



Nap-Gard®

7-4510

Fusion Bonded Epoxy

Revised: 27 April 2022

DESCRIPTION

Nap-Gard® 7-4510 is a thermosetting epoxy powder designed as a coating for both external and internal underground and subsea pipeline service. In buried service, the coating is capable of withstanding continuous operating temperatures of 107°C (225°F).

TYPICAL POWDER PROPERTIES

Color:	Black	Theoretical Coverage:	134 Ft ² /lb/mil
Specific Gravity:	1.44 ± .05	Typical Gel Time:	22 ± 4 seconds
Cured Film	1.35 ± .05	CSA Z245.20	@ 205°C (401°F)
Density:	1440 ± 50 g/L	Shelf Life*:	12 months
CSA Z245.20		@ 25°C (77°F)	
		@ 50% RH	

* Transportation: The material is stable during transportation at temperatures below 25°C (77°F) and 50% RH.

TYPICAL PROPERTIES OF APPLIED FILM†

Recommended Film Thickness		Average	450µm (18 mils)
		Minimum	300µm (12 mils)
TEST / REQUIREMENT	METHOD	CRITERIA	RESULT
Impact Resistance	ASTM G14 CSA Z245.20	1/8"X5"X8" Steel Panels @25°C (77°F) @-30°C (-22°F)	160 in.lbs
Bending	CSA Z245.20 API-RP-5L7	3.0°/PD @-30° (-22°F)	Pass Pass
Hardness	ASTM D2583 ASTM D2240-74	Barcol Shore D	61 Average 90 Average
Hot Water Resistance	CSA Z245.20	75°C, 24 hours	Rating 1-2, Pass
Cathodic Disbondment	CSA Z245.20	24 hours., 3.5 V _{dc} , 65°C	2-4 mm radius Pass



GENERAL APPLICATION PARAMETERS

- Grit blast to NACE Near-White specifications (Swedish Standard #Sa2½) and profile between 50µm (2 mils) and 112µm (4.5 mils).
- Use phosphoric acid/deionized water rinse if water soluble salt contamination is suspected.
- Preheat pipe to approximately 225°C (438°F) to 246°C (475°F)
- Apply Nap-Gard® 7-4510 powder to meet customer thickness specifications.
- Follow recommended cure schedule (see below).
- Cure should be verified by DSC or other methods.
- Electrically inspect for holidays.

CURE† SCHEDULE GUIDELINES

The cure schedule for Nap-Gard® 7-4510 shows the minimum time at temperature required to achieve the typical performance properties of the coating. Because pipe cooling rates vary so widely with pipe wall thickness, no allowance has been made for heat loss from the pipe but this can be easily measured on the coating line and allowance made. Recommended powder application temperature range is listed below for single/dual layer FBE and post heating is not a normal requirement. The minimum post application curing temperature (as measured on the coated pipe) and the time to quench may conform to the following cure schedule.

7-4510	
Application Temperature	Min Time to Quench†
225°C (438°F)	180 seconds
232°C (450°F)	120 seconds
239°C (463°F)	90 seconds
246°C (475°F)	60 seconds

† Cure is by residual heat in the pipe, therefore very light wall pipe may require additional post heat to complete cure.

‡ Recommended time to quench is based on the assumption that the listed temperature is maintained without any cool down rate. Time to quench will vary with application parameters and pipe sizes. **Therefore, the above information shall be used only as a guideline by the applicator to develop proper time to quench. Cure should be verified by DSC or other methods. For three layer, the optimum time for adhesive application is between 30-70% cure of the FBE. This has to be developed by the applicator based on the plant layout.**

Always consult product Safety Data Sheet (SDS) prior to handling.

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