

## **Application Instructions**

For product description refer to product data sheet HEMPACORE AQ 48860

## **HEMPACORE AQ 48860**

Scope:	This application instruction covers surface preparation, application equipment, and application guidelines for HEMPACORE AQ 48860.
	HEMPACORE AQ 48860 is tested for a 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 AQ 48860, the coatings can be applied both off-site and on-site. HEMPACORE AQ 48860 can be specified for environments as described in ISO 12944 C1 and C2 corrosion categories in combination with approved primers and top coats.
	Note that HEMPACORE AQ 48860 shall <b>only</b> be used together with Hempel approved primers and top coats. For more information please consult the list of approved primers and top coats for Hempacore products or consult a Hempel representative.
Storage:	HEMPACORE AQ 48860 is recommended to be stored in dry, shaded areas. The recommended storage and transportation conditions are between 5°C and 40°C. The shelf life of HEMPACORE AQ 48860 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 AQ 48860 can be used for fire protection of structural carbon steel and galvanised steel according to the below recommendations.
	<u>Carbon steel</u> 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 $2\frac{1}{2}$ according to ISO 8501-1. In case oxidation has occurred between blasting and application of the primer, then the surface should be re-blasted and primed.
	<u>Galvanised steel</u> 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.
	After priming and before application of HEMPACORE AQ 48860, 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 AQ 48860.
	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 are not limited to): surface contamination, damages and defects, unknown primer pre-applied, non-approved primer and exceeded dry film thickness of primer.
Primers:	HEMPACORE AQ 48860 has been tested with several primers for compatibility and suitability in fire scenarios. <b>Only Hempel-approved primers can be used in combination with HEMPACORE AQ 48860.</b> Consult your Hempel technical representative for detailed working specification.
	HEMPACORE AQ 48860 may under no circumstances be applied directly to the steel surface.





	HEMPACORE AQ 48860 shall be applied within the minimum and maximum over-coating intervals of the primer specified. 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 AQ 48860 shall be applied on steel temperatures between 5°C and 40°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 AQ 48860 is applied must be well ventilated and proper air circulation shall be secured for optimal drying, but during initial drying firm direct wind-impacts shall be avoided. When two coats are needed for the required DFT it is recommended to apply twice the same DFT that together equal the required DFT. By this means the most optimal film formation will be obtained.
	Prior to top coating, the applied product must in all situations be protected from condensation and water during application, drying and service. The top coated product may be exposed to C2 conditions (ISO12944).
	HEMPACORE AQ 48860 is a relatively high viscosity material. Prior to application, the material has to be stirred shortly in order to homogenise the material and to ensure good flow during the application. Excessive stirring should be avoided as this may cause dehydration of the product.
Application equipment:	Recommended airless spray equipment: (Airless spray data are indicative and subject to adjustment)
	Pump ratio:min. 45:1Nozzle size:.017"023"Nozzle pressure:200bar/2800 psiFan angle:30-50°.
	After finishing the application, clean the equipment immediately with water. It is recommended to remove the gun filter.
	<b>Note:</b> 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 or higher maintaining the high output capacity of the pump.
Thinning:	Thinning of HEMPACORE AQ 48860 is not normally required. In the rare cases it is required it shall be thinned with small amount of water
Spray application:	<b>Film-build:</b> 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 or abrasives should be remedied.
Brush and roller application:	Application with hand tools, brush, or roller is possible but due to the natural tendency a less smooth paint film by these methods may be obtained. 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 massivity (Hp/A value) 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 <b>wet film thickness</b> 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 <b>dry film thickness</b> 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 top coat is applied before the dry film thickness of HEMPACORE AQ 48860 has been measured and confirmed to be correct. If a top coat has been applied on an area with insufficient HEMPACORE dry film thickness then the top coat must be removed before repair/touch-up can be conducted.
	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/water retention and surface irregularities. The paint consumption must be controlled.
Film thickness acceptance:	It is required that as a <u>minimum</u> the specified dry film thickness of HEMPACORE AQ 48860 is achieved. It is recommended that the specified dry film thickness is not exceeded by more than 20% as this may negatively influence the performance in case of fire.
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 AQ 48860 can be exposed to indoor conditions and/or C1 or C2 conditions according to ISO12944
	Top coat application is generally recommended for optimal performance.
Top coats:	Depending on the end use of the coating system, a top coat may be required. A selection of approved top coats is compatible with HEMPACORE AQ 48860.
	Only Hempel approved top coats can be used in combination with HEMPACORE AQ 48860. 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 AQ 48860 is achieved prior to the start of the top coat 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 top coat (or additional coat of HEMPACORE AQ 48860) 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 top coat depends on the exposure conditions. For ISO 12944 C1 conditions HEMPACORE AQ 48860 may be used without top coat. A top coat is, however recommended for increased durability and/or aesthetic appeal, and is required in C2 conditions. Consult your Hempel technical representative for detailed specifications for different corrosion categories.
	Some top coats may inhibit/prolong the drying of HEMPACORE AQ 48860. It is important that the top coat is not applied before the preceding HEMPACORE coats are dry in order to avoid solvent/water entrapment.
Repair & Maintenance:	HEMPACORE AQ 48860 can be used as repair and touch-up coating for damaged areas of freshly applied HEMPACORE AQ 48860. 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 spots to minimum St 3 (ISO8501-1) or by abrasive blasting to minimum Sa $2\frac{1}{2}$ (ISO8501-1) 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 of 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 $2\frac{1}{2}$ (ISO8501-1) prior to application of the new coating system. After removing the loose particles and dust the coating system can be build up per the normal procedure
Maintenance:	Maintenance of HEMPACORE coating systems must be done with Hempel approved top coats or with the same HEMPACORE products if no top coat has been used before. HEMPACORE products cannot be directly applied over an already top coated coating system.
	Areas of damaged top coats 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 <i>HEMPEL's GENERAL TERMS AND CONDITIONS FOR INTUMESCENT PAINTS</i> .





Physical data versus temperature:

Drying time and recoating interval vary with film thickness, temperature and drying conditions. The relative humidity and amount of air movement affect the drying properties significantly. Below drying times are indicative:

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

Table 1: Surface dry (Dust free times)

Temperature	DFT	5°C	10°C	15°C	20°C	25°C	30°C	35°C	40°C
HEMPACORE AQ 48860	750 µm DFT	>60 min	60 min	30 min	15 min	15 min	10 min	<10 min	<10 min

Table 2: Dry to	touch								
Temperature	DFT	5°C	10°C	15°C	20°C	25°C	30°C	35°C	40°C
HEMPACORE AQ 48860	750 μm DFT	>90 min	80 min	70 min	60 min	50 min	40 min	30 min	<30min

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
	350 µm	1	16 hours	12 hours	8 hours	5 hours	4 hours	4 hours	3 hours	<3 hours
HEMPACORE AQ 48860	750 µm	1	24 hours	16 hours	12 hours	8 hours	6 hours	5 hours	4 hours	<4 hours
	1500 μm	2	>24 hours	24 hours	16 hours	10 hours	8 hours	7 hours	6 hours	<6 hours

Table 4: Minimum overcoating intervals (overcoating with itself)*								
DFT of HEMPACORE AQ 48860	5°C	10°C	15°C	20°C	25°C	30°C	35°C	40°C
750 μm	24 hours	16 hours	12 hours	8 hours	6 hours	5 hours	4 hours	4 hours
1500 µm or higher	>24 hours	24 hours	16 hours	10 hours	8 hours	7 hours	6 hours	6 hours

Table 5: Minimum over-coating time (over-coating with approved top coat, acrylic or other chemistry)*									
DFT of HEMPACORE AQ 48860	Nr of coats	5°C	10°C	15°C	20°C	25°C	30°C	35°C	40°C
750 µm	1	24 hours	16 hours	12 hours	8 hours	6 hours	5 hours	4 hours	4 hours
1500 µm	2	>24 hours	24 hours	16 hours	10 hours	8 hours	7 hours	6 hours	6 hours
> 1500 µm	3+	>24 hours	24 hours	16 hours	10 hours	8 hours	7 hours	6 hours	6 hours

\*It is a good practice to determine the condition of the paint prior recoating or overcoating. The previous intumescent layer shall be dry hard, which means no mark can be made in the paint by pressing firm with a finger or thumb. The coating does not necessarily have to be so called "nail hard".





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. Untop coated HEMPACORE AQ 48860 must in all situations be protected from condensation and water. The top coated product may be exposed to C2 conditions (ISO12944). Those areas that are damaged during handling and/or transport should be repaired according to the repair instructions to secure the fire protection properties.
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. Avoid inhalation, avoid contact with skin and eyes, and do not swallow. Take precautions against possible risks of fire as well as protection of the environment. Apply only in well ventilated areas.
Important information:	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.
ISSUED BY:	HEMPEL A/S – 48860 March 2014

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