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Date: 20-Aug-2025

SMI/REF: 2505-906

Product: **LPS 1** *(received 20-Jun-2025)*

Dilution: As received, where indicated

BOMBARDIER AEROSPACE MATERIAL SPECIFICATION
BAMS 569-001 Rev C (Date: 2024-08-16)
LUBRICANTS AND COOLANTS

Requirements for Class C:

6	**MATERIAL REQUIREMENTS**	
6.2	Staining & Corrosion (All classes)	Conforms
6.3	Galvanic Corrosion (All classes)	Conforms
6.4	Stress Corrosion (All classes)	Conforms
6.5	Sandwich Corrosion (Classes C & D only)	Conforms
6.6	Hydrogen Embrittlement (Classes C & D only)	Conforms
6.7	~~Paint Compatibility (Class D only)~~	Not applicable
6.8	~~Sealant Compatibility (Class D only)~~	Not applicable
6.9	~~Storage Stability (Class A only)~~	Not applicable
6.10	~~Foaming (Class A only)~~	Not applicable
6.11	~~Bacteria Resistance~~	Not performed
6.12	~~Impurities~~	To be certified by supplier

Respectfully submitted,

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Director

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6.1 GENERAL REQUIREMENTS

Lubricants/coolants shall conform to the requirements given in Table 2

Table 2: Requirements for testing of Lubricants and Coolants

TEST	SAMPLE CODE [1]	CLASS / AVAILABILITY	SECTION
Staining & Corrosion	S1	A,C, D	6.2
Galvanic Corrosion	S1	A,C, D	6.3
Stress Corrosion on Titanium	ASTM F945	A,C,D	6.4
Sandwich Corrosion	ASTM F1110	C, D	6.5
Hydrogen Embrittlement	ASTM F519	C, D	6.6
Paint Compatibility	S2	D	6.7
Sealant Compatibility	S3	D	6.8
Storage Stability	-	A	6.9
Foaming	-	A	6.10
Bacteria Resistance	-	A	6.11
Impurities	-	A,C, D	6.12
NOTE: [1] Refer to Table 1 for specimen requirements			

6.2 Staining & Corrosion

Two (2) panels for each alloy defined in Tables 1 and 2 shall be polished with sand paper until a clean, oxide free surface is obtained.

Each specimen shall be placed in a test tube and poured in the emulsion (minimum recommended concentration from supplier with tap water) until the specimen is ½ immersed. The test tube shall be left open to the atmosphere and exposed for 48 hours (+/- 30 minutes). The panel surfaces shall be checked for evidence of corrosion.

The specimens shall not exhibit more than slight staining at the interface.

The fluids shall be non-corrosive to aluminum alloys, low alloy carbon steels, stainless steels and titanium alloys.

Note: Dilution: As received

ALLOY	OBSERVATION of SURFACES AFTER 48 HOUR EXPOSURE
AMS QQ-A-250/4[1] (2024-T3 AMS 4037)	**No visible corrosion**
AMS 4026 or AMS 4027	**No visible corrosion**
AMS QQ-A-250/12 (7075-T6)	**No visible corrosion**
AMS 6345 or AMS 6350	**No visible corrosion**
AMS 5910 or AMS 5501	**No visible corrosion**
AMS 4911	**No visible corrosion**

[1]*Typographical error corrected per instructions from Bombardier. Bare aluminum, AMS QQ-A-250/4, 2024-T3, was tested instead of "AMS QQ-A-250/5" which was incorrectly listed in Table 1.*

Result Conforms

6.3 Galvanic Corrosion

One (1) panel of 2024-T3 in contact with one (1) panel of 4130 steel as defined in Tables 1 and 2 shall be immersed in a premixed emulsion (minimum recommended concentration from supplier with tap water) for 336 hours (+/- 1 hour). The mated surfaces shall be disassembled and examined for corrosion.

The specimens shall not exhibit more than 5% corrosion on either mated surface. There shall be no evidence of intergranular attack (IGA) or end grain pitting. If corrosion on aluminum is present, (IGA) or end grain pitting shall be verified as follows:

- *The samples shall be cross sectioned in the area showing evidence of IGA or grain pitting in such a way to expose the microstructure (end grains and grain boundaries) to be examined.*
- *The specimens shall then be mounted, ground and polished per ASTM E3 techniques.*
- *The specimens shall then be evaluated at 200X magnification minimum to first identify the general appearance of the exposed surfaces and second to identify potential artifacts which may induce errors in the examination.*
- *The specimens shall then be etched per ASTM E407 and examined at 400X magnification.*

Any IGA or grain pitting found will mean the failure of the test and the depth of the defect shall be recorded in the report.

***Bare 2024 aluminum in contact with 4130 steel:* (Dilution: As received)**

Aluminum: ***No visible corrosion***
4130 Steel: ***No visible corrosion***

Result Conforms

6.4 Titanium Stress Corrosion

Testing shall be performed per ASTM F945 with the following modifications:

- Candidate solution is the lubricant/coolant to be tested at maximum supplier recommended concentration.
- Test specimens shall be made of AMS 4911 material. The traceability of the specimen shall be done with a metal tag attached to the specimen.

No pitting, no crack or rough etching (i.e. areas with edges or areas rougher than 32 Ra) shall be present on the candidate specimens.
Note: Dilution: As received

AMS 4911: No pitting, cracking or rough etching.

Result Conforms

6.5 Sandwich Corrosion

The specimens shall be prepared and tested in accordance to ASTM F1110 at maximum lubricant or coolant supplier recommended concentration.

The fluid test panels shall not exhibit more corrosion than the control specimens and shall be non corrosive to aluminum.

	AMS 4037 2024-T3 Bare Anodized	AMS 4041 2024-T3 Alclad	AMS 4045 7075-T6 Bare Anodized	AMS 4049 7075-T6 Alclad
Dilution: As received	1	1	1	1
Control	1	1	1	1

Result Conforms

6.6 Hydrogen Embrittlement

Hydrogen embrittlement specimens shall be manufactured in accordance with ASTM F519, Type 1a and cadmium plated with ASTM F519 Table 1, treatment B.

The specimens shall be immersed during 1 hour in fluid to be tested at maximum recommended concentration from supplier. The specimens shall then be submitted to a continuous tensile loading at 75 percent notch ultimate tensile strength during 200 hours. The specimens shall not be rinsed between immersion and loading.

No cracks or fracture shall be found on the specimens at the end of the test.

Dilution: As received

Results:
Specimen #1: ***No failures occurred within 200 hours.***
Specimen #2: ***No failures occurred within 200 hours.***
Specimen #3: ***No failures occurred within 200 hours.***
Specimen #4: ***No failures occurred within 200 hours.***

Result Conforms

6.7 ~~Paint Compatibility~~

Result Not applicable

6.8 ~~Sealant Compatibility~~

Result Not applicable

6.9 ~~Storage Stability~~ Result Not applicable

6.10 ~~Foaming~~ Result Not applicable

6.11 ~~Bacteria Resistance~~

~~The fluid shall contain effective bactericides which will prevent the breakdown of the fluid, when tested in accordance with ASTM E2275, Chapter 8.2 using a characterized microbial inoculum containing Psuedomonas aeruginosa (ATCC #9027), Klebsiella pneumonia (ATCC #4352) and Proteus mirabilis (ATCC #7002) and 1% aluminum chips in testing solution. (Not applicable to assembly type lubricants or non-water miscible lubricant.~~
~~(Not applicable to assembly type lubricants or non-water miscible lubricants.~~
~~There shall be 10,000 bacteria cfu/ml maximum and not any foul odor at the end of the test~~

Result Not performed

6.12 ~~Impurities~~

~~The supplier shall certify via a disclosure letter that:~~
~~No polydimethylsiloxane are present in the fluids.~~
~~Other polyorganosiloxanes, organomodified siloxanes or silicones are not accepted for classes C & D and their content is allowed to 0.4% maximum for class A.~~

Result To be certified by supplier