense that the corresponding practical pot life is **substantially shorter**.

Therefore:

- Irrespective of equipment, use the paint immediately after mixing. At a normal application speed the 20 litres/5 US gallons are used in approx. 10 minutes.
- Keep an eye on the paint temperature frequently for instance by touching the can with your hand. If it feels more than hand warm, discard the paint and flush the equipment immediately irrespective of type of spray equipment.

**Paint temperature:**

If the in-can temperature is below approximately 15°C/59°F viscosity will be too high for application. If the paint temperature at mixing is 25°C/77°F or higher a substantial risk of shortened pot life and curing in can/spray equipment exists. **When working in warm, sub-tropical/ tropical climates a refrigerated container can be used for storing/ cooling of the paint before application.** Alternatively 3553 can be replaced with HEMPADUR MULTI-STRENGTHs 3547 or 4575 for exterior surfaces exposed to wear or with HEMPADUR 3573 in case of potable water tanks.

**Stripe coating:**

Edges, corners, manual welds, and places difficult to cover properly by spray application should be stripe coated (touched up) either before or after the spray application.

One or two stripe coats will usually be necessary, but depending on actual conditions.

HEMPADUR MULTI-STRENGTH 3553 may be slightly thinned with THINNER 0845, except for stripe coating in potable water tanks.

**Extra film thickness:**

Extra thickness - extra layer(s) - may be necessary in case of severely pitted and/or where very high degrees of antiabrasive properties are needed.

**Two- coat application:**

When applied in two coats it is an advantage to apply the first coat thicker than the second coat, for instance 300 micron for first, 200 micron for the second layer.

**RECOATING intervals:**

Within a maximum of 85% Relative Humidity the following recoating intervals apply (d=days h=hours):

Steel temperature	0°C/°F		10/50	15/59	20/68	25/77	30/86	35/95	40/104
HEMPADUR qualities	Min		60 h	38 h	24 h	16 h	12 h	9 hours	8 hours
	Max		13 d	8 d	5 d	3½ d	2½ d	44 hours	36 hours
HEMPANYL TAR 1628 HEMPATHANE qualities	Min		30 h	19 h	12 h	8 h	6 h	4½ h	4 h
	Max		60 h	38 h	24 h	16 h	12 h	9 h	8 h

The layer of HEMPADUR MULTI-STRENGTH 3553 must NOT be exposed to (steel) temperatures below 10°C/50°F, condensing humidity nor relative humidities higher than 85% before recoating.

**Curing table:**

The following curing times apply:

Steel temperature	°C/°F	10/50	15/59	20/68	25/77	30/86	35/95	40/104
Fully cured		18 days	11 days	7 days	5 days	3½ days	2½ days	2 days
"Initial curing"		7½ days	5 days	3 days	2 days	1½ days	1 day	1 day

**Filling of tanks:**

Tanks should generally not be taken into use before HEMPADUR MULTI-STRENGTH 3553 is fully cured (see above).

Full curing is mandatory in potable water tanks.

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Exposure to ballast water and crude oil may exceptionally take place after an "initial curing" time as listed above.

**Water resistance:**

HEMPADUR MULTI-STRENGTH 3553 is resistant to light showers and condensation after an initial curing time as listed:

Steel temperature	10°C/50°F	15°C/59°F	20°C/68°F	25°C/77°F	30°C/86°F
Minimum time	60 hours	32 hours	24 hours	20 hours	15 hours

**Note:** In multi-coat systems HEMPADUR MULTI-STRENGTH 3553 **must not be exposed to water between coats** due to risk of exuding curing agent, which will impair the adhesion. In case the surface has become wet, thorough solvent cleaning is called for to remove the exudation, and the adhesion of the following coat should be checked on a test patch. Contact nearest Hempel office for further details.

**Ventilation during application:**

The following ventilation is recommended during application and drying for full coating of tanks and void spaces:

Size of tank/void space	Number of air shifts
100 m³/3300 cbft	4-10 times per hour
400 m³/13300 cbft	2-5 times per hour
1000 m³/33000 cbft	1-3 times per hour
4000 m³/133000 cbft	1 time per hour

The ventilation is not needed for the drying/curing of the coating, but recommended in order to remove e.g. spraydust from application.

**Minimum outdocking interval:**

When the painted surface will be exposed to abrasion shortly after out-docking, the recommended minimum drying/curing time before out-docking is:

Steel temperature °C/°F	10/50	15/59	20/68	25/77	30/86	(35/95)	(40/104)
Minimum days	12½	8	5	3½	2½	(2)	(1½)

When out-docking takes place into water with a temperature at or above 10°C/50°F, and sufficient time afterwards is allowed for full cure before the coating is exposed to abrasion, the recommended minimum time before out-docking is:

Steel temperature °C/°F	10/50	15/59	20/68	25/77	30/86	(35/95)	(40/104)
Minimum days	7½	5	3	2	1½	(1)	(1)

- Note:**
1. The temperatures in the tables above are mean values, but the temperature during curing should at no time come below 10°C/50°F.
  2. Curing will proceed under water when the water temperature is above 10°C/50°F.

**Remarks:**

Stripe coating is recommended in tanks.

**Safety:**

In case of deep pittings higher film thickness is recommended on areas with pittings. Handle with care. Before and during use, observe all safety labels on packaging and paint containers, consult HEMPEL Material Safety Data Sheets and follow all local or national safety regulations. Harmful or fatal if swallowed; immediately seek medical assistance if swallowed. Avoid inhalation of possible solvent vapours or paint mist, as well as paint contact with skin and eyes. Apply only in well ventilated areas and ensure that adequate forced ventilation exists when applying paint in confined spaces or when the air is stagnant. Always take precautions against the risks of fire and explosions.

This Product Data Sheet supersedes those previously issued. For definition and scope, see explanatory notes to applicable Product Data Sheets.

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