

APPLICATION INSTRUCTIONS

For product description refer to the product data sheet

HEMPADUR* MASTIC 45880

CURING AGENT 95880

Scope:

These Application Instructions cover surface preparation, application equipment and application details for HEMPADUR MASTIC 4588.

Surface preparation:

General: In order to obtain best performance, abrasive blast cleaning is recommended. However, HEMPADUR MASTIC 4588 may be applied on rusty steel surfaces where higher performance is needed than obtainable with conventional coatings but where mechanical cleaning and dust removal can only be carried out (beside the removal of salts and of oily contaminants).

Remove oil and grease with suitable detergent, salt and other contaminants by (high pressure) fresh water cleaning.

REPAIR AND MAINTENANCE:

Spot-repairs:

Clean damaged areas thoroughly by power tool cleaning to St 3 or by abrasive blasting to minimum Sa 2, preferably Sa 2½. Improved surface preparation will improve the performance of HEMPADUR MASTIC 4588. As an alternative to dry cleaning, water jetting to minimum WJ-2 (NACE No. 5/SSPC-SP12), may be used. A flash-rust degree of maximum FR-2 (Hempel standard) is acceptable before application. Feather edges to sound and intact areas. Brush off loose material. Touch up to full film thickness.

Compatibility: HEMPADUR MASTIC 4588 **may** be used in connection with other generic paint systems than epoxy and polyurethanes.

It is recommended to make a test patch. In any case it is a must that the old paint system is tightly adhering and is properly prepared before the touch-up is performed.

Full coating:

Compatibility with old system: In general full compatibility can be expected with old epoxy systems. A test patch should always be performed before fullcoating is decided. If the old epoxy is not weathered/chalked or if it is topcoated with polyurethane, it is recommended to roughen the surface before recoating. Furthermore, very thorough cleaning is a must. Any dirt, chalked surface material, oil and grease should be removed with suitable detergent followed by high pressure fresh water hosing of the entire surface.

Removal of old system: Full coating after complete mechanical removal of an old paint system is possible too. Yet, it must be considered that mechanical cleaning may produce a very smooth surface giving reason to reduced adhesive forces.

Note: Another risk is left over of a hard black rustscale being cleaned to an apparent brightness without showing any adhesive defects. Yet, the exposure to open air during cleaning may have started a continuous oxidation of the hard black rust making it mechanically weak and of poor adhesion to the underlying steel surface. Later, during service, the scale plus overlaying paintmaterial may flake off.

Note: On old steel surfaces having been exposed to salt water, excessive amounts of salt residues in pittings may call for high pressure water jetting, wet abrasive blasting, alternatively dry abrasive blasting, high pressure fresh water hosing, drying, and finally, dry abrasive blasting again.

NEW STEEL:

When used as intermediate and/or finishing coat, surface preparation according to Product Data Sheet for the preceding primer coat (HEMPADUR primers). When used as selfpriming coat, surface preparation according to specification.

When applied to GALVOSILS:

HEMPADUR MASTIC 4588 can be applied when the "almost-cured" stage of the GALVOSIL is reached. Consult APPLICATION INSTRUCTIONS for the relevant GALVOSIL. Remove oil and grease etc. with suitable detergent. Remove salt and other contaminants by high pressure fresh water cleaning. After exposure to high humidity, zinc salts, "white rust", must be removed carefully by high pressure fresh water cleaning, if necessary combined with scrubbing with stiff nylon brushes.

Application equipment:

HEMPADUR MASTIC 4588 being a relatively high viscosity material, may require special measures to be taken at application.

Recommended airless spray equipment:

Pump ratio:	min. 45:1
Pump output:	12 litres/minute (theoretical)
Input pressure:	min. 6 bar/90 psi
Spray hoses:	max. 30 metres/100 feet, 3/8" internal diameter max. 6 metres/20 feet, 1/4" internal diameter

Regular surfaces:
Nozzle size: .021" through .023"
Fan angle: 60°.

Complicated surfaces (and touch up):
Nozzle size: .017" through .021"
Fan angle: 40°.

After finishing the application, clean the equipment immediately with THINNER 0845 or HEMPEL'S TOOL CLEANER 9961.

Note: 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.

Alternatively up to approx. 5% THINNER 0845 may be added, but thinning must be done with care as the anti-sagging properties are drastically reduced by overthinning.

Airless spray data are indicative and subject to adjustment.

Application:

Film-build/continuity: With this paintmaterial applied in one/few coat(s) 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** surfaces must be adopted. It is very important to use nozzles of the correct size, not too big, 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 a stripecoat will usually be necessary. To obtain good and steady atomizing, the viscosity of the paint must be suitable and the spray equipment must be sufficient in output pressure and capacity. At high working temperatures, use of extra thinner may be necessary to avoid dust-spray.

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.

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

On **poorly prepared surfaces** it is always recommended to apply the first coat by brush. Extra thinning will facilitate the penetration of the paint material, but will also require an extra layer to be applied.

Pot life:

When measured under standard conditions the pot life is 1 hour at 20°C/68°F. However, for a 20 litres/5 US gallons mix, and used under warm climate conditions (up to approximately 35°C/95°F) the heat developed by the chemical reaction between BASE and CURING AGENT may make the corresponding practical pot life 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 approximately 10 minutes.)

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. 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.

Attached:

Tables of "physical data versus temperature"

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

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Product data are subject to change without notice and become void five years from the date of issue.

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**Physical data
versus temperature:**

Drying time and recoating interval vary with film thickness, temperature and later exposure conditions thus the following information for **in-field** application:

HEMPADUR MASTIC 4588 in a dry film thickness of **100-150 micron/4-6 mils**:

Surface temperature:	-10°C/14°F	0°C/32°F	10°C/50°F	20°C/68°F	30°C/86°F
Drying time (approx)	96 hours	24 hours	10 hours	4 hours	3 hours
Curing time (approx)	2½ months	1 month	14 days	7 days	5 days
MINIMUM recoating interval related to later conditions of exposure:					
Interval for recoating with HEMPADUR, HEMPATEX and HEMPATANE qualities					
Atmospheric					
Medium	5 days	30 hours	12 hours	5 hours	4 hours
Severe	7 days	42 hours	16 hours	7 hours	6 hours
Interval for recoating with HEMUCRYL qualities					
Atmospheric					
Medium	Not relevant*	Not relevant*	12 hours	5 hours	4 hours
Severe	Not relevant*	Not relevant*	16 hours	7 hours	6 hours

*HEMUCRYLs should not be used at temperatures below 5°C/41°F

HEMPADUR MASTIC 4588 in a dry film thickness of **200 micron/8 mils**:

Surface temperature:	-10°C/14°F	0°C/32°F	10°C/50°F	20°C/68°F	30°C/86°F
Drying time (approx)	6 days	36 hours	15 hours	6 hours	4½ hours
Curing time (approx)	2½ months	1 month	14 days	7 days	5 days
MINIMUM recoating interval related to later conditions of exposure:					
Interval for recoating with HEMPADUR, HEMPATEX and HEMPATANE qualities					
Atmospheric					
Medium	7 days	45 hours	19 hours	7 hours	5 hours
Severe	10 days	63 hours	26 hours	10 hours	8 hours
Interval for recoating with HEMUCRYL qualities					
Atmospheric					
Medium	Not relevant*	Not relevant*	19 hours	7 hours	5 hours
Severe	Not relevant*	Not relevant*	26 hours	10 hours	5 hours

*HEMUCRYLs should not be used at temperatures below 5°C/41°F

MAXIMUM recoating intervals of HEMPADUR MASTIC 4588 (independent on dry film thicknesses):

Surface temperature:	-10°C/14°F	0°C/32°F	10°C/50°F	20°C/68°F	30°C/86°F
MAXIMUM recoating interval related to later conditions of exposure:					
Interval for recoating with HEMPATEX qualities					
Atmospheric	16 days	96 hours	40 hours	16 hours	12 hours
Medium	12 days	72 hours	30 hours	12 hours	9 hours
Severe					
Interval for recoating with HEMUCRYL qualities					
Atmospheric	Not relevant*	Not relevant*	6 days	3 days	2 days
Medium	Not relevant*	Not relevant*	3 days	1½ days	27 hours
Severe					
Interval for recoating with HEMPATANE qualities					
Atmospheric	90 days	45 days	20 days	10 days	7½ days
Medium	29 days	14 days	6 days	3 days	3 days
Severe					
Interval for recoating with HEMPADUR qualities					
Atmospheric					
Medium	None	None	None	None	None
Severe**	90 days	90 days	60 days	30 days	23 days

* HEMUCRYLs should not be used at temperatures below 5°C/41°F

** If the coating has been subjected to direct sunlight for a short period only, the maximum recoating interval may be prolonged.

Before recoating after exposure in contaminated environment, clean the surface thoroughly by high pressure fresh water hosing and allow to dry. If the maximum recoating interval is exceeded, roughening of the surface is necessary to ensure intercoat adhesion.

In case of **workshop** application under very controlled conditions, it may be possible to adjust the minimum recoating intervals. Contact HEMPEL for further advice.