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NCAMP Material Specification

*This specification is generated and maintained in accordance with NCAMP
Standard Operating Procedures, NSP 100*

265°F Cure High Performance Epoxy Prepregs
Type 38, Class 1, Grade 300
(Newport NCT4708 MR60H 300gsm Tape)

NCAMP Project Number: NPN030901

Prepared by:

1. SCOPE:

1.1 Form:

This detail specification along with the base specification NMS 4708 establishes the requirements for continuous unidirectional carbon fiber impregnated with a modified B-staged epoxy resin (“unidirectional tape prepreg”). The prepreg is produced using a hot-melt process.

This detail specification follows the section and table numbering scheme of the base specification NMS 4708. It contains additional or superseding requirements. The base specification shall govern where no additional requirement is specified; in such cases, the applicable sections are omitted from this detail specification.

- 1.3 Classification:** All products qualified to this detail specification have the following classification: Type 38, Class 1, Grade 300.

3. TECHNICAL REQUIREMENTS:

Table 1 – Prepreg Physical and Chemical Properties

Property	Test Method ⁽¹⁾	Number of Replicates	Requirements ⁽³⁾
Resin Content	ASTM D 3529	Every roll ⁽²⁾	38±3% indiv. 38±2% avg.
Fiber Areal Weight	SACMA SRM 23R-94	Every roll ⁽²⁾	300±12 gsm ind 300±9 gsm avg
Volatile Content	ASTM D 3530	First and last rolls of every batch ⁽²⁾	1.0% max. ind. 0.8% max. ave.
Flow	ASTM D 3531	First and last rolls of every batch ⁽²⁾	16±4%
Gel Time	ASTM D 3532	Optional	660±240 seconds ind.
Tack	See 4.6.1	First and last rolls of every batch	Level IV
Drape	See 4.6.2	First and last rolls of every batch	Pass
HPLC	SACMA SRM 20R-94	First and last rolls of a batch	P1/P3=0.3 to 0.5 P1/P5=0.4 to 0.6 P1/P7=1.5 to 2.3
IR	ASTM E 168		

Calorimetry (DSC) exotherm peak temperature	25R-94
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⁽¹⁾ Specific procedures should be identical to those used in the original material qualification program

⁽²⁾ Three specimens should be taken across the width of the prepreg; left, center, right

⁽³⁾ "ind" refers to individual measurements. "avg" refers to the average measurements per roll.

3.2 Constituent Material Requirements:

3.2.2 Reinforcement: The carbon fiber tow product manufacturer shall establish control factors which will yield product meeting the technical requirements of this prepreg specification. The factors which are used in the production of fiber tow used in the prepreg material qualification shall constitute the approved factors; they shall be used for manufacturing production carbon fiber tow product. Control factors are Controlled Process Equipment and Controlled Process Parameters for producing the product. Control factors include, but are not limited to, the following:

- a) PAN Precursor formulation (raw ingredients and ratios),
- b) PAN Precursor manufacturing process, equipment, line, or site,
- c) PAN Precursor acceptance requirements,
- d)

Dry Glass Transition Temperature, Tg by DMA	ASTM D7028 Onset of Storage Modulus	Between 280°F and 316°F, ind.
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⁽¹⁾ Specific procedures should be identical to those used in the original material qualification program

⁽²⁾ "ind" refers to individual measurements. "avg" refers to the average measurements per panel.

3.5.3 Cured Laminate Mechanical Properties:

TABLE 4 - Required Cured Laminate Tests for Mechanical Properties
(Class I)

QUALIFIED PRODUCTS LIST

Supplier Product Designation	Supplier Name and Production Location	Date Qualified
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