



Product Data

HEMPADUR® SPRAY-GUARD® 35490/ HEMPADUR® SPRAY-GUARD® 35493

High temperatures: 35490 with CURING AGENT 95690
Medium temperatures: 35493 with CURING AGENT 95790

Description: HEMPADUR SPRAY-GUARD 35490/35493 is a solvent-free, two-component, epoxy coating. It cures to a hard, tough and well adhering protective coating. It can be spray applied in one coat at a minimum film thickness of 2.5 mm (100 mils).

Recommended use: As a heavy duty coating on steel and concrete exposed to severe corrosive conditions and/or impact such as splashzones and decks. Colour retention will be of minor importance.
CURING AGENT 95690 suited for application at temperatures above 20°C/68°F.
CURING AGENT 95790 suited for application at temperatures between 10°C/50°F and 20°C/68°F.
Conforms with NORSOK M-501, system no. 4.

Service temperatures:

	Dry exposure only:	In water (no temperature gradient):
Maximum:	140°C/284°F	35°C/95°F
See REMARKS overleaf.		

Availability: Part of Group Assortment. Local availability subject to confirmation.

PHYSICAL CONSTANTS:

Colours/Shade nos:	Grey-green/41690
Finish:	Semi-gloss, textured
Volume solids, %:	100
Theoretical spreading rate:	0.4 m ² /litre - 2.5 mm 16.0 sq.ft./US gallon - 100 mils
Flash point:	> 60°C/140°F
Specific gravity:	1.9 kg/litre - 15.8 lbs/US gallon
Surface dry:	See REMARKS overleaf
Dry to touch:	See REMARKS overleaf
Fully cured:	See REMARKS overleaf
V.O.C.:	0 g/litre - 0 lbs/US gallon

The physical constants stated are nominal data according to the HEMPEL Group's approved formulas. They are subject to normal manufacturing tolerances. Further reference is made to "Explanatory Notes" in the HEMPEL book.

APPLICATION DETAILS:

	35490	35493
Mixing ratio:	Base 35499 : Curing agent 95690 5.6 : 1.0 by volume; 23.0 : 2.0 by weight	Base 35499 : Curing agent 95790 5.7 : 1.0 by volume; 23.0 : 2.15 by weight
Application method:	Spray (small areas: notched trowel) (Consult separate Application Instructions)	Spray (small areas: notched trowel) (Consult separate Application Instructions)
Thinner (max. vol.):	Do not dilute (see REMARKS overleaf)	Do not dilute (see REMARKS overleaf)
Pot life:	See REMARKS overleaf	See REMARKS overleaf
Recommended equipment:	Air spray by worm-pump equipment, by hose pump or by modified piston pump. (Consult separate Application Instructions) For small areas Quick Spray Hopper Gun.	Air spray by worm-pump equipment, by hose pump or by modified piston pump. (Consult separate Application Instructions) For small areas Quick Spray Hopper Gun.
Cleaning of tools:	HEMPEL'S TOOL CLEANER 99610.	HEMPEL'S TOOL CLEANER 99610.
Indicated film thickness, dry:	2.5 mm/100 mils	2.5 mm/100 mils
Indicated film thickness, wet:	2.5 mm/100 mils	2.5 mm/100 mils
Recoating interval, min:	See REMARKS overleaf	See REMARKS overleaf
Recoating interval, max:	See REMARKS overleaf	See REMARKS overleaf

Safety: 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. Avoid inhalation, avoid contact with skin and eyes, and do not swallow. Take precautions against possible risks of fire or explosions as well as protection of the environment. Apply only in well ventilated areas.



HEMPADUR SPRAY-GUARD 35490/35493

SURFACE PREPARATION:

Steel: Abrasive blasting to Sa 2½ or Sa 3 depending on area of use. Surface profile corresponding to Rugotest No. 3 BN11, Keane-Tator Comparator 5.5 G/S, or ISO Comparator, Coarse (G). Oil and grease must be removed with suitable detergent, salt and other contaminants by (high pressure) fresh water cleaning prior to blasting. After blasting clean the surface carefully from abrasives and dust. The blasted and cleaned surface may advantageously be primed with HEMPADUR 15590.

Concrete: Remove slip agent and other possible contaminants by emulsion cleaning followed by high pressure hosing with fresh water. Remove scum layer and loose matter to a hard, rough and uniform surface, preferably by abrasive blasting, possibly by other mechanical treatment, flame cleaning or acid etching. Seal surface with suitable sealer, e.g. HEMPADUR SEALER 05990 (furthermore, see Product Data Sheet for 05990). Further information about surface preparation to be found in separate APPLICATION INSTRUCTIONS for 35490/35493.

APPLICATION CONDITIONS:

Use only on a clean and dry surface with a temperature above the dew point to avoid condensation when application and curing can proceed as listed:

Cured with	Curing agent 95690	Curing agent 95790
Minimum appl temperature of substrate:	20°C/68°F	10°C/50°F
Curing will proceed down to:	10°C/50°F	2°C/36°F
Fully cured:	7 days at 20°C/68°F	7 days at 10°C/50°F
Surface dry (ISO 1517):	about 3 hrs at 20°C/68°F	about 3 hrs at 10°C/50°F
Dry to touch:	about 8 hrs at 20°C/68°F	about 8 hrs at 10°C/50°F
Dry to handle:	about 3 days at 20°C/68°F	about 3 days at 10°C/50°F

To facilitate stirring and mixing, the material temperature should in no case be less than approx 20°C/68°F.

PRECEDING COAT: SUBSEQUENT COAT:

None, HEMPADUR SEALER 05990, HEMPADUR 15590, or according to specification. In case a "smoothing" of the surface is required, HEMPADUR MULTI-STRENGTH 45751 may be used.

REMARKS:

Weathering/
temperatures:

The natural tendency of epoxy coatings to chalk in outdoor exposure and to become more service sensitive to mechanical damage and chemical exposure at elevated temperatures is also reflected in this product.

Film thicknesses:

May be specified and applied in higher film thicknesses than indicated. **Not recommended below 2.5 mm /100 mils, since HEMPADUR SPRAY-GUARD 35490/35493 will not form a close and pinhole-free film at lower film thicknesses.**

Adhesion:

Proper adhesion is obtained by applying HEMPADUR SPRAY-GUARD 35490/35493 directly to the steel. If a blast primer is required, HEMPADUR 15590 is recommended.

Thinning:

Do not dilute as this will influence adhesion and cohesion of the paint system.

Pot life:

Material temperature	30°C/86°F	20°C/68°F	10°C/50°F
With curing agent 95690	30 minutes	1 hour	Not relevant
With curing agent 95790	Not relevant	30 minutes	1 hour

Recoating interval:

Substrate temperature		30°C/86°F	20°C/68°F	10°C/50°F
With curing agent 95690	Min	4 hours	8 hours	Not relevant
	Max	2 weeks	1 month	2 months
With curing agent 95790	Min	2 hours	4 hours	8 hours
	Max	2 weeks	1 month	2 months

In the case of contamination before recoating, very careful cleaning is a must.

Repair work should include recoating of a part of the surrounding, intact, original paint, which must be cleaned and roughened prior to application.

For further details consult separate Application Instructions.

Note:

HEMPADUR SPRAY-GUARD 35490/35493 is for professional use only.

ISSUED BY:

HEMPEL A/S - 3549041690C0007/3549341690C0002

This Product Data Sheet supersedes those previously issued.

For explanations, definitions and scope, see "Explanatory Notes" in the HEMPEL Book.

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.



Application Instructions

For product description refer to product data sheet

HEMPADUR® SPRAY-GUARD® 35490/ HEMPADUR® SPRAY-GUARD® 35493

High temperatures: 35490 with CURING AGENT 95690
Medium temperatures: 35493 with CURING AGENT 95790

Scope:

These Application Instructions cover surface preparation and application in connection with HEMPADUR SPRAY-GUARD 35490/35493.

Surface preparation:

Steel: Heavily scaled surfaces may advantageously be descaled mechanically (e.g. hammering) prior to abrasive blasting.

Rough welds and sharp edges should be ground and rounded off prior to abrasive blasting. Weld spatters to be removed.

Prior to blast cleaning the steel, remove oil, grease, and other contamination with suitable detergent followed by (high pressure) fresh water cleaning. Other chemical contamination shall be neutralized and/or flushed.

Alkali deposits on new welding seams to be removed with fresh water.
All steel surfaces to be protected must be abrasive gritblasted to minimum "near white metal", Sa 2½, ISO 8501-1:2007.

For very severe service conditions, abrasive gritblasting to "white metal", Sa 3, ISO 8501-1: 2007 can be necessary.

The minimum required surface profile is Ra = 25 micron, corresponding to Rugotest No. 3, BN11, Keane-Tator Comparator 5.5 G/S, or ISO Comparator Coarse (G). The profile is obtained with sharp, angular abrasives.

All blasted surfaces must be cleaned from dust, abrasives, etc. prior to painting.
HEMPADUR 15590 may be used as blast primer according to specification.

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 suitable detergent. The last mentioned in the following way: Saturation of the surface with fresh water. Washing with detergent 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!



HEMPADUR SPRAY-GUARD 35490/35493

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 homogenously 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.

Pre-treatment 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 05990 in such a way that the surface is just saturated. Any surplus must be removed (do also see the Product Data Sheet for HEMPADUR SEALER 05990).

Application equipment:

The following pumps are recommended for application of HEMPADUR SPRAY-GUARD 35490/35493:

For major jobs:

- a. **Worm pump type, vertically situated, eg:**
PUTZMEISTER SPRAY BOY II
Model no. 20975.005 (air driven)
Worm pump, electrically or air driven. Pump house D 4 1/2, Art. 70829004.
Mantel material, benzene resistant, Neoprene, 70827006.
Best working temperatures between 10°C/50°F and 30°C/86°F
- b. **Hose pump ("Carrousel" pump), eg:**
BREDEL Hosepump type SP 40. Pump hose 40 mm in diameter, preferably of synthetic rubber. Electrically or air driven. Motor power for instance 1.5 kW, geared to give an output speed of 7-55 rpm.
Best working temperatures between 10°C/50°F and 30°C/86°F.
- c. **Piston pump type with hopper, eg:**
GROVER MFG CORP. Model 473 TSD
Modified, divorced piston pump 10:1 (7.5:1 can also be used).
Best working temperatures above 20°C/68°F

For small as well as major jobs:

- d. GRACO President, Modified Model 225-841, 10:1 Piston Pump.

For repair and small constructions:

- e. PUTZMEISTER QUICK SPRAY.

Note: Other Hopper guns are available.

Spray guns:

Ball Valve guns from Maskin A/B Tumac, Sweden

No. 04131.001, Putzmeister, West Germany

Serie 22517, Grover, Texas

Nozzle Orifice:

3-7 mm depending on circumstances

Material Hose:

Internally lined hose is recommended e.g. Uniroyal Mamili SAE 16CR 1T 3434. Length up to 15 metres/50 feet.

For piston pumps max. 10 metres/35 feet.

For hose pump max. 20 metres/70 feet.



HEMPADUR SPRAY-GUARD 35490/35493

Mixing machine:

For large jobs the use of a mixing machine is recommended, e.g.:
PENNINE G5 Mixer from: PENNINE Industrial Equipment Ltd., Great Britain.

Note: Other spray and mixing equipment than above mentioned may be usable.

Do not dilute.

Application by trowel is possible, but primarily relevant **for small horizontal areas**. Use a wide-notched trowel with an opening of 10 mm to ensure that a sufficient film thickness has been achieved. Smoothen out with a plain spatula dipped in THINNER 08080. Keep a uniform pressure with the spatula. Finally, if a textured surface is required, the wet coating is rolled over with a textured nylon roller dipped in THINNER 08080.

Mixing:

HEMPADUR SPRAY-GUARD 35490/35493 is delivered in two components, viz:
BASE 35499 and CURING AGENT 95690 for use at temperatures above 20°C/68°F, or
BASE 35499 and CURING AGENT 95790 for use at temperatures between 20°C/68°F
and 10°C/50°F.

Stir the base thoroughly several minutes with a powerful, mechanical mixer.
Add the content of the smaller can, the CURING AGENT, into the larger can and stir again. Minimize the residues in the small can.

It is important to ensure that all BASE material is homogeneously incorporated into the mixture after which HEMPADUR SPRAY-GUARD 35490/35493 is ready for application.

If it is necessary to mix smaller portions than supplied, then **extreme** care must be taken to ensure that BASE as well as CURING AGENT separately are made completely homogenous by thorough stirring **before subdividing**.

The mixing ratio is:

"Medium temperatures", 35493:

BASE, HEMPADUR SPRAY-GUARD 35499 : 10.7 parts by weight or 5.7 parts by volume
CURING AGENT 95790 : 1.0 part by weight or 1.0 part by volume.

"High temperatures", 35490:

BASE, HEMPADUR SPRAY-GUARD 35499 : 11.5 parts by weight or 5.6 parts by volume
CURING AGENT 95690 : 1.0 part by weight or 1.0 part by volume.

Pot life:

CURING AGENT 95690

At 30°C/86°F: 30 minutes
At 25°C/77°F: 45 minutes
At 20°C/68°F: 1 hour

CURING AGENT 95790

At 20°C/68°F: 30 minutes
At 15°C/59°F: 45 minutes
At 10°C/50°F: 1 hour

Do not mix more material than can be used during the pot life at the prevailing temperature. In hot climate it is recommended to mix only one set at a time just prior to use.

Procedure:

Worm and hose type pump:

Flush the pump with HEMPEL'S TOOL CLEANER 99610.
Empty the pump. Mix and add HEMPADUR SPRAY-GUARD 35490 or 35493 to the hopper.

Nozzle orifice: Approximately 5 mm, air pressure 4-6 bar/60-90 psi.

Pressure, air driven machinery, worm type pump:
Airmotor: 1.5-2 bar/20-30 psi

The best distance between gun and substrate is 25-50 cm/1-2 feet.

The hopper must be completely free of previous mixture before re-loading with HEMPADUR SPRAY-GUARD 35490 or 35493.



HEMPADUR SPRAY-GUARD 35490/35493

To avoid material being pressed into the air chamber of the gun, turn on the atomizing air before starting the pump.

Piston pump:

Flush the pump and the hose with HEMPEL'S TOOL CLEANER 99610.
Remove HEMPEL'S TOOL CLEANER 99610 from the pump by opening lower ball valve.
Mix HEMPADUR SPRAY-GUARD 35490 or 35493 and load the pump.

Nozzle orifice: Approximately 7 mm.

Air pressure:
Nozzle: 3-6 bar/45-90 psi
Input, 10:1 pump: 1.5-4 bar/20-60 psi
Open the relax-a-valve a little before spraying.

The best distance between gun and substrate is 25-40 cm/1-1.5 foot.

Stop of spray application:

Even for short interruptions of spraying it is important to stop the gun **and** the pump simultaneously to prevent paint build-up in hoses and gun. Automatic devices for this purpose can be delivered as standard for most equipment.

If the nozzle is blocked, the following procedure is mandatory:

- Remove and clean cap and nozzle separately.
- Circulate the material at equal pressures (**do not** increase the pressure on the material hose).

Control of wet film thickness:

The applied paint film thickness must be measured immediately after application with a wet film thickness gauge suitable for this range of thicknesses (scale: 1-5 mm/40-200 mils).

Besides, control of consumption in relation to the area coated is carried out regularly. Theoretically, a film thickness of 2.5 mm corresponds to a consumption of 2.5 litres HEMPADUR SPRAY-GUARD 35490 or 35493 per square metre.

Additional material must be applied in case the thickness is insufficient, and in case of improper film formation.

Equipment cleaning:

Thorough cleaning of equipment is essential for a continuous, problem-free operation.

During application:

Keep the sides of the hopper free of "old" material by scraping the sides regularly.

After application:

Immediately after finishing the application pump a high viscosity lubricating oil through the equipment to press out the sandy remnants of HEMPADUR SPRAY-GUARD 35490/35493 to avoid settling around fittings, nozzle, piston, etc. Then follow by flushing pump, hose, and the relax-valve, if any, with HEMPEL'S TOOL CLEANER 99610.

Take cup and nozzle off the gun and flush the system at maximum speed.
To ease cleaning insert a sponge in the material hose and pump it through the hose several times. In case the material hose is not internally lined finalize by rinsing with high viscosity lubricating oil to prevent drying out of the hose. If the above-mentioned precautions are not taken, there is a risk of problematic starting-up later on.

Take the pump house apart and ensure it is thoroughly clean. In mortar type machinery lubricate the worm. Leave the pump unassembled after cleaning.

For the piston pump types HEMPADUR SPRAY-GUARD 35490/35493 will cause a relatively high degree of wearing of packings for which reason extra sets should always be at hand.



HEMPADUR SPRAY-GUARD 35490/35493

Check of the dry film: The dry film is checked all over for discontinuities and correct minimum thickness with a High Voltage Holiday Detector operating at 12 KV. These checks can take place on HEMPADUR SPRAY-GUARD 35490 after curing with CURING AGENT 95690 for minimum 24 hours at 20°C/68°F, on HEMPADUR SPRAY-GUARD 35493 after curing with CURING AGENT 95790 for minimum 24 hours at 10°C/50°F.

Discontinuities and areas with too low film thickness showing spark discharge must be touched up.

Touch-up: For repair and touch-up HEMPADUR SPRAY-GUARD 35490/35493 can be used. On minor spots HEMPADUR SPRAY-GUARD 35490/ 35493 may be applied by spatula. Large areas are repaired by applying the specified film thickness after proper surface preparation as described above.

Safety: 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. Avoid inhalation, avoid contact with skin and eyes, and do not swallow. Take precautions against possible risks of fire or explosions as well as protection of the environment. Apply only in well ventilated areas.

ISSUED BY: HEMPEL A/S - 3549041690C0007 / 3549341690C0002

This Product Data Sheet supersedes those previously issued.

For explanations, definitions and scope, see "Explanatory Notes" in the HEMPEL Book.

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.



INSTRUCTIONS FOR MANUAL APPLICATION OF

Supplementary to the Product Data Sheet with Application Instructions

HEMPADUR® SPRAY-GUARD® 35490/ HEMPADUR® SPRAY-GUARD® 35493

Surface preparation:

According to Product Data Sheet.

HEMPADUR 15590 in a dry film thickness of 50 micron can be used as a blast primer, reference is made to the Product Data Sheet.

Application:

After careful mixing, HEMPADUR SPRAY-GUARD 35490/35493 is applied by a wide-notched trowel with 10 mm clearance.

In order to remove irregularities caused by application using a trowel, and obtain a uniform layer, smoothen with a spatula dipped into HEMPEL'S THINNER 08080. Maintain a uniform pressure when using a spatula.

To obtain a non-skid surface, roll the surface with a nylon roller with hair of a medium length. Should be dipped into HEMPEL'S THINNER 08080.

Checking:

The film thickness is checked by measuring the wet film as well as by calculating the consumption corresponding to the area. Theoretically, a film thickness of 2.5 mm corresponds to 2.5 litres of HEMPADUR SPRAY-GUARD 35490/35493 per square metre.

The coating is checked all over for pinholes by high-voltage pinhole detection with 12 kilovolt. Where sparks are observed the spots are marked and repaired with specified thickness as a minimum.

ISSUED BY:

HEMPEL A/S

This Product Data Sheet supersedes those previously issued.

For explanations, definitions and scope, see "Explanatory Notes" in the HEMPEL Book.

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.

