

SPECIFICATION INDEX
FOR
MATERIALS, PROCESSES, AND FINISHES

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REVISION HISTORY

Submittal	Date	Change Summary
---	07 Dec. 16	Original Release
A	21 February 2019	Listed equivalent external specifications where applicable and added new Cobham specifications that have been released since the last revision.
B	14 June 2019	Addition of section 1.1. Revised section 2.1. Revised Table I through Table III, Table VI., and Table X. Addition of section 2.4.
C	22 July 2019	Added appendix, which provides instructions for how to use Pub. No. 23854 and Pub. No. 24230.

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1.0 PURPOSE

The purpose of this document is to supply an index of specifications (herein referred to as SPs) of different materials, processes, and finishes. CLSS, as used herein refers to Carleton Life Support Systems Inc., doing business as Cobham Mission Systems.

1.1 Disclaimer

It should be noted that the use of any of the industry specifications (i.e., AMS, QQ, MIL, etc.) listed next to the Cobham SPs will not affect form, fit, or function, as long as the temper and form are identical. For example, if SP1638396 is specified, QQ-A-250/11, AMS-QQ-A-250/11, or AMS4027 are acceptable for use. This means if an SP or this publication is revised, a first article inspection is not required for any of the affected drawings.

The appendix provides an instructional guide on how to use this document and Pub. No. 24230.

2.0 LIST OF MATERIALS

2.1 Aluminum Alloys

Table I includes SPs for 2024 alloys, Table II includes SPs for 5000-series alloys, Table III includes SPs for 6061 alloys, Table IV includes SPs for 7050 alloys, and Table V includes SPs for 7075 alloys.

Table I. 2024 Aluminum Alloy Specifications

Title	SP Number	External Spec.
2024-T3 AL SHEET AND -T351 PLATE, SPECIFICATION FOR	SP1638392	QQ-A-250/4 AMS-QQ-A-250/4 AMS 4037
2024-T81 AL SHEET AND -T851 PLATE, SPECIFICATION FOR	SP1638393	QQ-A-250/4 AMS-QQ-A-250/4 AMS 4268
2024 AL BAR, ROD, WIRE; ROLLED, DRAWN, OR COLD FINISHED, SPECIFICATION FOR	SP1638506	AMS 4120 AMS 4339 AMS-QQ-A-225/6

Table II. 5000-Series Aluminum Alloy Specifications

Title	SP Number	External Spec.
5052-O SEAMLESS TUBING, SPECIFICATION FOR	SP1638511	AMS 4070

Table III. 6061 Aluminum Alloy Specifications

Title	SP Number	External Spec.
6061-O AL SHEET AND PLATE, SPECIFICATION FOR	SP1638394	QQ-A-250/11 AMS-QQ-A-250/11 AMS 4025
6061-T4 AL SHEET AND -T451 PLATE, SPECIFICATION FOR	SP1638395	QQ-A-250/11 AMS-QQ-A-250/11 AMS 4026
6061-T6 AL SHEET AND -T651 PLATE, SPECIFICATION FOR	SP1638396	QQ-A-250/11 AMS-QQ-A-250/11

Table III. 6061 Aluminum Alloy Specifications – CONTD

Title	SP Number	External Spec.
		AMS 4027
6061-T4 AL TUBE, SPECIFICATION FOR	SP1638397	WW-T-700/6 AMS-WW-T-700/6 AMS 4081
6061-T6 AL TUBE, SPECIFICATION FOR	SP1638398	WW-T-700/6 AMS-WW-T-700/6 AMS 4082
6061-T6 EXTRUSION, SPECIFICATION FOR	SP1638399	QQ-A-200/8 AMS-QQ-A-200/8 AMS 4150 AMS 4173
6061-T4, T4510, and T4511 EXTRUSION, SPECIFICATION FOR	SP1638510	AMS-QQ-A-200/8 AMS 4161 AMS 4172
6061 AL BAR, ROD, WIRE, SPECIAL SHAPES; ROLLED, DRAWN, OR COLD FINISHED, SPECIFICATION FOR	SP1638505	AMS 4115 AMS 4116 AMS 4117 AMD 4128

Table IV. 7050 Aluminum Alloy Specifications

Title	SP Number	External Spec.
7050-T7451 AL PLATE, SPECIFICATION FOR	SP1638400	AMS 4050
7050-T7651 AL PLATE, SPECIFICATION FOR	SP1638401	AMS 4201
7050-T74511 AL EXTRUSION, SPECIFICATION FOR	SP1638402	AMS 4342
7050-T6511 AL EXTRUSION, SPECIFICATION FOR	SP1638403	AMS 4340
7050-T7452 AL, DIE FORGED, SPECIFICATION FOR	SP1638404	AMS 4333
7050-T7452 AL, HAND FORGED, SPECIFICATION FOR	SP1638405	AMS 4108

Table V. 7075 Aluminum Alloy Specifications

Title	SP Number	External Spec.
7075-T6 AL SHEET, SPECIFICATION FOR	SP1638438	QQ-A-250/12 AMS-QQ-A-250/12 AMS 4045
7075-T73 AL SHEET, SPECIFICATION FOR	SP1638439	QQ-A-250/12 AMS-QQ-A-250/12 AMS 4078

2.2 Steels and Stainless Steels

Table VI includes SPs for steels.

Table VI. Steel and Stainless Steel Specifications

Title	SP Number	External Spec.
304 SHEET AND STRIP, SPECIFICATION FOR	SP1638406	MIL-S-5059 AMS 5513 AMS 5910 AMS 5911 AMS 5912 AMS 5913
316 SHEET AND STRIP, SPECIFICATION FOR	SP1638407	MIL-S-5059 AMS 5907
15-5PH STAINLESS STEEL, SPECIFICATION FOR	SP1638408	AMS 5659
17-4PH STAINLESS STEEL, SPECIFICATION FOR	SP1638409	AMS 5643
17-7PH STAINLESS STEEL, SPECIFICATION FOR	SP1638410	AMS 5528
PH13-8Mo STAINLESS STEEL, SPECIFICATION FOR	SP1638411	AMS 5629 AMS 5934
304L STAINLESS STEEL BARS, WIRE, FORGINGS, TUBING, AND RINGS, SPECIFICATION FOR	SP1638503	AMS 5647
STAINLESS STEEL PLATE, SHEET, AND STRIP FOR GENERAL APPLICATIONS, SPECIFICATION FOR	SP1638514	ASTM A240
301 STAINLESS STEEL PLATE, SHEET, AND STRIP, SPECIFICATION FOR	SP1638516	AMS 5517 AMS 5518 AMS 5519 AMS 5901 AMS 5902
302 STAINLESS STEEL PLATE, SHEET, AND STRIP, SPECIFICATION FOR	SP1638517	AMS 5516 AMS 5903 AMS 5904 AMS 5905 AMS 5906
303 STAINLESS STEEL, SPECIFICATION FOR	SP1638518	ASTM A581 ASTM A582 ASTM A895 AMS 5640
304 STAINLESS STEEL HYDRAULIC TUBING, SPECIFICATION FOR	SP1638522	AMS 5566 AMS-T-6845

2.3 Titanium Alloys

Table VII includes SPs for titanium alloys.

Table VII. Titanium Alloy SPs

Title	SP Number	External Spec.
Ti-6Al-4V SHEET AND PLATE, SPECIFICATION FOR	SP1638412	AMS 4911

2.4 Copper Alloys: Brasses, Bronzes, et cetera

Table VIII includes SPs for copper alloys.

Table VIII. Copper Alloy Specifications

Title	SP Number	External Spec.
COPPER ALLOYS, SPECIFICATION FOR	SP1638519	ASTM B16 ASTM B21 ASTM B36 ASTM B75 ASTM B121 ASTM B139 ASTM B194 QQ-B-639

2.5 Non-Metallics

2.5.1 Paints and Primers

Table IX includes SPs for paints and primers.

Table IX. Paint and Primer SPs

Title	SP Number	External Spec.
HIGH SOLIDS EPOXY COATINGS, SPECIFICATION FOR	SP1638441	MIL-PRF-22750
HIGH SOLIDS EPOXY PRIMER, SPECIFICATION FOR	SP1638442	MIL-PRF-23377
POLYURETHANE COATING, SPECIFICATION FOR	SP1638443	MIL-PRF-85285
WATERBORNE EPOXY PRIMER, SPECIFICATION FOR	SP1638444	MIL-PRF-85582
LEAD & CHROMATE FREE CORROSION INHIBITING EPOXY PRIMER, SPECIFICATION FOR	SP1638445	MIL-DTL-53022

2.5.2 Dry Films

Table X includes SPs for dry films.

Table X. Dry Film SPs

Title	SP Number	External Spec.
HEAT CURED CORROSION INHIBITING SOLID FILM LUBRICANT, SPECIFICATION FOR	SP1638436	MIL-PRF-46010
DRY FILM LUBRICANT, SPECIFICATION FOR	SP1638440	Sandstrom Poxylube #859
DRY FILM LUBRICANT, SANDSTROM #099, SPECIFICATION FOR	SP1638470	Sandstrom #099

2.5.3 Plastics

Table XI includes SPs for plastics.

Table XI. Plastics SPs

Title	SP Number	External Spec.
ULTEM 7801, SPECIFICATION FOR	SP1638446	ASTM D5205 PEI0110 B99999 F21
ULTEM 2300, SPECIFICATION FOR	SP1638447	ASTM D5205 PEI0110 G30 A99994 F01 F04
ULTEM 9085, SPECIFICATION FOR	SP1638448	ASTM D5205 PEI0110 B98949
ULTEM 1100, SPECIFICATION FOR	SP1638449	ASTM D5205 PEI0110 B89999 F31 F03 F14
PEEK (POLYETHER ETHER KETONE), SPECIFICATION FOR	SP1638450	MIL-P-46183
REINFORCED NYLON, SPECIFICATION FOR	SP1638451	L-P-410

2.5.4 Rubbers

Table XII includes SPs for rubbers.

Table XII. Rubbers SPs

Title	SP Number	External Spec.
GENERAL SILICONE RUBBER, SPECIFICATION FOR	SP1638452	A-A-59588
SILICONE RUBBER, 60 DURO, SPECIFICATION FOR	SP1638453	AMS3303
SILICONE RUBBER, 50 DURO, SPECIFICATION FOR	SP1638454	AMS3302
SILICONE RUBBER, 70 DURO, SPECIFICATION FOR	SP1638455	AMS3304
FLUOROCARBON RUBBER, SPECIFICATION FOR	SP1638456	AMS7276
EPDM RUBBER, SPECIFICATION FOR	SP1638457	AMS3260

3.0 LIST OF FINISHES

Table XIII includes SPs for finishes.

Table XIII. Finishes SPs

Title	SP Number	External Spec.
ANODIC COATINGS FOR ALUMINUM AND ALUMINUM ALLOYS, SPECIFICATION FOR	SP1638422	MIL-A-8625
PASSIVATION OF STAINLESS STEEL, SPECIFICATION FOR	SP1638423	AMS 2700
CONVERSION COATING OF ALUMINUM, SPECIFICATION FOR	SP1638424	MIL-DTL-5541
PHOSPHATE COATING OF STEEL, SPECIFICATION FOR	SP1638425	MIL-DTL-16232
CADMIUM PLATING, SPECIFICATION FOR	SP1638426	AMS-QQ-P-416
BLACK OXIDE COATING OF STEEL, SPECIFICATION FOR	SP1638427	MIL-DTL-13924
HARD ANODIC COATING WITH PTFE, SPECIFICATION FOR	SP1638428	AMS2482
ELECTROLESS NICKEL PLATING, SPECIFICATION FOR	SP1638429	AMS2404
ELECTROLESS NICKEL PLATING WITH CO-DEPOSITED PTFE, SPECIFICATION FOR	SP1638430	AMS2454
ELECTRODEPOSITED NICKEL PLATING, SPECIFICATION FOR	SP1638431	AMS-QQ-N-290
THIN HARD DENSE CHROMIUM PLATING, SPECIFICATION FOR	SP1638432	AMS2438
HARD DEPOSIT CHROMIUM PLATING, SPECIFICATION FOR	SP1638433	AMS2438
CHROMIUM PLATING, SPECIFICATION FOR	SP1638434	AMS2460
PRIMING AND PAINTING, SPECIFICATION FOR	SP1638435	MIL-DTL-18264

4.0 LIST OF PROCESSES

Table XIV includes SPs for processes.

Table XIV. Processes SPs

Title	SP Number	External Spec.
FUSION WELDING, SPECIFICATION FOR	SP1638414	AWS D17.1
LASER WELDING, SPECIFICATION FOR	SP1638415	AWS C7.4
RESISTANCE WELDING, SPECIFICATION FOR	SP1638416	AWS D17.2
NONDESTRUCTIVE INSPECTION, SPECIFICATION FOR	SP1638417	ASTM E1417 ASTM E1444 ASTM E1742
HEAT TREATMENT OF ALUMINUM, SPECIFICATION FOR	SP1638418	AMS 2770
HEAT TREATMENT OF STAINLESS STEEL, SPECIFICATION FOR	SP1638419	AMS 2759/3
STRESS RELIEF OF STEEL PARTS, SPECIFICATION FOR	SP1638420	AMS 2759/11
WET INSTALLATION OF FASTENERS, SPECIFICATION FOR	SP1638421	MIL-STD-7179

APPENDIX

INSTRUCTIONAL GUIDE FOR USING PUB. NO. 23854 AND PUB. NO. 24230

General Description of Resources for Handling Obsolete Specifications:

Pub. No. 24230 contains a long list of canceled and superseded specifications downloaded from IHS for easy reference. The document is searchable and shows what document, if any, replaces the old one.

Pub. No. 23854 contains an index listing the SP documents that have been created so far for materials and processes.

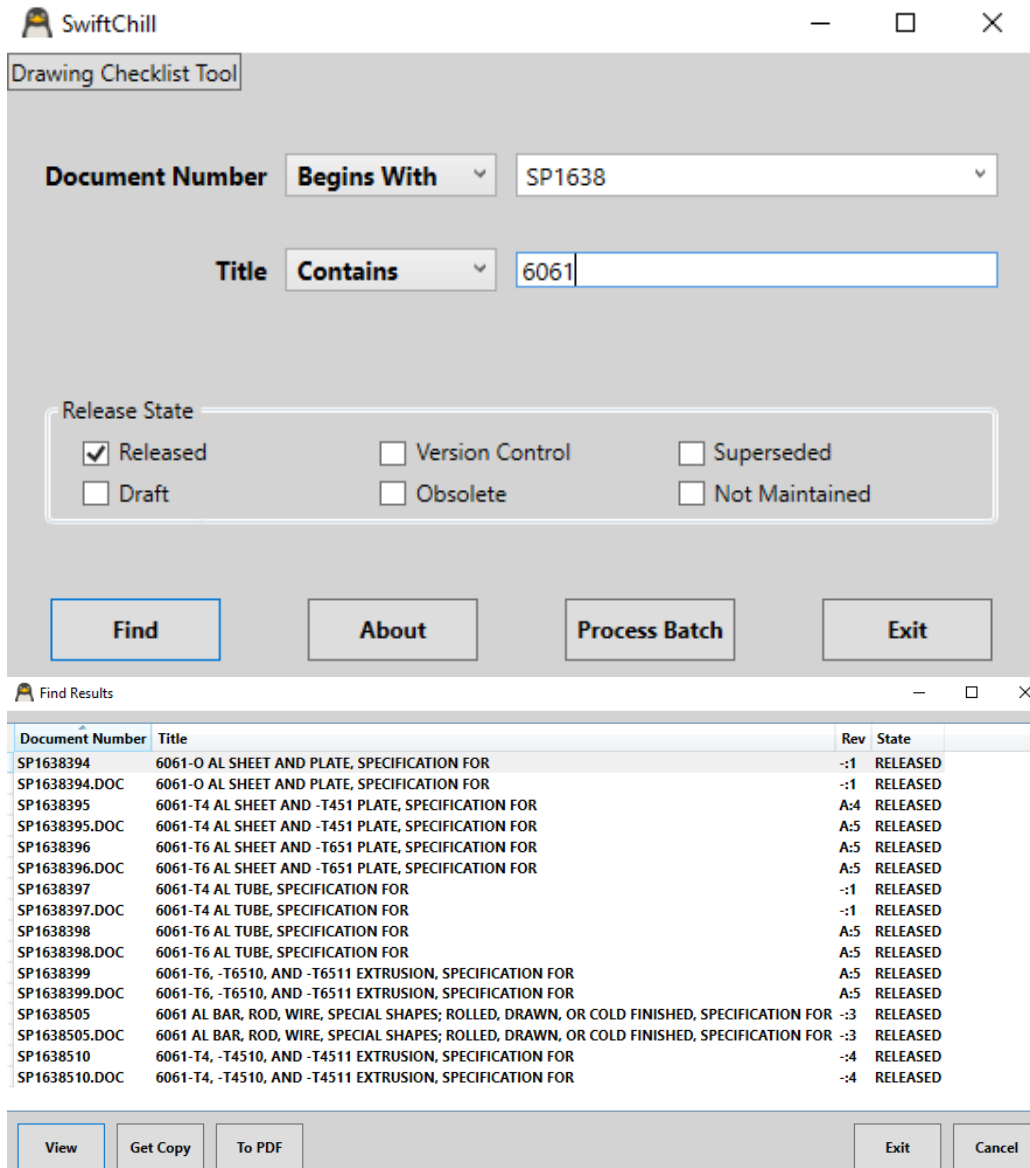
SP1638XX documents listed in the index each contain detailed information showing all current and past specs that are equivalent for a material or process. These documents can be used interchangeably.

Process to Identify and Use Equivalent Specifications:

NOTE

When searching for a specification in any of the documents referenced below, remember that they could be listed imperfectly on the drawing or spec, adding a space or leaving out a space or dash, making it easier to search for only part of the text (i.e., try 250/4 instead of QQ-A-250/4).

1. Refer to Pub. No. 24230 for replacement specifications:
 - a. Refer to Pub. No. 24230 by opening the document and searching for “spec” to be replaced. Hold down the Control key, press F, enter spec, click “Next” and review all entries until it says it has reached the end of the document.
 - b. Make optional material or process options match between the specs as explained in Section 2 of the document.
 - c. Material or processes to the replacement SP, subject to everything else being the same, can be used without submitting a request for deviation.
 - d. If no suitable replacement has been found, there may still be one that was released recently. To search Swiftchill, select “Begins With”, enter document number “SP1638”, select “Contains” in the title for the keyword, which is usually the alloy number, such as “6061”. See Appendix-Figure 1 for an example.



Appendix-Figure 1. Swiftchill Search Example

2. Using Pub. No. 23854 Specification Index to identify alternate and/or replacement specs:
 - a. Refer to the List of Tables, following the Table of Contents, to identify which table in the document applies to the finish or process on the drawing and go to that table.
 - b. Find the specification on the drawing in the right column, select the line in the table where the left column matches the form, temper, or options listed on print.
 - c. Other SPs listed in the same box in the right column are acceptable when the form, temper, etc. match the original specification.

3. Identifying usable specifications when the drawing lists “SP....” for the material or process:
 - a. Refer to the SP referenced for list of equivalent specifications.
 - b. Equivalent specs can be used without a deviation request but form, temper, and any other options must be the same.
4. Inspecting parts based on equivalent SPs:
 - a. Certifications received with a part can reference any of the equivalent SPs from the appropriate SP, so long as the other options called out on the drawing match.
 - b. An inspection record stating, “Accepted based on SP23854 Table II” should be added or an appropriate reference to the basis for equivalency in the cross reference documents or SP listed on the drawing.
5. Handling obsolete SPs not found in Pub. No. 24230 or Pub. No. 23854:
 - a. Contact the Material and Process group to determine appropriate SPs and initiate adding appropriate information to the above documents, along with creating new material and process SP documents as the need arises.
6. Purchasing items that list a SP for the material and/or processes:
 - a. Potential suppliers need to have all the referenced documents for the material and processes. This enables them to see what else is acceptable without a deviation request.
 - b. If something does not have a SP called out yet, Pub. No. 23854 or Pub. No. 24230 can be used to identify what can be used without submitting a deviation request.
 - c. For any other substitutions or obsolete SPs, suppliers will still have to contact you and submit a deviation request if engineering approves of a substitution. New documents will be created when that happens to expand how many materials and processes are covered in the SP documents.
7. Examples of SPs:
 - a. Drawing callouts and superseding specifications are shown in Appendix-Table I.
 - b. Drawing callouts of Cobham SP documents and examples of acceptable material certifications are shown in Appendix-Table II.

Appendix-Table I. Superseded Specification Examples

Drawing Callout	Superseding Specification	Comments
AL ALY, QQ-A-200/8 (6061) T6511	AL ALY, AMS-QQ-A-200/8 (6061) T6511	6061 extrusions
CONVERSION COAT PER MIL-C-5541 CLASS 1A	CONVERSION COAT PER MIL-DTL-5541 TYPE I CLASS 1A	MIL-C-5541 conversion coatings were all type I (containing hexavalent chromium).
AL ALY, QQ-A-250/11 (6061) T651	AL ALY, AMS 4027 (6061) T651	QQ-A-250/11 was superseded by AMS-QQ-A-250/11 for unspecified and for aerospace applications (do not use ASTM B209 since it is for non-aerospace use). AMS-QQ-A-250/11 was later superseded by AMS 4027.
PASSIVATE PER QQ-P-35 TYPE	PASSIVATE PER AMS 2700 CLASS 4 METHOD 1 TYPE	QQ-P-35 has been superseded by AMS-QQ-P-35 for unspecified or aerospace use (do not use ASTM A967 since it is for non-aerospace use only). AMS-QQ-P-35 has been superseded by AMS 2700. Only AMS Method 1 is valid in this case (nitric acid passivation). Method 2 (citric acid) requires explicit approval from the customer. AMS 2700 Class 4 is required for drawings that originally specified QQ-P-35 in order to match the lot inspection requirements.

Appendix-Table II. Cobham SP Documents and Examples of Acceptable Material Certifications

Drawing Callout	Acceptable Specification	Comments
AL ALY, SP1638399 (6061) T6511	AMS-QQ-A-200/8 (6061) T6511 or AMS 4173 (6061) T6511	>0.249" thick 6061 extrusions
AL ALY, SP1638399 (6061) T6511	AMS-QQ-A-200/8 (6061) T6 or AMS 4150 (6061) T6	≤0.249" thick 6061 extrusions
CONVERSION COAT PER SP1638424 TYPE I CLASS 1A	CONVERSION COAT PER MIL-DTL- 5541 TYPE I CLASS 1A	
SST, SP1638409 (17-4PH) H1025	Requires one or two certificates: AMS 5643/H1025 or AMS 5643 plus heat treatment per AMS 2759/3 to H1025.	The AMS 5643 material comes in the Solution Treated (ST) condition. Sometimes it is certified to AMS 5643/H1025 which is a separate document from AMS 5643 where it is already heat treated to the H1025 condition. At this time, the AMS 5643 ST condition is much more common and therefore suppliers will but the ST material and they will need to heat treat it to the H1025 condition. The heat treatment has to be done in accordance with AMS 2759/3. The majority of heat treaters that cannot certify to AMS 2759 will no-bid the job if they find out that this is an aerospace application. One example of how this is specified within a SP document is shown in Appendix-Table III.
PASSIVATE PER SP1638423 METHOD 1 TYPE 1, 2, 3, OR 8	PASSIVATE PER AMS 2700 METHOD 1 TYPE 1, 2, 3, OR 8	

Appendix-Table III. Example of Tables Listing More than one Requirement in SP1638409

Specification	Thickness Range (in.)	Condition
AMS 5643 AMS 2759/3	8.0 MAX THICK	H900*
AMS 5643 AMS 2759/3	8.0 MAX THICK	H925*
AMS 5643 AMS 2759/3 AMS 5643/H1025	8.0 MAX THICK	H1025