



**PRODUCT NUMBER:** 7-2502  
**APPLICATION:** Pipe Coating

Introduction:

*Nap-Gard® Product No. 7-2502 is a thermosetting epoxy powder designed as a coating for underground and subsea pipeline service. In 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 Z245.20-06 and NACE RP-0394.*

## 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> @ 205°C (401°F) CSA	7 ± 2 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>	12 months
<b>Thermal Characteristics:</b> CSA Z245.20-06	T <sub>g1</sub> = 60 ± 5°C T <sub>g2</sub> = 108 ± 6°C ΔH = 68 ± 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>Tensile Strength:</b> ASTM D2370-98/D882-91	9436 psi	
<b>Impact Resistance:</b> ASTM G14-72 1/8" X 5" X 8" Steel Panels CSA Z245.20-06	@ 25°C (77°F) 160 in. lbs @ -30°C (-22°F) > 1.5 J Pass	<b>Hardness:</b> Barcol, ASTM D2583 60 avg. Shore D, ASTM D2240-74 89 avg.
<b>Elongation:</b> Modified ASTM D2370-98	@23°C (73°F) 10.96%	<b>Compressive Strength:</b> ASTM D695-95 10230 psi (+/- 20%)
<b>Bending:</b> CSA-Z245.20-06 API-RP-5L7	@-30°C (-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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**Shear Adhesion ASTM D1002-94:**

Average	6093 psi
Minimum	5934 psi
Maximum	6114 psi

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

75°C, 24 hr.	1 - 2	Rating
		Pass

**Thermal Conductivity:**

ASTM C177 0.19 ± 0.02 BTU/hr./ft<sup>2</sup>/ft./°F

**Cathodic Disbondment:****CSA Z245.20-06**

24 hr., 3.5 volts, 65°C (150°F)	2 - 4 mm radius	Pass
28 days, 1.5 volts, 25°C (77°F)	3 - 5 mm radius	Pass
Strained C.D.	No Cracking	Pass

**TYPICAL ELECTRICAL PROPERTIES**

**Dielectric Strength:** 1500 volts/mil @ 250µm (10 mils)  
ASTM D149-97

**Breakdown voltage:** 20000 volts @ 450µm (18 mils)  
ASTM D149-97

**Dielectric Constant:** 2.15 at 1 MHz  
ASTM D150

**Volume Resistivity:** 3.3 X 10<sup>15</sup> ohm-cm.  
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> in H <sub>2</sub> O**	No Blistering

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

\*\*Distilled Water

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## GENERAL APPLICATION PARAMETERS

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1. Grit blast to NACE Near-White specifications (Swedish Standard #Sa 2½) 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 450°F (232°C) to 482°F (250°C).
4. Apply Nap-Gard® 7-2502 powder to meet customer thickness specifications.
5. Follow recommended cure schedule (see below).
6. Electrically inspect for holidays and repair all found with Nap-Gard® 7-1631S, 7-1847, or 7-1861.

## CURE SCHEDULE GUIDELINES

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The cure profile and schedule for **Nap-Gard® Product No. 7-2502** 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 232°C (450°F) to 253°C (488°F) 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:

<u>Pipe Temperature</u>	<u>Minimum Time to Quench**</u>
226°C (438°F)	115 Seconds
232°C (450°F)	75 Seconds
239°C (462°F)	45 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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