



Application Instructions

HEMPACORE ONE 43600 & HEMPACORE ONE FD 43601

For product description refer to Product Data Sheet

HEMPACORE ONE 43600/ HEMPACORE ONE FD 43601

Scope:

This application instruction covers surface preparation, application equipment, and application guidelines for HEMPACORE ONE 43600 and HEMPACORE ONE FD 43601.

HEMPACORE ONE 43600 and HEMPACORE ONE FD 43601 are tested for a wide range of approvals for the fire protection of structural steel. Please consult the Product Data Sheet for more information. For latest information about country specific approvals, please contact your local Hempel office.

Due to the application properties of HEMPACORE ONE 43600 and HEMPACORE ONE FD 43601, the coatings can be applied both off-site and on-site. HEMPACORE ONE 43600 and HEMPACORE ONE FD 43601 can be specified for environments as described in ISO 12944 C1 to C4 corrosion categories in combination with approved primers and topcoats.

Note that HEMPACORE ONE 43600 and HEMPACORE ONE FD 43601 shall **only** be used together with Hempel approved primers and topcoat. For more information please consult the list of approved primers and topcoats or consult a Hempel representative.

Disclaimer:

It is the applicator's responsibility to ensure that all coatings of a HEMPACORE coating system are applied in accordance with these application instructions. It is furthermore the responsibility of the applicator to ensure that the specified dry film thickness is achieved. Technical assistance can be provided by Hempel to assist the applicator and is given subject to HEMPEL's GENERAL TERMS & CONDITIONS FOR INTUMESCENT PAINTS.

Storage:

HEMPACORE ONE 43600 and HEMPACORE ONE FD 43601 are recommended to be stored in dry, shaded areas. The recommended storage conditions are between 5°C and 40°C. The shelf life of HEMPACORE ONE 43600 and HEMPACORE ONE FD 43601 may vary depending on the storage conditions. At 25°C the shelf life is 12 months from date of manufacture. The shelf life may be reduced if the products are stored outside Hempel's recommended storage conditions. The products must be re-inspected before use in case the shelf life is exceeded.

Substrates and surface preparation:

HEMPACORE ONE 43600 and HEMPACORE ONE FD 43601 can be used for fire protection of structural carbon steel, galvanised steel, stainless steel and thermally sprayed aluminium steel (TSA) according to the below recommendations.

Carbon steel

Cleaning and degreasing. Entire area to be (high pressure) fresh water cleaned in order to remove salts and other contaminants. When the surface is dry, perform abrasive blasting to minimum Sa 2½ according to ISO 8501-1:2007. In case oxidation has occurred between blasting and application of the primer, then the surface should be re-blasted and primed.

Galvanised steel

Cleaning and degreasing. Entire area to be (high pressure) fresh water cleaned in order to remove salts and other contaminants. When surface is dry, perform either light abrasive sweep blasting to a uniform rough surface or roughen the surface by mechanical means. Afterwards, apply one coat of primer Hempadur 15553 at maximum dft of 100 micron.

Stainless steel

Cleaning and degreasing. Entire area to be (high pressure) fresh water cleaned in order to remove salts and other contaminants. When surface is dry, perform either light abrasive sweep blasting to a uniform rough surface or roughen the surface by mechanical means. Afterwards, apply one coat of primer Hempadur 15570 at maximum dft of 100 micron.



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Thermally Sprayed Aluminium (TSA)

The surface should be overcoated as soon as possible before contamination occurs. If contaminated, thoroughly clean and degrease. Avoid aluminium rust formation by long term exposure to high humidity. If rusted, the rust must be eliminated by mechanical means and washing. Apply first coat of HEMPADUR 15570 by mist-coat technique.

After priming and before application of HEMPACORE ONE 43600 or HEMPACORE ONE FD 43601, remove oil and grease etc. with suitable detergent. Salt and other contaminants shall be removed by (high pressure) fresh water cleaning. Leave the surface drying for sufficient time to ensure full evaporation of water, prior to application of HEMPACORE ONE 43600 or HEMPACORE ONE FD 43601.

Hempel must be consulted in all cases of doubt about the suitability for overcoating of the primer. Cases where Hempel should be consulted include (but not limited to): surface contamination, damages and defects, unknown primer pre-applied, non-approved primer and exceeded dry film thickness of primer.

Primers:

HEMPACORE ONE 43600 and HEMPACORE ONE FD 43601 have been tested with different primers for compatibility and suitability in fire scenarios. **Only Hempel-approved primers can be used in combination with HEMPACORE ONE 43600 and HEMPACORE ONE FD 43601.** Consult your Hempel technical representative for detailed working specification.

HEMPACORE ONE 43600 and HEMPACORE ONE FD 43601 may under no circumstances be applied directly to the steel surface.

HEMPACORE ONE 43600 and HEMPACORE ONE FD 43601 shall be applied within the minimum and maximum over-coating intervals of the primer specified. Please consult the datasheet of the relevant primer.

The maximum dry film thickness of the primer recommended by Hempel shall not be exceeded as this could influence the performance during a fire

Application conditions:

HEMPACORE ONE 43600 and HEMPACORE ONE FD 43601 shall be applied on steel temperatures between +5°C and + 50°C. The surface temperature must always be 3°C above dew point and the maximum relative humidity should not exceed 85% during the application.

The area where HEMPACORE ONE 43600 or HEMPACORE ONE FD 43601 is applied must be well ventilated and proper air circulation shall be secured for optimal drying.

For application under warm conditions special attention shall be given to avoid solvent entrapment due to application of high dry film thicknesses per coat. Under warm conditions it is generally recommended to apply several thinner coats to obtain the specified dry film thickness (e.g. apply 1500µm in one coat or alternatively in 2 coats of 750µm each).

It is recommended that the products in all situations are protected from condensation and water during application and drying.

HEMPACORE ONE 43600 and HEMPACORE ONE FD 43601 are relatively high viscosity materials and normally show a false body effect when stored. Prior to application, the material has to be stirred shortly in order to homogenise the material and break the false body effect to ensure good flow during the application. Excessive stirring should be avoided as this may cause increased solvent evaporation. Thinning of HEMPACORE ONE 43600 and HEMPACORE ONE FD 43601 is not recommended.

Application equipment:

Recommended airless spray equipment:

(Airless spray data are indicative and subject to adjustment)

Pump ratio:	min. 45:1
Nozzle size:	.017" - .023"
Nozzle pressure:	200bar/2800 psi
Fan angle:	30-50°.

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After finishing the application, clean the equipment immediately with THINNER 08080 or HEMPEL'S TOOL CLEANER 99610. It is recommended to remove the gun filter.

Note: Increasing spray hose diameter may ease paint flow, thereby improving the spray fan. If longer hoses are necessary, it may be necessary to raise the pump ratio to 60:1 maintaining the high output capacity of the pump.

Thinning:

Thinning of HEMPACORE ONE 43600 and HEMPACORE ONE FD 43601 is not recommended.

Spray application:

Film-build: With HEMPACORE products applied in one/few coat(s) at low dry film thicknesses, it is of special importance that a continuous, pinhole-free paint film is obtained at application of each coat. An application technique which will ensure good film formation on all faces of the profiles must be adopted. It is very important to use nozzles of the correct, not too big, size and to have a proper, uniform distance of the spray gun to the surface; 30-50 cm should be aimed at. Furthermore, great care must be taken to cover edges, openings, rear sides of stiffeners etc. Thus, on these areas application of a stripe coat will therefore be good painting practice.

The finished coating must appear as a homogeneous film with a smooth surface and irregularities such as dust, dry spray, abrasives, should be remedied.

Brush and roller application:

Application with hand tools, brush, or roller is possible but due to the natural tendency of obtaining a more uneven paint film by these methods, additional coats may be necessary to obtain the specified dry film thickness.

Application by hand tools, brush, or roller is generally only recommended for small areas, repairs and touch-up.

Wet/dry film thickness:

It is important that the specified dry film thickness is achieved in order to make sure that the product is performing as specified.

The required dry film thickness of HEMPACORE products vary depending on the section size of the steel profile and the configuration that the steel profile is used in. It is the responsibility of the applicator to ensure that the specified dry film thickness is applied on all areas. The applicator should therefore be in possession of a full list of steel sections and dry film thicknesses according to the configuration, including information about the number of sides to be coated.

It is recommended that all steel sections are marked according to the list of steel sections and dry film thicknesses specified to secure that application is done according to the specification.

It is recommended that the **wet film thickness** is measured frequently during the application using a wet film gauge to ensure that the specified thickness is achieved. This will allow the applicator to adjust the thickness if necessary. Avoid the gauge sinking into the underlying coat so incorrect wet film thickness measurements are made.

Measurements of the **dry film thickness** should be conducted on the fully dry HEMPACORE coats. It is important that dry film measurements are done on a fully dried paint as measurements on not fully dried paint may give incorrect results. Normally electronic dry film thickness-gauges are used for this. The applicator must confirm that the specified dry film thickness has been achieved according to the specification. If insufficient dry film thickness is measured then an additional coat or touch-up should be applied.

When indicative measurements have to be made prior to complete drying of the coating, indicative dry film thickness measurements may be done with an electronic DFT-gauge in combination with a shim. The shim must be held in between the coating and the gauge to minimise sinking in of the gauge into the soft coating.

It is important that no topcoat is applied before dry film thickness of HEMPACORE ONE 43600 or HEMPACORE ONE FD 43601 has been measured and confirmed to be correct. If a topcoat has been applied on an area with insufficient HEMPACORE dry film thickness then the topcoat must be removed before repair/touch-up can be conducted.

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The paint layer must be applied homogeneously and as close to the specification as possible. Avoid exaggerated film thickness due to the risk of sagging, cracks and solvent retention. The paint consumption must be controlled.

Application of HEMPACORE ONE 43600:

The maximum dry film thickness that can be applied in a single coat is 1500µm.

Application of HEMPACORE ONE FD 43601:

The maximum dry film thickness that can be applied in a single coat is 1100µm.

Application of higher dry film thicknesses can cause sagging and unacceptable solvent retention may occur. For optimal drying times, (multiple) thinner coats can be applied, with dry film thicknesses of up to e.g. 750µm.

Film thickness acceptance:

It is required that as a minimum the specified dry film thickness of HEMPACORE ONE 43600 and HEMPACORE ONE FD 43601 is achieved. It is recommended that the specified dry film thickness is not exceeded by more than 10% as this may negatively influence the performance in case of fire.

For guidelines and acceptance criteria of dry film thickness measurements it is recommended to follow industry best practice guidelines e.g.:

- *AWCI Technical Manual 12-B, Standard Practice for the Testing and Inspection of Field Applied Thin Film Intumescent Fire-Resistive Materials.*
- *ASFP Technical Guidance Document 11:2008, Code of Practice for the specification and on-site installation of intumescent coatings.*
- *ASFP Technical Guidance Document 16:2010, Code of Practice for off-site Applied Thin Film Intumescent Coatings*

Hempel specifications:

HEMPACORE dry film thickness specifications by Hempel are always made based on information about steel sections, configurations and other project information provided by the customer and generic information about steel section types from databases. The information provided in the specification is therefore a guideline, made to the best knowledge of Hempel, for the applicator/customer who should confirm the specification prior to application of the material.

Weathering exposure:

HEMPACORE ONE 43600 and HEMPACORE ONE FD 43601 can be exposed to mild exterior conditions up to 6 month before being topcoated. For longer or permanent exterior exposure the HEMPACORE products shall be topcoated with a suitable topcoat. During the construction phase and during service care must be taken to avoid pooling water.

Topcoat application is generally recommended for optimal performance.

Topcoats:

Depending on the end use of the coating system, a topcoat may be required. A selection of approved topcoats is compatible with HEMPACORE ONE 43600 and HEMPACORE ONE FD 43601. **Only Hempel-approved topcoats can be used in combination with HEMPACORE ONE 43600 and HEMPACORE ONE FD 43601.** Consult your Hempel technical representative for detailed working specification.

It must be ensured by the applicator that the total specified dry film thickness of HEMPACORE ONE 43600 or HEMPACORE ONE FD is achieved prior to the start of the topcoat application. Dry film thickness measurements must be done on a fully dry HEMPACORE coating in order to measure an accurate result.

Before application of a topcoat (or additional coat of HEMPACORE ONE 43600 or HEMPACORE ONE FD 43601) the applicator must ensure that the coating surface of the HEMPACORE product is clean of salts, oil, grease or other contaminants.

Recommended dry film thickness of the topcoat depends on the exposure conditions. For ISO 12944 C1 conditions HEMPACORE ONE 43600 and HEMPACORE ONE FD 43601 may be used without topcoat. A topcoat is, however recommended for increased



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durability and/or aesthetic appeal. Consult your Hempel technical representative for detailed specifications for different corrosion categories.

Some topcoats may inhibit/prolong the drying of HEMPACORE ONE 43600 or HEMPACORE ONE FD 43601. It is important that the topcoat is not applied before the preceding HEMPACORE coats are dry in order to avoid solvent entrapment. Special attention should be given to areas where the total specified dry film thickness of the HEMPACORE product exceeds 2mm.

Repair & Maintenance:

HEMPACORE ONE 43600 and HEMPACORE ONE FD 43601 can be used as repair and touch-up coating for damaged areas of freshly applied HEMPACORE ONE 43600 or HEMPACORE ONE FD 43601. Prior to repair, make sure that the surface is clean and free of contamination. Loose parts are to be removed completely.

When film damages are deep and bare steel is visible, then clean the area to minimum St 3 (spot-repairs) or by abrasive blasting to minimum Sa 2½ prior to application of the new coating system. Application of the damaged areas can be done by airless spray, brush cladding or roller. Conditions during these applications shall fulfil the requirements as during normal application conditions.

When damages occur when the intumescent paint is still soft, it may be possible to remove the intumescent paint using a clean putty knife. It is recommended to remove the complete soft intumescent layer, and after drying of the (undamaged part of the) coating the repair spot can be repaired by brush, roller or airless spray.

For repairs of older systems, the full coating system shall be removed and the damaged areas shall be cleaned thoroughly by power tool cleaning to minimum St 3 (spot-repairs) or by abrasive blasting to minimum Sa 2½ prior to application of the new coating system.

Feather edges to sound and intact areas. Brush off loose material. Touch up to full film thickness.

Maintenance:

Maintenance of HEMPACORE coating systems must be done with Hempel approved topcoats or with the same HEMPACORE products if no topcoat has been used before. HEMPACORE products cannot be directly applied over an already top coated coating system.

Areas of damaged topcoats must be repaired immediately, as the underlying intumescent in these areas may be exposed to unacceptable weathering.

Maintenance of a HEMPACORE coating system without consulting Hempel for approval may influence the performance of the HEMPACORE product. All maintenance of any HEMPACORE coating system must therefore be done in consultation with Hempel.

Maintenance of HEMPACORE coating systems outside Hempel's instructions is subject to the conditions given in HEMPEL's *GENERAL TERMS AND CONDITIONS FOR INTUMESCENT PAINTS*.

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Physical data versus temperature:

Drying time and recoating interval vary with film thickness, temperature and drying conditions:

Drying times (provided there is good ventilation and RH < 85%):

Table 1: Surface dry (Dust free times)

Temperature	5°C	10°C	15°C	20°C	25°C	30°C	35°C	40°C
HEMPACORE ONE 43600 750 µm DFT	60 min	50 min	40 min	30 min	25 min	20 min	10 min	<10 min
HEMPACORE ONE FD 43601 750 µm DFT	40 min	30 min	25 min	15 min	12 min	10 min	5 min	<5 min

Table 2: Dry to touch

Temperature	5°C	10°C	15°C	20°C	25°C	30°C	35°C	40°C
HEMPACORE ONE 43600 750 µm DFT	>60 min	60 min	45 min	35 min	30 min	25 min	20 min	<20 min
HEMPACORE ONE FD 43601 750 µm DFT	>40 min	40 min	30 min	20 min	15 min	12 min	<10 min	<10 min

Table 3: Dry to handle

	DFT	Nr of coats	5°C	10°C	15°C	20°C	25°C	30°C	35°C	40°C
HEMPACORE ONE 43600	750 µm	1	36 hours	30 hours	15 hours	8 hours	7 hours	6 hours	5 hours	4 hours
	1500 µm	1	3 days	2 days	1½ days	24 hours	22 hours	20 hours	18 hours	16 hours
	3000 µm	2	10 days	8 days	6 days	7 days	6 days	5 days	4½ days	4days
	> 3 mm	3+	>15 days	>13 days	>11 days	>10 days	>7 days	>6 days	>5 days	>4 days
HEMPACORE ONE FD 43601	750 µm	1	30 hours	24 hours	10 hours	6 hours	5½ hours	5 hours	4 hours	3 hours
	1100 µm	1	2½ days	1½ days	24 hours	16 hours	14 hours	12 hours	10 hours	<10 hours
	2200 µm	2	8 days	6 days	5½ days	5 days	4½ days	4 days	3½ days	3 days
	> 2.2 mm	3+	> 12 days	>10 days	>9 days	>8 days	>6 days	>5days	>4 days	>3 days

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Table 4: Minimum re-coating times (over-coating with itself)

	DFT	5°C	10°C	15°C	20°C	25°C	30°C	35°C	40°C
HEMPACORE ONE 43600	750 µm	32 hours	25 hours	13 hours	6 hours	5½ hours	5 hours	4 hours	<4 hours
HEMPACORE ONE 43600	1500 µm	48 hours	36 hours	24 hours	16 hours	14 hours	12 hours	11 hours	10 hours
HEMPACORE ONE FD 43601	750 µm	12 hours	10 hours	7 hours	5 hours	4½ hours	4 hours	3½ hours	<3½ hours
HEMPACORE ONE FD 43601	1100 µm	>24 hours	24 hours	18 hours	13 hours	12 hours	10 hours	9 hours	<9hours

Table 5: Minimum over-coating time (over-coating with approved acrylic topcoat)

	DFT	Nr of coats	5°C	10°C	15°C	20°C	25°C	30°C	35°C	40°C
HEMPACORE ONE 43600	750 µm	1	4 hours	3 hours	2½ hours	2 hour	2 hour	1½ hour	1 hour	<1 hour
	1500 µm	1	6 hours	4 hours	3 hours	2½ hours	2 hour	1½ hour	1 hour	<1 hour
	3000 µm	2	10 hours	8 hours	6 hours	3 hours	3 hours	2½ hours	2½ hours	2 hours
	> 3 mm	3+	>20 hours	>16 hours	>8 hours	>4 hours	>3 hours	>3 hours	>3 hours	>3 hours
HEMPACORE ONE FD 43601	750 µm	1	3 hours	2½ hours	2 hour	2 hour	2 hour	1½ hour	1 hour	1 hour
	1100 µm	1	4 hours	3 hours	2 hours	2 hour	2 hour	1½ hour	1 hour	1 hour
	2200 µm	2	8 hours	6 hours	4 hours	2 hours	2 hours	2 hours	2 hours	2 hours
	> 2.2 mm	3+	>16 hours	>8 hours	>6 hours	>3 hours	>3 hours	>3 hours	>3 hours	>3 hours

Table 6: Minimum over-coating time (over-coating with other approved topcoat)

		Nr of coats	5°C	10°C	15°C	20°C	25°C	30°C	35°C	40°C
HEMPACORE ONE 43600	750 µm	1	5 days	3 days	2.5 days	36 hours	24 hours	24 hours	12 hours	<12 hours
	1500 µm	1	12 days	9 days	5 days	48 hours	48 hours	36 hours	24 hours	<24 hours
	3000 µm	2	24 days	21 days	12days	5 days	4 days	3½ days	3 day	<3days
	> 3 mm	3+	>24 days	>21 days	>12 days	>5 days	>4 days	>3½ days	>3 days	>2½ days
HEMPACORE ONE FD 43601	750 µm	1	3 days	2.5 days	48 hours	18 hours	16 hours	13 hours	10 hours	<10 hours
	1100 µm	1	9 days	5 days	3 days	36 hours	30 hours	24 hours	18 hours	<18 hours
	2200 µm	2	18 days	15 days	9 days	3½ days	2½ days	48 hours	48 hours	<48 hours
	> 2.2 mm	3+	>18 days	>15 days	>9days	>3½ days	>2½ days	>48 hours	>48 hours	>48 hours

Handling:

During transport, storage and handling of coated steel sections, attention should be given to avoid damages to the coating. Once the coating is dry to handle, the sections may be moved ensuring minimal pressure on the steel sections and sufficient ventilation allowing a continuous drying. Therefore, do not cover up the sections as this will affect the drying properties.

Those areas that are damaged during handling and/or transport should be repaired according to the repair instructions to secure the fire protection properties.



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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 – 43600 / 43601

This Product Data Sheet supersedes those previously issued.

For explanations, definitions and scope, see "Explanatory Notes" at 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 TERMS AND CONDITIONS FOR INTUMESCENT PAINTS, 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 TERMS AND CONDITIONS FOR INTUMESCENT PAINTS 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.

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