de Havilland Inc.

Material Specification

TITLE:	**NON STRUCTURAL PHENOLIC GLASS PREPREG FOR AIRCRAFT INTERIORS**
SPECIFICATION NUMBER:	**DHMS H 1.03**
ISSUE:	**A**
AMENDMENT:	**---**
DATE:	**June 16, 1998**
PAGE:	**1 of 4**

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Re: Bombardier de Havilland/GKN Westland, contract number DH-1659.MSC, June 10, 1997 in manufacturing DHC-8 bulkhead composite components, de Havilland will accept Hunting specification 60-08 issue 4, as equivalent to Material Specification DHMS H 1.03 Issue A.

Type 1:	60-08-001:	Cycom 799HE-38%-G-7781-296-1000
Type 2:	60-08-002:	Cycom 799HE-37%-G120-105-1000

Manufacturer: Cytec Aerospace Ltd.,
Abenbury Way
Wrexham Industrial Estate
Wrexham, Clwyd
LL13 9UZ

Receipt test materials as follows:

Test	Reference	Requirement
Resin Content (%)	ASTM D2584	36-40%
Volatile Content (%)	Para 1.1	10 % Max
Resin Flow (%)	Para. 1.2	10-20
Gel Time	Para. 1.3	5-10
Climbing Drum Peel	ASTM D1781 Para. 1.4	10 in.lb/3 in. width (test both tool side and bag side surfaces, transverse and parallel to warp direction)

1.1 Volatile Content

Three 4 inch x 4 inch specimens of the uncured material shall be weighed individually on an analytical balance to the nearest 10 mg and placed in an air circulating type oven at 280˚F ± 10˚F for 15 minutes. The specimens shall be removed from the oven, placed in a desiccator, cooled to room temperature and reweighed, in order to calculate the volatile content as follows:

Volatile Content, % by weight = $\frac{W1 - W2}{W1} \times 100$

W1 = Original Weight

W2 = Weight After Heating Cycle

1.2 Resin Flow by Weight

Three specimens, each 4 inches x 4 inches x 4 plies of the uncured material shall be weighed on an analytical balance to the nearest 10 mg. The specimens shall be positioned between 0.0015" aluminum foil which is coated with release agent and placed individually in a press, preheated to 280˚F ± 10˚F at 50 psi ± 5 psi pressure and cured for 15 minutes. The foil shall be removed, the flash broken off, each specimen individually reweighed to the nearest 10 mg and the percent flow calculated.

1.3 Gel Time

1.3.1 Method 1

Three specimens, each being approximately 1/4" square, shall be cut from the uncured material. A hot plate shall be preheated to 280˚F ± 10˚F unless otherwise specified and a micro cover glass placed on the hot plate, allowing a minimum of 20 seconds for it to reach equilibrium. One specimen shall be placed at the centre of the micro cover glass and timing shall be commenced. Within 5 seconds, a second micro cover glass shall be placed over the specimen. When the resin softens during the first 30 seconds, the top micro cover glass shall be probed to isolate a drop of resin. The fluidity and colour of the isolated drop shall be observed periodically at first, and continuously as the end point approaches. The lateral spreading movement of the resin, upon probing, will decrease and the colour will change as the gel point approaches. The timer shall be stopped at the first indication of resin immobility and the elapsed time to the nearest minute shall be recorded.

1.3.2 Method 2

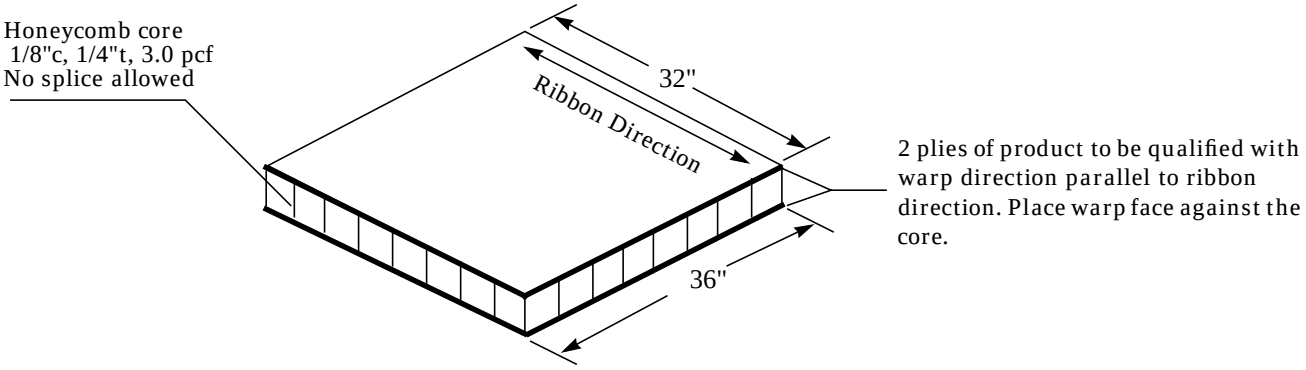
Apparatus:

1. Fisher-Johns melting point apparatus
2. Thickness No.2 18 mm cover glasses
3. Timer or stopwatch
4. Wooden picks or equivalent.

Procedure:

1. Preset the Fisher-Johns melting point apparatus to read 280˚F ± 10˚F of the specified temperature.
2. Insert a 1/4" x 1/4" sample between 2 cover glasses and place on the Fisher-Johns apparatus.
3. Start the timer and probe the specimen with a wooden pick.
4. When resin gels (this is usually evident when no resin movement is seen when moderate pressure is applied to the specimen), stop the timer and report the gel time to the nearest 0.1 minute.

1.4 Climbing Drum Peel Test Panel Construction



REVISION RECORD

Issue	Page	Description and Reason for Change
ORG		This is a new specification.
A		Add receipt test requirements. Specification expands to 4 pages.