BOMBARDIER

Toronto Site

PROPRIETARY INFORMATION

PPS 21.20

PRODUCTION PROCESS STANDARD

MIXING AND HANDLING TWO-PART SEALANTS

Issue 34
- This standard supersedes PPS 21.20, Issue 33.
- Vertical lines in the left hand margin indicate technical changes over the previous issue.
- Direct PPS related questions to christie.chung@aero.bombardier.com or (416) 375-7641.
- This PPS is effective as of the distribution date.

Signed original on file. Validation of paper prints is the responsibility of the user.

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	Quality	

Issue 34 - Summary of Changes (over the previous issue)

The following summaries are not detailed and are intended only to assist in alerting PPS users to changes which may affect them; refer to the applicable sections of this PPS for detailed procedure and requirements.

- Specified that the BAMS 552-008 Class B sealant specified are also qualified to BAMS 552-009 with the exception of AC 735 B2 which is only qualified to BAMS 552-008.
- Added sealant data for PPG Aerospace PRC-DeSoto PR 2007 two-part sealant to BAMS 552-009 Class B.

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Tables

1 SCOPE

1.1 This Production Process Standard (PPS) specifies the procedure and requirements for mixing, storing and handling two-part sealing compounds used for sealing aircraft structures and assemblies.

1.1.1 This PPS complements the engineering drawings that specify its use as an authorized instruction. The procedure specified in this PPS shall be followed to ensure compliance with all applicable specifications. In general, if this PPS conflicts with the engineering drawing, follow the engineering drawing. The requirements specified in this PPS are necessary to fulfil the engineering design and reliability objectives.

1.1.2 Refer to PPS 13.26 for the subcontractor provisions applicable to this PPS.

1.1.3 Procedure or requirements specified in a Bombardier BAPS, MPS, LES or P. Spec. do not supersede the procedure or requirements specified in this PPS.

2 HAZARDOUS MATERIALS

2.1 Before receipt at Bombardier Toronto, all materials shall be approved and assigned Material Safety Data Sheet (MSDS) numbers by the Bombardier Toronto Environment, Health and Safety Department. Refer to the manufacturer's MSDS for specific safety data on any of the materials specified in this PPS. If the MSDS is not available, contact the Bombardier Toronto Environment, Health and Safety Department.

3 REFERENCES

3.1 ASTM D2240 - Standard Test Method for Rubber Property - Durometer Hardness.

3.2 AMS-S-8802 - Sealing Compound, Temperature Resistant, Integral Fuel Tanks and Fuel Cell Cavities, High Adhesion.

3.3 BAMS 552-008 - Non-Chromated Pressure and Environmental Sealant.

3.4 BAMS 552-009 - Lightweight Fast Curing Fuel Tank Sealant.

3.5 DHMS S3.01 - Sealing Compound, Temperature-Resistant Integral Fuel-Tanks, High Adhesion.

3.6 DHMS S3.02 - Sealing Compound, Low Adhesion for Removal Panels and Fuel Tank Inspection Plates.

3.7 DHMS S3.04 - Sealing Compound, Flame Resistant.

3.8 DHMS S3.05 - Sealing Compound, Polysulphide Rubber Electrical Connectors & Electrical Systems, Chemically Cured.

3.9 DHMS S3.06 - Corrosion Inhibiting Sealant.

3.10 DHMS S3.07 - High Adhesion Sealing Compound for Integral Fuel Tanks.

3.11 DHMS S3.08 - Sealing Compound, Polythioether, Integral Fuel-Tanks, and General Purpose, Fast Curing.

3.12 EHS-OP-005 - Hazardous Materials Management, *Bombardier Toronto internal operating procedure*.

3.13 PPS 13.26 - General Subcontractor Provisions.

3.14 PPS 13.28 - Storage Life of Adhesives, Sealants, Paints and Composite Products.

3.15 PPS 13.39 - Bombardier Toronto Engineering Process Manual.

3.16 PPS 21.15 - Machine Mixing and Handling of DHMS S3.01/B2 Sealant.

3.17 PPS 21.21 - General Sealing Practices.

3.18 PPS 31.17 - Solvent Usage.

3.19 Engineering Order (E.O.) 7336 - BM9010.05 Supersession List.

3.20 QDI-09-02 - Process Control - *Bombardier Toronto internal Quality procedure*.

4 MATERIALS, EQUIPMENT AND FACILITIES

4.1 Materials

4.1.1 Two-part sealing compounds as listed in Table I.

4.1.2 Methyl alcohol (methanol).

4.1.3 Dry ice pellets.

4.2 Equipment

4.2.1 Weighing scales, triple beam balance type, or equivalent, capable of weighing to ± 0.5 grams.

4.2.2 Mixing spatula, stainless steel.

4.2.3 Mixing paddle, nylon bladed, 1/4" dia. shank.

4.2.4 Hand drillmotor, air driven, slow speed (800 - 1200 rpm).

4.2.5 Paperboard containers, wax-free, disposable, MELO take-out food containers or equivalent.

4.2.6 Polyethylene cartridges and plungers:

- 2 1/2 ounce, Semco #250-CP2 1/2, Pyles #950-25-C.
- 6 ounce, Semco #250-CP6, Pyles #950-60-C.

4.2.7 End caps for cartridges, Semco #250S, Pyles #1859-3.

4.2.8 Primary storage freezers equipped with direct reading temperature indicators and capable of maintaining -40°F (-40°C) or lower.

4.2.9 Secondary storage freezers equipped with direct reading temperature indicators and capable of maintaining -10°F (-23°C) or lower.

4.2.10 Insulated transport box.

4.2.11 Rubber gloves (e.g., DSC 422-2).

4.2.12 Neoprene gloves (e.g., DSC 422-5).

4.2.13 Bombardier approved chemical splash goggles.

4.2.14 Durometer to ASTM D2240.

4.3 Facilities

4.3.1 This PPS has been categorized as a Controlled Special Process according to PPS 13.39 and as such only facilities specifically approved according to PPS 13.39 are authorized to perform mixing, storing and handling two-part sealing compounds used for sealing aircraft structures and assemblies according to this PPS.

4.3.2 Bombardier subcontractors shall direct requests for approval to Bombardier Aerospace Supplier Quality Management. Bombardier Aerospace facilities shall direct requests for approval to the appropriate internal Quality Manager.

4.3.3 Facility approval shall be based on a facility report, a facility survey and completion of a qualification test program, if required. The facility report shall detail the materials and equipment to be used, the process sequence to be followed and the laboratory facilities used to show compliance with the requirements of this PPS. Any deviation from the procedure or requirements of this PPS shall be detailed in the facility report. Based upon the facility report, Bombardier Toronto Engineering may identify additional qualification and/or process control test requirements. During the facility survey, the facility requesting qualification shall be prepared to demonstrate their capability. Once approved, no changes to subcontractor facilities may be made without prior written approval from Bombardier Aerospace Supplier Quality Management.

TABLE I - SEALANT MIXING AND HANDLING DATA

MATERIAL DESIGNATION		MIXING DATA		APPLICATION AT 75 ±10°F (24 ±5°C) AND 50 ±15% R.H. (Note 1)			CURE TIME AT 75 ±10°F (24 ±5°C) AND 50 ±15% R.H. (Note 2)		REFRIGERATED STORAGE LIFE	
DHMS or BAMS Number	**Product Name**	**Component**	**Mixing Ratio (by weight)**	**Method**	**Maximum Application Life (Note 2)**	**Assembly Time**	**Tack Free**	**Full Cure (Note 3)**	**-10°F (-23°C)**	**-40°F (-40°C)**
DHMS S3.01 Type I Class A	DHMS S3.01 Type I Class A sealant are replaced by AMS-S-8802 Class A sealant (refer to EO 7336)									
DHMS S3.01 Type I Class B	PR 1422 B1/2	Base	100	Extrusion	1/2 hour	1/2 hour	8 hours	24 hours	—	—
		Accelerator	13.3							
	DHMS S3.01/B2 Type I sealant is replaced by DHMS S3.01/B2 Type II sealant (refer to EO 7336)									
DHMS S3.01 Type II Class B	PR 1776M B2	Part A	10	Extrusion	2 hours	2 hours	16 hours	24 hours	21 days	45 days
		Part B	100							
	PR 1776M B1/2	Part A	12	Extrusion	1/2 hour	1/2 hour	8 hours	12 hours	—	—
		Part B	100							
	AC-370 B2	Catalyst	12.5	Extrusion	2 hours	2 hours	7 - 8 hours	8 - 10 hours	—	—
		Base	100							
	AC-370 B1/2	Catalyst	12.5	Extrusion	1/2 hour	1/2 hour	6 - 7 hours	6 - 7 hours	—	—
		Base	100							
DHMS S3.01 Type II Form D	PR 1776M B2	Part A	10	Pre-formed Caps	2 hours	2 hours	20 hours	72 hours	14 days	30 days
		Part B	100							
DHMS S3.02 Class A	PR 1428 A2	Base	100	Brush	2 hours	—	10 hours	16 hours	—	—
		Accelerator	10							
DHMS S3.02 Class B	PR 1428 B2	Base	100	Extrusion	2 hours	2 hours	24 hours	36 hours	10 days	10 days
		Accelerator	10							
DHMS S3.03/B2	DHMS S3.03/B2 is replaced by DHMS S3.01/B2 sealant (refer to EO 7336)									
DHMS S3.04	P/S 700	Base	100	Extrusion	2 hours	—	4 hours	48 hours	—	—
		Accelerator	2.5							
DHMS S3.05/2 Class B	Chemseal CS 3100 (medium)	Part A Base	100	Dip, Pour or Inject	1 hour	1 hour	24 hours	48 hours	—	—
		Part B Accelerator	10							
DHMS S3.06 Type I Class C	P/S 870 C80	Base	100	Spatula or Roller (Note 4)	24 hours	80 hours	—	35 days (Note 5)	30 days	45 days
		Accelerator	17							
DHMS S3.06 Type I Class E	PR-1436G E2	For fay sealing applications, DHMS S3.06 Type I Class E sealant is replaced by DHMS S3.06 Type I Class C sealant. For all other sealing applications, contact Liaison Engineering.								
DHMS S3.07 Class B	P/S 890 B2	Note 6		Extrusion	2 hours	—	6 hours	10 hours	—	—
	P/S 890 B4				4 hours	—	36 hours	90 hours	—	—
DHMS S3.07 Class C	P/S 890 C-80	Note 6		Spatula or Roller	8 hours	80 hours	120 hours	21 days	—	—
DHMS S3.08 Type I Class B (Note 7)	PR-1826 B1/2	Note 6		Extrusion or Spatula	30 minutes	30 minutes	2 hour	3 hours	—	—
	PR-1826 B1/4	Note 6		Extrusion or Spatula	15 minutes	15 minutes	1 hours	1.5 hours	—	—

TABLE I - SEALANT MIXING AND HANDLING DATA

MATERIAL DESIGNATION		MIXING DATA		APPLICATION AT 75 ±10°F (24 ±5°C) AND 50 ±15% R.H. (Note 1)			CURE TIME AT 75 ±10°F (24 ±5°C) AND 50 ±15% R.H. (Note 2)		REFRIGERATED STORAGE LIFE	
DHMS or BAMS Number	**Product Name**	**Component**	**Mixing Ratio (by weight)**	**Method**	**Maximum Application Life (Note 2)**	**Assembly Time**	**Tack Free**	**Full Cure (Note 3)**	**-10°F (-23°C)**	**-40°F (-40°C)**
BAMS 552-008 or BAMS 552-009 Class B	AC-380 B2	Base	100	Extrusion	2 hours	2 hours	8 to 10 hours	8 to 10 hours	14 days	28 days
		Accelerator	10							
	AC-380 B1/2	Base	100	Extrusion	30 minutes	30 minutes	5 hours	5 hours	14 days	28 days
		Accelerator	10							
	Naftoseal MC-780 B2	Base	100	Extrusion	2 hours	2 hours	14 hours	24 hours	14 days	28 days
		Accelerator	10							
	Naftoseal MC-780 B1/2	Base	100	Extrusion	1/2 hour	1/2 hour	4 hours	8 hours	14 days	28 days
		Accelerator	10							
	WS-8032S B2	Base	100	Extrusion	2 hours	2 hours	6 hours	9 hours	—	30 days
		Accelerator	12							
	WS-8032S B1/2	Base	100	Extrusion	1/2 hour	1/2 hour	4 hours	6 hours	—	30 days
		Accelerator	12							
BAMS 552-008 Class B	AC-735 B2	Base	100	Extrusion	2 hours	2 hours	10 hours	10 hours	14 days	28 days
		Accelerator	10							
BAMS 552-009 Class B	PR 2007 B2	Base	100	Extrusion	2 hours	2 hours	6 hours	8 hours	14 days	28 days
		Accelerator	10							
—	PR 1431G	PR 1431G is replaced by DHMS S3.06 Type I, Class C-80 (refer to EO 7336)								
—	PR 1435	Base	100	Brush or Spatula	20 minutes	—	3 hours	8 hours	—	—
		Accelerator	13.3							
AMS-S-8802 Class A	PR 1440 A2	Base	100	Brush (Note 8)	2 hours	2 hours	36 hours	72 hours	—	—
		Accelerator	10							
	PR 1440 A1/2	Base	100	Brush	1/2 hour	1/2 hour	10 hours	30 hours	—	—
		Accelerator	10							
	WS-8020RC A2	Base	100	Brush (Note 8)	2 hours	2 hours	10 hours	30 hours	—	30 days
		Accelerator	12							

Notes:
1. Sealant granted a shelf life extension according to PPS 13.28 may exhibit a shorter application life.
2. Lower and/or higher temperature and relative humidity will affect the application and cure times specified.
3. The cure time specified is for 30-35 Shore A Durometer.
4. Sealant may be thinned with solvent specified in PPS 31.17 (20% by volume maximum) after mixing.
5. Applicable in faying surface conditions only.
6. DHMS S3.07 and DHMS S3.08 are supplied in Semkit packages. Mix according to paragraph 5.2.9.
7. Surfaces shall be primed with PR-1826 Adhesion Promoter according to PPS 21.21 before application of PR-1826 Class B sealants.
8. This sealant may be applied by the extrusion method only if specified on the engineering drawing.

5 PROCEDURE

5.1 General

5.1.1 Two-part sealing compounds come in matched lot numbers of base compound and accelerator. Store, issue and mix two-part sealants in matched lot numbers.

5.1.2 Wear splash goggles and light duty neoprene rubber gloves when handling and mixing sealant components.

5.1.3 It is extremely important that weighing of sealant components be done carefully using an accurate weighing scale.

5.1.4 Refer to PPS 21.21 for general sealing procedures.

5.2 Mixing of Sealant

5.2.1 Keep base compounds and accelerators at 60 to 80°F (16 to 27°C) before mixing.

5.2.2 Take care when mixing sealants to avoid entrapment of air in the mixtures.

5.2.3 For DHMS S3.06 Class C-80 and DHMS S3.07 sealants, the maximum mixing temperature is 75°F (24°C). For any other sealants, the maximum mixing temperature is 85°F (29°C).

5.2.4 If the mixing instructions specified herein conflicts with the manufacturer's technical data sheet, follow the manufacturer's instructions.

5.2.5 Mix sealant supplied as Semkit packages according to paragraph 5.2.9.

5.2.6 Mix the entire contents of two-part sealants as follows:

Step 1. Thoroughly stir the base compound and accelerator to uniform consistency in their original separate containers.

Step 2. Add the accelerator to the container of the base compound while slowly mixing with a mixing paddle or spatula.

- If mixing with a mixing paddle, scrape the sides and bottom of the container and the mixing paddle to ensure thorough mixing.
- If mixing with a spatula, thoroughly mix for a minimum of 5 minutes to ensure a uniform consistency.
- If mixing DHMS S3.06 Class C-80 sealant, use slow smooth strokes beginning at the far side of the container and ending at the near side and rotate the container approximately 15° after each stroke. The thoroughly mixed sealant will have a peppery appearance without yellow or black streaks.

5.2.7 Mix a portion of a two-part sealant kit as follows:

Step 1. Thoroughly stir the base compound and accelerator to uniform consistency in their original separate containers.

Step 2. Carefully weigh out the base component into a disposable mixing container in even 100 gram increments (e.g., 100, 200, 300, etc., as required).

Step 3. Add the required amount of accelerator directly to the base component on the weighing scale. Do not weigh the accelerator into a separate container.

Step 4. Thoroughly mix the component mixture.

5.2.8 If the sealant is supplied in bulk quantities, machine mix the sealant according to Table I, except for the following:

- Mix PR 1435 sealant by hand only. Machine mixing shortens the application life.
- Machine mix and "quick freeze" PR 1422/B2 sealant according to PPS 21.15.

5.2.9 For sealants supplied in Semkit packages, mix as follows:

Step 1. Hold the cartridge and pull the dasher rod back approximately 1/4 of the way up the cartridge.

Step 2. Insert the ramrod into the hollow of the dash rod, move the piston and inject about 1/3 of the contents of the rod into the cartridge. ***Caution****: use firm but even pressure. Do not force, tap, pound or jolt the ramrod if piston does not move readily.*

Step 3. Repeat steps 1 and 2 until all the contents of the rod are emptied into the cartridge.

Step 4. Remove the ramrod.

Step 5. **Hand mix** the materials for 50 to 60 strokes. A stroke is one complete in and out cycle. Hold the cartridge and rotate the rod 90° in a spiral clockwise motion with each stroke. Each stroke should extend from the neck end of the cartridge to the plunger end of the cartridge.

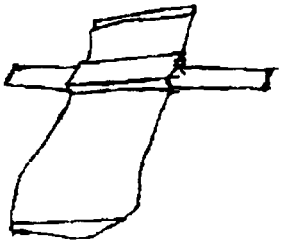
Step 6. Remove the bottom cap.

Step 7. Push the dasher rod to the plunger end of the cartridge, grasping the cartridge firmly at the plunger end. Detach the dasher rod from the mixing dasher by turning counter clockwise and remove the dasher rod from cartridge.

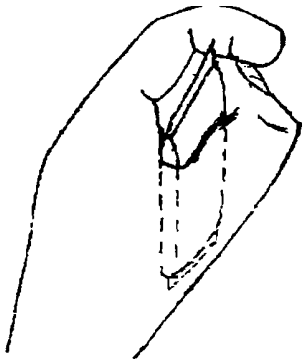
Step 8. Thread the Semco specialty nozzle into the neck end of the cartridge, insert it into the Semco dispensing gun and use as required.

5.2.10 If the sealant is supplied in a plastic sachet, where both parts are separated by a clip and a wooden spatula, mix the sealant in the sachet as follows. Take care not to rupture the bag:

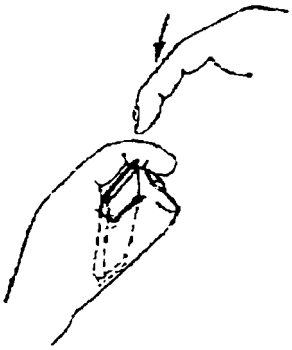
Step 1. Remove the clip and spatula from the sachet.



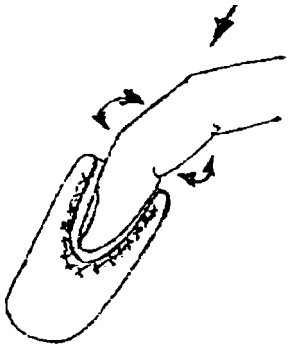
Step 2. Hold the sachet in your left hand as shown with the black end uppermost.



Step 3. Push the finger of your right hand into the sachet to mix the black into the pink.



Step 4. Waggle your finger in the sachet, to mix the black into the pink.



Step 5. Squeeze with your left hand and remove your right hand finger.

Step 6. Repeat Step 3 through Step 5. Stop when all contents of the sachet is uniform in colour.

5.3 Handling of Mixed Sealants

5.3.1 Apply brushable mixed sealants directly from the containers in which the sealant components were mixed or transfer the mixed sealants to other clean wax-free containers.

5.3.2 Fill appropriately sized polyethylene cartridges with extrudable sealant immediately after mixing. Take care to prevent air entrapment when filling cartridges. If applying small quantities of extrudable sealants, a spatula may be used to apply the sealant directly from the mixing containers.

5.3.3 Fit cartridges of mixed sealant to be “quick frozen” with end caps immediately after filling.

5.3.4 Allow refrigerated sealant to warm to room temperature before use. Pre-mixed frozen (PMF) sealant may be thawed more rapidly by immersing the cartridge in warm water, 120 ± 10°F (49 ± 5°C) for 10 minutes. After thawing, Inspection shall verify sufficient thawing of the sealant such that no condensation forms on the cartridge or on the extruded sealant.

5.3.5 Discard excess sealant material which has been removed from refrigerated storage after completing the application of sealants according to PPS 21.21.

5.4 Refrigerated Storage

5.4.1 Refrigerated storage applies only to sealant material that has a refrigerated storage life as shown in Table I.

5.4.2 Wear heavy duty neoprene rubber gloves and splash goggles when handling frozen sealant racks, dry ice or when working with the refrigerated alcohol bath.

5.4.3 “Quick freeze” mixed sealant for refrigerated storage within 15 minutes of mixing as follows:

Step 1. Immerse the cartridges of mixed sealant in a methyl alcohol solution maintained at -70°F (-57°C) or below for 15 to 30 minutes.

Step 2. Maintain the refrigerant solution temperature by means of a mechanical refrigeration unit or by the addition of dry ice.

Step 3. Transfer sealant cartridges to a primary storage freezer operating at -40°F (-40°C) or lower.

5.4.4 Immediately upon receipt, deliver pre-mixed and frozen purchased sealants to a primary storage freezer operating at -40°F (-40°C) or lower.

5.4.5 Keep frozen sealant in refrigerated storage at -40°F (-40°C) or lower from the time of “quick freezing” or receipt until immediately before use or issue to a secondary storage freezer.

5.4.6 Identify all refrigerated sealant according to type of sealant, mixing date, material batch number and storage life expiry date.

5.4.7 Issue refrigerated sealant on a first in, first out (FIFO) basis.

5.5 Transporting Mixed Sealants

5.5.1 Transport mixed sealant from a primary freezer to a secondary freezer according to Table II.

5.5.2 Production shall fill out a Transport Control Card and ship it with the sealant order. If transport time between the primary and secondary freezers is less than 5 minutes, a Transport Control Card for the sealant order is not required.

5.5.3 Upon receipt and insertion of the sealant order into the secondary freezer, Production shall fill out the Transport Control Card and check it for conformance to the requirements of this PPS. If the time or condition of transport conflicts with the requirements of this PPS, quarantine the sealant order in a storage freezer pending Bombardier Toronto MRB or Bombardier Toronto delegated MRB disposition.

TABLE II - REFRIGERATED SEALANT TRANSPORT

<table>
<tr><th>TRANSPORT TIME</th><th>TRANSPORT CONTAINER</th><th>TRANSPORT CONTROL CARD</th><th>DRY ICE PELLETS</th><th>RECEIPT CONDITIONS</th></tr>
<tr><td>Less than 5 minutes</td><td>Polyethylene bag</td><td>Not required</td><td rowspan="2">Not required</td><td>Within specified time</td></tr>
<tr><td>5 to 30 minutes</td><td rowspan="2">Insulated transport box</td><td rowspan="2">To be filled out by Production upon issue and receipt</td><td rowspan="2">Overlay with approximately 1L of dry ice pellets</td><td rowspan="2">Within specified time with some dry ice pellets present</td></tr>
<tr><td>Over 30 minutes</td></tr>
</table>

5.6 Storage Life

5.6.1 Refer to Table I for the maximum storage life of mixed sealants at storage freezer temperatures.

5.6.2 Check each storage freezer containing refrigerated sealant at the end of each shift and discard all sealant material that has exceeded its storage life for that freezer temperature.

5.6.3 The storage life of sealant transferred from a primary to secondary freezer shall be as specified for the secondary freezer temperature. If the sealant's storage life expires on the date of the transfer, use the sealant during the transfer shift but discard it following that shift.

5.7 Application Life of Mixed Sealants

5.7.1 Application life, as shown in Table I, is the time and condition during which mixed sealant remains suitable for application.

5.7.2 Discard unused sealant upon expiration of its application life, as soon as it becomes too stiff to apply readily or it fails to wet out to the substrate.

5.7.3 The application life of frozen sealant begins to run out as soon as the sealant is removed from the freezer.

5.8 Assembly Time of Mixed Sealants

5.8.1 Commencing from mixing of the sealant or removal of the sealant from the freezer, all work on the faying surface shall be finished and all rivets or fasteners drawn tight within the assembly time specified in Table I.

5.9 Curing of Sealants

5.9.1 The curing rate of mixed sealants varies greatly with changes in temperature or humidity. Sealant curing is extremely slow when the ambient temperature is less than 60°F (16°C).

5.9.1.1 For aerodynamic sealing, sealant application and curing outside of the temperature and relative humidity specified in Table I may result in an unacceptable aerodynamic fillet seal (e.g., excessive shrinkage, etc.) or butt joint seal (e.g., excessive shrinkage, dragging effect on vertical surfaces, etc.).

5.9.2 Tack-free cure is the time required for the sealant to cure sufficiently such that shop swarf, chips, etc. will not stick to the sealant. To prevent contamination of the seal, do not perform further work on sealed areas until the sealant is tack-free.

5.9.3 The sealants specified in Table III can be heat accelerated to cure according to Table III to provide a serviceable hardness of 30 Shore A.

TABLE III - HEAT ACCELERATED CURE CONDITIONS

MATERIAL SPECIFICATION	PRODUCT NAME	CURE TIME (NOTE 1)
DHMS S3.01 Type I Class B	PR 1422 B1/2	1.5 hours at 77 ± 2°F (25 ± 1°C) followed by 8 hours at 125 ± 2°F (52 ± 1°C)
	PR 1422 B2	
AMS-S-8802	PR 1440 B1/2	
	PR 1440 B2	
DHMS S3.01 Type II Class B	AC-370 B1/2	1.5 hours at 77 ± 2°F (25 ± 1°C) followed by 3 hours at 135 ± 2°F (52 ± 1°C)
	AC-370 B2	
	PR 1776 B1/2	1.5 hours at 77 ± 2°F (25 ± 1°C) followed by 8 hours at 125 ± 2°F (52 ± 1°C)
	PR 1776 B2	
DHMS S3.01 Type II Form D	PR 1776 B2	
DHMS S3.05/2 Class B	Chemseal CS 3100 (medium)	24 hours at 77 ± 2°F (25 ± 1°C) followed by 5 hours at 140 ± 2°F (60 ± 1°C)
DHMS S3.06 Type I Class C	Pro-Seal 870 C-80	24 hours at 77 ± 2°F (25 ± 1°C) followed by 96 hours at 120 ± 2°F (49 ± 1°C)
DHMS S3.07 Class B	Pro-Seal 890 B-2	2 hours at 77 ± 2°F (25 ± 1°C) followed by 6 hours at 120 ± 2°F (49 ± 1°C)
	Pro-Seal 890 B-4	2 hours at 77 ± 2°F (25 ± 1°C) followed by 12 hours at 120 ± 2°F (49 ± 1°C)
DHMS S3.07 Class C	Pro-Seal 890 C-80	24 hours at 77 ± 2°F (25 ± 1°C) followed by 144 hours at 140 ± 2°F (60 ± 1°C)
BAMS 552-008 or BAMS 552-009 Class B	AC-380 B1/2	1 hour at 140 ± 2°F (60 ± 1°C)
	AC-380 B2	5 hours at 140 ± 2°F (60 ± 1°C)
	AC-735 B2	2 hours at 135 ± 2°F (57 ± 1°C)
	Naftoseal MC-780 B2	2 hours at 135 ± 2°F (57 ± 1°C)
	Naftoseal MC-780 B1/2	2 hours at 135 ± 2°F (57 ± 1°C)
	WS-8032S B2	3 hours at 135 ± 2°F (57 ± 1°C)
	WS-8032S B1/2	1 hours at 135 ± 2°F (57 ± 1°C)

Note 1. During the first stage cure at 77 ± 2°F (25 ± 1°C), where specified, relative humidity shall be maintained at 50 ± 5%. When curing at the elevated temperature (i.e., greater than 100°F), relative humidity requirement does not apply.

6 REQUIREMENTS

6.1 The base compound and curing agent shall be uniformly blended and free of skins, lumps and jelled or coarse particles. There shall be no separation of ingredients which cannot be readily dispersed by mechanical agitation or mixing by hand.

6.2 Mixed sealants shall be uniform in consistency with no evidence of undispersed or inadequately mixed accelerator in the base compound.

6.3 Store, mix and issue all sealant materials as matched lot number material.

6.4 Discard refrigerated sealant that has exceeded its storage life.

6.5 At the start of each shift, check and record the temperature of all freezers used for the refrigerated storage of sealants. If the temperature of a primary storage freezer is above -40°F (-40°C) or the temperature of a secondary storage freezer is above -10°F (-23°C), quarantine the sealant and implement corrective action (e.g., according to QDI-09-02).

6.6 Ensure that sealant is sufficiently thawed such that no condensation forms on the cartridge or on the extruded sealant.

7 SAFETY PRECAUTIONS

7.1 The safety precautions specified herein are specific to Bombardier Toronto to meet Canadian Federal and Provincial government environmental, health and safety regulations. It is strongly recommended that subcontractors consider these safety precautions; however, subcontractors are responsible for ensuring that their own environmental, health and safety precautions satisfy the appropriate local government regulations.

7.2 Observe standard plant safety precautions when performing the procedure specified herein.

7.3 Keep sealant materials away from fire and other sources of ignition.

7.4 Ensure that sufficient ventilation is maintained when mixing any of the materials specified herein.

7.5 Always wear protective respiratory equipment according to PPS 13.13 when working with two-part sealants.

7.6 Wear protective gloves and avoid skin contact with sealant materials. If contact occurs, wash thoroughly with soap and water. Do not use protective hand cream as it may cause contamination.

7.7 Avoid ingestion of any of the materials specified herein. Always wash hands before eating or smoking. Obtain immediate medical attention if ingestion occurs.

7.8 Always wear Bombardier approved splash goggles when working with the refrigerated alcohol bath and when mixing and handling sealant components. If eye contact with sealant components occurs, flush eyes immediately with large quantities of water at an eye wash station and report to the Health Centre.

7.9 Refer to PPS 31.17 for the safety precautions for handling and using solvents.

8 PERSONNEL REQUIREMENTS

8.1 This PPS has been categorized as a Controlled Special Process according to PPS 13.39. Refer to PPS 13.39 for personnel requirements.

9 MAINTENANCE OF EQUIPMENT

9.1 Clean all equipment according to PPS 31.17 immediately after use and before the sealant has cured.

9.2 Remove cured sealant from equipment with solvent specified in PPS 31.17 or, if necessary, a commercial paint stripper.

10 STORAGE OF UNMIXED SEALANTS

10.1 Store sealants with the precautions necessary for flammable materials.

10.2 Store sealant materials at 60 to 80°F (16 to 27°C).

10.3 Always use the oldest sealant stock first (i.e., first in/first out (FIFO) basis).

10.4 Keep containers of sealant materials tightly closed during storage.

10.5 Store base compound and accelerator together as matched batch numbers.

10.6 Refer to PPS 13.28 for the storage life of sealants.

11 DISPOSAL OF CHEMICAL WASTES

11.1 Dispose of all chemical wastes according to national legislation and local regulations. At Bombardier Toronto, dispose of chemical wastes according to EHS-OP-005.

11.2 At Bombardier Toronto, dispose of chemical contaminated work clothes, rags, etc., into Red Containers labelled “Waste Rags”.