

**PRODUCT NUMBER:** 7-2508

**APPLICATION:** Pipe Coating

Introduction:

*Nap-Gard® Product No. 7-2508 is a thermosetting epoxy powder designed as a coating for pipe for underground and subsea pipeline service. In buried service, the coating is capable of withstanding continuous operating temperatures of 107°C (225°F). It is designed to offer superior performance to conventional epoxy coatings. In particular, it offers improved resistance to Cathodic disbondment. It has been certified to meet the requirements of CSA Z245.20-06 and NACE RP-0394. This product is offered in different gel times to allow application of different pipe sizes.*

## POWDER PROPERTIES

<b>Color:</b>	Green	<b>Theoretical Coverage:</b>	134 Ft <sup>2</sup> /lb/mil
<b>Specific Gravity:</b>	1.44 ± .05	<b>Typical Gel Time:</b> @ 205°C (401°F) CSA Z245.20-06	
		Fast gel version	8 ± 2 Sec.
		Standard gel version	16 ± 3 Sec.
		Long gel version	24 ± 5 Sec.
<b>Density:</b> CSA Z245.20-06 (Section 12.6.2.3)	1440 ± 50 g/L	<b>Shelf Life @ 25°C (77°F):</b> @ 50% RH	12 months
		*FG is only 6 months	
<b>Thermal Characteristics:</b> CSA Z245.20-06	T <sub>g1</sub> = 61 ± 7°C T <sub>g2</sub> = 106 ± 6°C ΔH = 55 ± 10 (J/g)		

## TYPICAL PROPERTIES OF APPLIED FILM

<b>Recommended Film Thickness:</b>	350µm (14 mils) Average 300µm (12 mils) Minimum	<b>DSC – glass transition temperature</b> T <sub>g3</sub> = 110°C (230°F) CSA Z245.20-06
<b>Impact Resistance:</b> ASTM G14-72 CSA Z245.20-06	@ 25°C(77°F) 160 in. lbs @-30°C(-22°F) > 1.5 J Pass	1/8" X 5" X 8" Steel Panels
<b>Elongation:</b> Modified ASTM G10-72	@0°C (32°F) 4.8% @-30°C(-22°F) 3.2%	<b>Hardness:</b> Barcol, ASTM D2583 60 avg.
<b>Bending:</b> CSA-Z245.20-06 API-RP-5L7	@-30° (-22°F) 3.0°/pipe dia. Passes all requirements	Pass

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

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**Hot Water Resistance CSA Z245.20-06:**

Rating 75°C, 24 hr. 1 - 2 Pass

**Cathodic Disbonding**

CSA Z245.20-06:

24 hr., 3.5 V., 65°C 1.2 mm radius from edge of holiday

28 day, 1.5 V., 23°C 2.3 mm radius from edge of holiday

Strained C.D. Pass

**TYPICAL ELECTRICAL PROPERTIES**

<b>Dielectric Strength:</b>	1,500 volts/mil @ 250µm (10 mils)	<b>Breakdown voltage:</b>	20,000 volts @ 450µm (18 mils)
ASTM D149-97			

<b>Dielectric Constant:</b>	2.15 at 1 MHz	<b>Volume Resistivity:</b>	3.3 X 10 <sup>15</sup> ohm-cm.
ASTM D150		ASTM D257	

**CHEMICAL RESISTANCE TESTS \***

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

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

\*\*Distilled Water

**GENERAL APPLICATION PARAMETERS**

1. Grit blast to NACE Near-White specifications (Swedish Standard #Sa2½) and profile between 50µm (2 mils) and 112µm (4.5 mils).
2. Use phosphoric acid/deionized water rinse if water soluble salt contamination is suspected.
3. Preheat pipe to approximately 240°C (464°F).
4. Apply Nap-Gard 7-2508 powder to meet customer thickness specifications.
5. Follow recommended cure schedule (see below).
6. Electrically inspect for holidays and repair all with Nap-Gard® 7-1677, 7-1848 or 7-1868.

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## CURE SCHEDULE GUIDELINES

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The cure profile and schedule for Nap-Gard<sup>®</sup> Product No. 7-2508 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. **WARNING: CURE IS BY RESIDUAL HEAT IN THE PIPE, THEREFORE VERY LIGHT WALL PIPE MAY REQUIRE ADDITIONAL POST HEAT TO COMPLETE CURE.**

Recommended powder application temperature range is 205°C (401°F) to 239°C (462°F) and post heating is not a normal requirement on many pipe sizes with 0.25 inch wall thickness or above. The minimum post application curing temperature (as measured on the coated pipe) and the time to quench may conform to the following cure schedule:

Pipe Temperature	Minimum Time to Quench**		
	<u>Fast gel</u>	<u>Standard gel</u>	<u>Long gel</u>
205°C (400°F)	210 Seconds	250 Seconds	300 Seconds
220°C (428°F)	120 Seconds	130 Seconds	150 Seconds
232°C (450°F)	75 Seconds	80 Seconds	100 Seconds
239°C (462°F)	45 Seconds	60 Seconds	80 Seconds

**\*\*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.

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