



# Nap-Gard®

## 7-2540

## Fusion Bonded Epoxy

Revised: 6 March 2014

### DESCRIPTION

Nap-Gard® Product No. 7-2540 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 standard 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>	Blue	<b>Theoretical Coverage:</b>	134 Ft <sup>2</sup> /lb/mil
<b>Specific Gravity:</b>	1.44 ± .05	<b>Typical Gel Time:</b> CSA Z245.20-10 @ 205°C (401°F)	22 ± 4 seconds
<b>Density:</b> CSA Z245.20-10 clause 12.6	1440 ± 50 g/L	<b>Shelf Life*:</b> @ 25°C (77°F) @ 50% RH	12 months

\* 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>		Maximum	350µm (14 mils)
		Average	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 > 1.5 J Pass
<b>Bending</b>	CSA Z245.20-10 API-RP-5L7	3.0°/PD @-30° (-22°F)	Pass Passes all requirements
<b>Elongation</b>	Modified ASTM D2370-98	@23°C (73°F)	10.96%
<b>DSC-Glass Transition Temperature</b>	CSA Z245.20-10	T <sub>g3</sub> = 110 ±5°C (230±9°F)	
<b>Hardness</b>			
<b>Tensile Strength</b>	ASTM D2370-98/D882-91	9436 psi	
<b>Compressive Strength</b>	ASTM D695-95	9436 psi	
<b>Hardness</b>	Barcol, ASTM D2583 Shore D, ASTM D2240-74	61 avg. 90 avg.	
<b>Cathodic Disbondment</b>	CSA Z245.20-10,	24 hours., 3.5 Volts., 65°C	2-4 mm radius Pass



28 days, 1.5 Volts., 25°C  
Strained C.D

3-5 mm radius Pass  
No Cracking Pass

<b>Thermal Conductivity</b>	ASTM C177		0.19±0.02 BTU/hr./ft <sup>2</sup> /ft./°F
<b>Hot Water Resistance</b>	CSA Z245.20.10	75°C, 24 hr.	1-2 Pass

\*\* 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	20000 volts @ 450µm (18 mils)
<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® 7-2540 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® 7-1677 or 7-1868, 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® No. 7-2540 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 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‡
232°C (450°F)	90 seconds
239°C (463°F)	60 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.

‡ Gel Time (CSA Z245.20-10, clause 12.2)

**\*\*CAUTION** 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 multi-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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