



# Nap-Gard®

## 7-2500

## Fusion Bonded Epoxy

Revised: 26 February 2015

### DESCRIPTION

Nap-Gard® Product No. 7-2500 is a thermosetting epoxy powder designed as a coating for underground and subsea pipeline service. In buried service, the coating is capable of withstanding continuous operating temperatures of 107°C (225°F). This product has been certified to meet the requirements of CSA Z245.20-10, NACE RP-0394-02 and NSF 61 for Potable Water Services.

For NSF 61 applications the maximum recommended film thickness is 14 mils.

This product is also recommended for use as a primer on multi-layer systems at a film thickness of 8-12 mils.



### TYPICAL POWDER PROPERTIES

<b>Color:</b>	Reddish Brown	<b>Theoretical Coverage:</b>	134 Ft <sup>2</sup> /lb/mil
<b>Specific Gravity:</b>	1.44 ± .05	<b>Typical Gel Time:</b>	22 ± 4 seconds
Cured Film	1.35 ± .05	CSA Z245.20-10	@ 205°C (401°F)
<b>Density:</b>	1440 ± 50 g/L	<b>Shelf Life*:</b>	12 months
CSA Z245.20-10		@ 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†

<b>Recommended Film Thickness</b>		Average	350µm (14 mils)
		Minimum	300µm (12 mils)
<b>TEST / REQUIREMENT</b>	<b>METHOD</b>	<b>CRITERIA</b>	<b>RESULT</b>
<b>Impact Resistance</b>	ASTM G14-72 CSA Z245.20-10	1/8"X5"X8" Steel Panels @25°C (77°F) @-30°C (-22°F)	160 in.lbs
<b>Bending</b>	CSA Z245.20-10 API-RP-5L7	3.0°/PD @-30° (-22°F)	Pass Pass
<b>Elongation</b>	Modified ASTM G10-72	@23°C (73°F)	10.96%
<b>Hardness</b>	ASTM D2583 ASTM D2240-74	Barcol Shore D	61 Average 90 Average
<b>Hot Water Resistance</b>	CSA Z245.20-10	75°C, 24 hours	Rating 1-2, Pass
<b>Cathodic Disbondment</b>	CSA Z245.20-10,	24 hours., 3.5 V <sub>dc</sub> ., 65°C 28 days, 1.5 V <sub>dc</sub> ., 23°C Strained C.D	2-4 mm radius Pass 3-5 mm radius Pass Pass
<b>Thermal Conductivity</b>	ASTM C177		0.19±0.02 BTU/hr./ft <sup>2</sup> /ft./°F



<b>Chemical Resistance Test*</b>	90 Day Immersion per CSA Z245.20-98	HCl in H <sub>2</sub> O**	No Blistering
		10% NaCl, H <sub>2</sub> SO <sub>4</sub> in H <sub>2</sub> O **	No Blistering
		10% NaCl in H <sub>2</sub> O **	No Blistering
		Distilled Water	No Blistering
		5% NaOH in H <sub>2</sub> O **	No Blistering
		MgCO <sub>3</sub> /CaCO <sub>3</sub> in H <sub>2</sub> O **	No Blistering

\*\* Distilled Water

\* For additional information refer to Nap-Gard® Products Catalog Chemical Resistance Chart.

† Performance depends on film thickness. Consult Nap-Gard® Specialist for specific recommendations.

### TYPICAL ELECTRICAL PROPERTIES OF FILM

<b>Dielectric Strength</b> ASTM D149-97	1500 volts/mil @ 250µm (10 mils)	<b>Breakdown Voltage</b> ASTM D149-97	volts @ 450µm (18 mils) 20K
<b>Dielectric Constant</b> ASTM D150	2.15 @ 1 MHz	<b>Volume Resistivity</b> ASTM D257	3.3 X 10 <sup>15</sup> ohm-cm.

### 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 232°C (450°F) to 246°C (475°F)
- Apply Nap-Gard® 7-2500 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. Repair with Nap-Gard® 7-1631 or 7-1861, NSF approved SP-7888
- If girth welds are being coated, refer to Axalta's "Nap-Gard® Field Girth Weld Application Procedure".

### CURE† SCHEDULE GUIDELINES

The cure schedule for Nap-Gard® Product No. 7-2500 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.

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Application Temperature	Min Time to Quench‡
226°C (438°F)	120 seconds
232°C (450°F)	80 seconds
239°C (463°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 Material Safety Data (MSDS) prior to handling.

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