SYM	ZONE	DESCRIPTION	DATE	APPROVED
10		IN PARAGRAPHS 3.1 AND 5.2 UPDATED TP–0133A TO STP–8810–0040; ADDED "UNLESS SPECIFIED OTHERWISE IN SECTION 6.0" TO GOX REQUIREMENTS IN PARAGRAPH 4.1.1; ADDED CHRISTO–LUBE MCG 111 IN SECTION 6.0 UNDER LUBRICANTS. DIRECT DRAWING CHANGE PER RT812PTUE0. T.L.M. 6/18/13 T.D.S. 6/18/13 RES–005039	6/18/13 6/18/13 6/18/13	B. FARNER L.H.HASELMAIER ISSUED/CEF
9		MOVED REVISION SUMMARIES 1 THRU 8 TO PAGE 2; ADDED "WITHDRAWN, NO REPLACEMENT" TO ASTM D3369 IN SECTION 3.1; REMOVED MIL–T–27730 FROM SECTION 3.1; ADDED SAE AMS SPECS 3216, 3218, 7259, 7276, AMS–R–83485, AND AMS–R–83485/1 TO SECTION 3.1 AND 6.0, CODE E01; ADDED TP–0133A TO SECTION 3.1; UPDATED SSC PTD–OI–E22 TO SOI–8080–0016 IN SECTION 3.1 AND 4.3; REMOVED NSS 1740.15 FROM SECTION 3.2; ADDED ASTM MNL 36, KTI–5210, NASA/TM–2007–213740, AND "CANCELLED" TO MSFC–HDBK–527 IN SECTION 3.2; ADDED "FROM SSC–113" TO SECTION 5.1; ADDED SECTION 5.1.1; CHANGED "VITON" TO "VITON A" AND "FLUOREL" TO "DYNEON FKM (FORMALLY FLUOREL) TO SECTION 6.0, CODE E01; ADDED PARKER HANNIFIN COMPOUNDS V0747, V747, V0709, V709, V0835, V835, AND VM835 TO SECTION 6.0, CODE E01. DIRECT DRAWING CHANGE PER RT810YFS01 RES T1–4202 K.J.M. 3/15/11 T.D.S. 3/15/11	3/17/11 3/21/11 3/26/11	B. FARNER B. STCYR ISSUED/CEF

REVISIONS

	SIGNATURE	DATE
DRAWN	BEVERLY GARCIA	8–31–89
CHECKED	RON MITCHELL	8–31–89
ENGINEER	MIKE MOSLEY	9–27–90
ISSUED	CEF	10–12–89
SUBMITTED	B. McSPADDEN	9–28–89
NASA SAFETY		
APPROVED	S.D. McCARTY	10–12–89
USED ON	54000–D001	

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

JOHN C. STENNIS SPACE CENTER
SSC, MS 39529–6000

SPECIFICATION FOR MATERIALS USED IN LOX AND GOX SERVICE EXEMPT FROM BATCH TEST REQUIREMENTS

SIZE B | DWG. NO. 54000–GM30 | REV. 10

AUTHORITY J9F0S005 | SHEET 1 OF 12

CADD CONTROLLED DRAWING
CADD P/N:
SCD/54000/GM30R10/SHT1

SYM	ZONE	DESCRIPTION	DATE	APPROVED
8		IN SECTION 3.1, REPLACED SPECIFICATION "ASTM D3293" WITH "ASTM D3294", AND DELETED SPECIFICATIONS "SAE AMS 3657", "SAE AMS 3658" AND "SAE AMS 3659" (SPECIFICATIONS RELATED TO EXTRUDED PRODUCTS); IN PARAGRAPH 4.5.2, CHANGED "RAW STOCK" TO "RAW MATERIAL"; IN SECTION6.0, MATERIAL CODE P01, DELETED MATERIAL CLASS "FOR EXTRUDED PRODUCTS, APPLICABLE SPECIFICATIONS ARE" AND ITS APPLICABLE SPECIFICATIONS (AMS 3657, AMS 3658 & AMS 3659); ADDED "DU–B" BEARING MATERIAL TO SECTION 6.0 UNDER HEADING "MISCELLANEOUS"; ADDED KRYTOX "XP1A7" OIL TO SECTION 6.0 UNDER HEADING "LUBRICANTS"; ADDED KRYTOX "GPL–103" OIL TO SECTION 6.0 UNDER HEADING "LUBRICANTS". DIRECT DRAWING CHANGE PER SWR PT5A7S8106. L.H.H. 06/08/06 T.D.S. 06/01/06 (RES T1–3532)	06/08/06 S.D.M.	ISSUED\CEF 06/08/06
7		ADDED VESPEL SP–22 TO LIST OF EXEMPT PLASTICS; DATA IN REMARKS AND APPLICABLE SPECIFICATIONS COLUMN FOR VESPEL SP–21 WAS "MAXIMUM FILL 50% BY WEIGHT". DIRECT DRAWING CHANGE PER SWR XJCRW50100. T.D.S. 2/25/04 TLM 2/27/04 (RES T1–3251)	3/5/04 3/4/04 3/3/04	ISSUED/CEF W.W.S. S.D.M.
6		FOR PARA. 2.0, CHANGED "TO THE LIMITS SPECIFIED IN SECTION 5.0" TO "AND SPECIFIES THE USE PARAMETERS UNDER WHICH THE EXEMPTION APPLIES"; FOR PARA. 4.1.1, CHANGED "APPROVED FOR USE IN LOX SYSTEMS FOR PRESSURE" TO "EXEMPT FROM BATCH TESTING WHEN USED IN LOX SYSTEMS AT PRESSURES" AND CHANGED "APPROVED FOR USE FOR GAS PRESSURE" TO "EXEMPT FROM BATCH TESTING WHEN USED IN GOX SYSTEMS AT PRESSURES"; RENUMBERED "MATERIAL SELECTION LIST" FROM SECTION 5.0 TO 6.0. DIRECT DRAWING CHANGE PER SWR J1DOT90002. T.D.S. 10/4/99 MAM 10/29/99 (RES T2–2378)	11/1/99 11/1/99	ISSUED/CEF 11/1/99 W.W.S. S.D.M.
5		REPLACED PCTFE SPECIFICATION SAE AMS 3646 WITH SAE AMS 3645 IN SECTION 3.1; ADDED MATERIAL DESCRIPTION & P.O. NUMBER TO THE "CERTIFICATE OF CONFORMANCE" REQUIREMENTS IN SECTION 4.2.1; ADDED NEW LINE 4.4–E – "SSC PART NUMBER (IF APPLICABLE)"; CHANGED "RAW STOCK" TO "MOLDED MATERIAL" AND ADDED "RAW MATERIAL" IN SECTION 4.4–F; ADDED "(CURE DATE)" TO LINE 4.4–G; ADDED NEW NEW SECTION 5.0; FOR MATERIAL CODE P09, a) DELETED ALL TRADE NAMES, b) DELETED MATERIAL CLASS "FOR SHEET PRODUCTS, APPLICABLE SPECIFICATION IS:" & ITS APPLICABLE SPECIFICATION "AMS 3646", c) ADDED MATERIAL CLASS FOR "RAW MATERIAL" AND d) ADDED MATERIAL CLASS FOR "COMPRESSION MOLDED MATERIAL" & ITS APPLICABLE SPECIFICATIONS; ADDED MATERIAL CODE P09.1. DIRECT DWG. CHANGE PER SWR JMFGFCE800 T.D.S. 9/21/98 F.L.R. 9/18/98 D.P.D. 9/23/98 (RES T1–2252)	9/24/98 9/23/98	ISSUED/CEF 9/24/98 W.W.S. S.D.M.
4		ADDED 54000–GM09 TO SECTION 3.1 AND MATERIAL CODE P09. ADDED SECTION 4.4 AND 4.5. CHANGED LOX RATING PRESSURE TO EQUAL THE GOX RATING PRESSURE FOR MATERIAL CODES M25, P01, P03, P06, P29, P12, P32, P13, P04, P33, P02, P09, PS1, AND PS2. DIRECT DRAWING CHANGE PER SWR JMFGFCE824. F.L.R. 6/19/98 M.A.M. 6/22/98 C. ADCOX 6/19/98 (RES T1–2225)	W.W.S. S.D.M.	ISSUED/CEF 6/22/98 6/22/98 6/22/98
3		REVISED IN ITS ENTIRETY TO INCORPORATE KENNEDY SPACE CENTER MATERIAL SELECTION LIST 79K09560 AND 79K09561. DIRECT DRAWING CHANGE BY NASA PER SWR JMFGFCE800. W.W.S. 5/1/98 T.D.S. 4/29/98	S.D.M.	ISSUED/CEF 5/1/98 5/1/98
2		ADDED 54000–GM30–7 AND FLAGNOTES 3 AN 4. SCD WAS REVISED AND REDRAWN IN ITS ENTIRETY AND INC. ARN 1A PER FSR J1DOGPW351. MAM 9/16/93 C. ADCOX 9/16/93	S.D.M.	ISSUED/CEF 11/8/93 10/28/93
1		CHANGED TEMP. LIMITS ON –2 THRU –5 ASSY'S. FROM "AMBIENT" TO "–297° TO 150°F". ADDED DUPONT'S GREASE. KRYTOX 240AC (54000–GM30–6). SCD REDRAWN IN ITS ENTIRETY PER J3P1P002. H. LEE 12–4–90	1–28–91	ISSUED/CEF 2–4–91 S.D.M.

SIZE	DWG. NO.	REV
B	54000–GM30	10
AUTHORITY J9F0S005	SHEET 2 OF 12	

1.0 SERVICE CONDITIONS

LIQUID OXYGEN AND GASEOUS OXYGEN

2.0 SCOPE

THIS SPECIFICATION LISTS THE MATERIALS USED IN LIQUID AND GASEOUS OXYGEN SERVICE THAT ARE EXEMPT FROM THE BATCH TEST REQUIREMENTS IN NASA–STD–6001 AND SPECIFIES THE USE PARAMETERS UNDER WHICH THE EXEMPTION APPLIES.

3.0 DOCUMENTATION

3.1 REFERENCED DOCUMENTS

THE LATEST ISSUE OF THE FOLLOWING DOCUMENTS FORM A PART OF THIS DRAWING TO THE EXTENT SPECIFIED HEREIN.

A–A–58092	TAPE, ANTISEIZE, POLYTETRAFLUORETHYLENE (SUPERSEDES MIL–T–27730)
ASTM D1430	STANDARD SPECIFICATION FOR POLYCHLOROTRIFLUOROETHYLENE (PCTFE) PLASTICS
ASTM D2116	STANDARD SPECIFICATION FOR FEP – FLUOROCARBON MOLDING AND EXTRUSION MATERIALS
ASTM D3294	STANDARD SPECIFICATION FOR PTFE RESIN MOLDED SHEET (REPLACES D3293)
ASTM D3308	STANDARD SPECIFICATION FOR PTFE RESIN SKIVED TAPE
ASTM D3369	STANDARD SPECIFICATION FOR POLYTETRAFLUOROETHYLENE (PTFE) RESIN CAST FILM (WITHDRAWN, NO REPLACEMENT)
ASTM D4894	STANDARD SPECIFICATION FOR POLYTETRAFLUOROETHYLENE (PTFE) GRANULAR MOLDING AND RAM EXTRUSION MATERIALS
ASTM D4895	STANDARD SPECIFICATION FOR POLYTETRAFLUOROETHYLENE (PTFE) RESIN PRODUCED FROM DISPERSION
NASA–STD–6001	FLAMMABILITY, ODOR, OFFGASSING, AND COMPATIBILITY REQUIREMENTS AND TEST PROCEDURES FOR MATERIALS IN ENVIRONMENTS THAT SUPPORT COMBUSTION (PREVIOUSLY NHB 8060.1C)
SAE AMS 3216	FLUOROCARBON (FKM) RUBBER, HIGH TEMPERATURE–FLUID RESISTANT, LOW COMPRESSION SET, 70 TO 80 DUROMETER
SAE AMS 3218	FLUOROCARBON (FKM) RUBBER, HIGH TEMPERATURE–FLUID RESISTANT, LOW COMPRESSION SET, 85 TO 95 DUROMETER
SAE AMS 3645	POLYCHLOROTRIFLUOROETHYLENE (PCTFE), COMPRESSION MOLDED, HEAVY SECTIONS, UNPLASTICIZED
SAE AMS 3647	POLYFLUOROETHYLENE–PROPYLENE FILM AND SHEET (FEP)
SAE AMS 3668	POLYTETRAFLUOROETHYLENE (PTFE) MOLDINGS, PREMIUM GRADE, AS SINTERED
SAE AMS 3669	POLYTETRAFLUOROETHYLENE SHEET, MOLDED, PREMIUM GRADE, AS SINTERED
SAE AMS 7259	RINGS, SEALING, FLUOROCARBON (FKM) RUBBER, HIGH TEMPERATURE–FLUID RESISTANT, LOW COMPRESSION SET, 85 TO 95 DUROMETER
SAE AMS 7276	RINGS, SEALING, FLUOROCARBON (FKM) RUBBER, HIGH TEMPERATURE–FLUID RESISTANT, LOW COMPRESSION SET, 70 TO 80 DUROMETER
SAE AMS–R–83485	RUBBER, FLUOROCARBON ELASTOMER, IMPROVED PERFORMANCE AT LOW TEMPERATURES
SAE AMS–R–83485/1	RUBBER, FLUOROCARBON ELASTOMER, IMPROVED PERFORMANCE AT LOW TEMPERATURES, O–RINGS, SIZES AND TOLERANCES
SSC 54000–GM08	SPECIFICATION FOR PROCUREMENT OF VIRGIN FEP TEFLON BAGGING AND PACKAGING MATERIAL
SSC 54000–GM09	SPECIFICATION FOR PROCUREMENT OF POLYCHLOROTRIFLUOROETHYLENE (ACLAR 22A) BAGGING AND PACKAGING MATERIAL
SOI–8080–0016	MATERIAL AND PROCESS CONTROL OF CRITICAL PROPULSION FACILITIES AND SYSTEMS (SUPERSEDES PTD–OI–E22)
STP–8810–0040	TECHNICAL PROCEDURE FOR PROCUREMENT, SAMPLE TESTING, CERTIFICATION, STORAGE, ISSUE, AND TRACEABILITY OF LO/GO COMPATIBLE SOFTGOOD MATERIAL

3.2 APPLICABLE DOCUMENTS

THOUGH NOT REFERENCED IN THIS DRAWING, THE FOLLOWING DOCUMENTS CONTAIN OXYGEN COMPATIBILITY REQUIREMENTS, TEST METHODS, AND TEST RESULTS THAT ARE APPLICABLE TO THIS DRAWING.

ASTM D2512	STANDARD TEST METHOD FOR COMPATIBILITY OF MATERIALS WITH LIQUID OXYGEN (IMPACT SENSITIVITY THRESHOLD AND PASS–FAIL TECHNIQUES)
ASTM G63	GUIDE FOR EVALUATING NONMETALLIC MATERIALS FOR OXYGEN SERVICE
ASTM G74	STANDARD TEST METHOD FOR IGNITION SENSITIVITY OF MATERIALS TO GASEOUS FLUID IMPACT
ASTM G86	TEST METHOD FOR DETERMINING IGNITION SENSITIVITY OF MATERIALS TO MECHANICAL IMPACT IN PRESSURIZED OXYGEN ENVIRONMENTS
ASTM G88	GUIDE FOR DESIGNING SYSTEMS FOR OXYGEN SERVICE
ASTM G94	GUIDE FOR EVALUATING METALS FOR OXYGEN SERVICE
ASTM G126	TERMINOLOGY RELATING TO THE COMPATIBILITY AND SENSITIVITY OF MATERIALS IN OXYGEN ENRICHED ATMOSPHERES
ASTM G128	GUIDE FOR CONTROL OF HAZARDS AND RISKS IN OXYGEN ENRICHED SYSTEMS
ASTM MNL 36	SAFE USE OF OXYGEN AND OXYGEN SYSTEMS
KTI–5210	MATERIAL SELECTION LIST FOR OXYGEN SERVICE
MSFC–HDBK–527	MATERIALS SELECTION LIST FOR SPACE HARDWARE SYSTEMS (CANCELLED)
NASA/TM–2007–213740	GUIDE FOR OXYGEN COMPATIBILITY ASSESSMENTS ON OXYGEN COMPONENTS AND SYSTEMS
SSC STD 79–010	SSC REQUIREMENTS FOR MATERIALS USED IN LOX/GOX SERVICE

3.3 HISTORICAL DOCUMENTS

THE INFORMATION CONTAINED IN SECTION 6.0 OF DRAWING 54000–GM30 REV. 3 WAS BASED ON REVISION 2 AND THE FOLLOWING KENNEDY SPACE CENTER MATERIAL SELECTION LISTS:

79K09560	MATERIAL SELECTION LIST FOR LIQUID OXYGEN SERVICE
79K09561	MATERIAL SELECTION LIST FOR GASEOUS OXYGEN AND AIR SERVICE

DOCUMENTATION TO SUPPORT SUBSEQUENT CHANGES IS MAINTAINED BY THE MATERIALS AND PROCESSES CONTROL TEAM IN ACCORDANCE WITH SOI–8080–0016.

4.0 REQUIREMENTS

4.1 MATERIAL RATING. SECTION 6.0 LISTS THOSE MATERIALS THAT HAVE BEEN DETERMINED TO BE COMPATIBLE WITH LOX AND/OR GOX USING NASA–STD–6001 CRITERIA. RATINGS INDICATE THE FOLLOWING:

4.1.1 "A" RATING.
MATERIALS RATED "A" FOR LOX ARE EXEMPT FROM BATCH TESTING WHEN USED IN LOX SYSTEMS AT PRESSURES NOT EXCEEDING THAT SHOWN AND TEMPERATURES NOT EXCEEDING –275°F (–171°C). MATERIALS RATED "A" FOR GOX ARE EXEMPT FROM BATCH TESTING WHEN USED IN GOX SYSTEMS AT PRESSURES NOT EXCEEDING THAT SHOWN AND TEMPERATURES NOT EXCEEDING 160°F (71°C) UNLESS SPECIFIED OTHERWISE IN SECTION 6.0. BATCH TESTING IS REQUIRED FOR ANY "A" RATED MATERIAL WHEN USED AT A PRESSURE HIGHER THAN SHOWN IN SECTION 6.0 OR TEMPERATURES EXCEEDING 160°F (71°C) FOR GOX OR –275°F (–171°C) FOR LOX.

MATERIALS LISTED BY TRADE NAME. WHEN AN "A" RATED MATERIAL IS IDENTIFIED BY TRADE NAME (E.G., HALOCARBON GREASE) THE LISTED TRADE NAME MATERIAL IS EXEMPT FROM THE REQUIREMENTS FOR BATCH TESTING FOR PRESSURES NOT EXCEEDING THAT SHOWN. IF A SPECIFIC MATERIAL IS LISTED (E.G., HALOCARBON 25–5S GREASE) ONLY THAT SPECIFIC MATERIAL IS EXEMPT. UNLISTED TRADE NAME MATERIALS WITH THE SAME COMPOSITION AS LISTED TRADE NAME MATERIALS MUST BE QUALIFIED BY BATCH TESTING UNLESS PURCHASED TO A LISTED SPECIFICATION.

MATERIALS LISTED BY SPECIFICATION. WHEN ONE OR MORE APPLICABLE SPECIFICATIONS ARE LISTED UNDER THE "REMARKS" HEADING OF THE TABLE, MATERIALS PURCHASED AND CERTIFIED TO MEET THE REQUIREMENTS OF ONE OF THE SPECIFICATIONS LISTED ARE EXEMPT FROM BATCH TESTING FOR PRESSURES NOT EXCEEDING THAT SHOWN.

4.1.2 "B.T." RATING.
MATERIALS RATED "B.T." (BATCH TEST) ARE APPROVED FOR USE IN OXYGEN SYSTEMS PROVIDED THAT EACH BATCH OR LOT OF THE PRODUCT IS INDIVIDUALLY TESTED AND MEETS THE ACCEPTANCE CRITERIA OF NASA–STD–6001, TESTS 13A (LOX) AND/OR TEST 13B (GOX AND LOX) AS APPROPRIATE.

4.1.3 "C" RATING.
MATERIALS RATED "C" ARE NOT NORMALLY USED IN OXYGEN SYSTEMS AND/OR HAVE NOT BEEN EVALUATED FOR USE IN OXYGEN.

4.2 MATERIAL CERTIFICATION. MATERIAL ORDERED FOR USE IN OXYGEN SERVICE SHALL BE CERTIFIED BY THE VENDOR FOR USE IN OXYGEN SYSTEMS BY ONE OF THE FOLLOWING METHODS:

4.2.1 CERTIFICATE OF CONFORMANCE FOR "A" RATED MATERIAL.
THE SUPPLIER OF ANY MATERIAL ORDERED FOR USE IN OXYGEN SERVICE THAT IS EXEMPT FROM BATCH TESTING MUST PROVIDE A "CERTIFICATE OF CONFORMANCE" WITH THE MATERIAL.

MATERIALS LISTED BY TRADE NAME. FOR "A" RATED MATERIALS LISTED BY TRADE NAME, THE SUPPLIER'S "CERTIFICATE OF CONFORMANCE" SHALL INCLUDE A DESCRIPTION OF THE MATERIAL WITH P.O. NUMBER REFERENCE, PLUS THE MATERIAL'S TRADE NAME AND CHEMICAL NAME. WHEN THE MATERIAL CONSISTS OF TWO OR MORE COMPONENTS, THE CHEMICAL NAME AND PERCENTAGE BY WEIGHT (OR VOLUME) OF EACH OF THE COMPONENTS MUST BE PROVIDED. FOR EXAMPLE, "WE CERTIFY THE MATERIAL OF THE SEAT INSERTS (P/N XXXXX) FURNISHED PER P.O. XXXXX IS HOSTAFLON TFM 4215, A CARBON FILLED POLYTETRAFLUOROETHYLENE (PTFE), 25% CARBON BY WEIGHT."

MATERIALS LISTED BY SPECIFICATION. WHEN AN "A" RATED MATERIAL IS ORDERED PER APPLICABLE SPECIFICATION(S), THE SUPPLIER'S "CERTIFICATE OF CONFORMANCE" SHALL INCLUDE A DESCRIPTION OF THE MATERIAL WITH P.O. NUMBER REFERENCE, PLUS THE MATERIAL'S CHEMICAL NAME AND THE STATED SPECIFICATION(S). SPECIFIC DETAILS (TYPE, GRADE, CONDITION, ETC.) OF THE MATERIAL MUST ALSO BE PROVIDED WHEN THE STATED SPECIFICATION COVERS MORE THAN ONE TYPE OF MATERIAL. FOR EXAMPLE, "WE CERTIFY THE MATERIAL OF THE 1/2" ROD FURNISHED PER P.O. XXXXX IS POLYCHLOROTRIFLUOROETHYLENE (PCTFE), MEETING THE REQUIREMENTS OF ASTM D1430 TYPE I GRADE 3 HOMOPOLYMER AND THE REQUIREMENTS OF SAE AMS–3645."

4.2.2 PACKING SLIP AND MSDS.
FOR MATERIALS RATED "B.T." THE VENDOR SHALL INDICATE ON THE SHIPPING DOCUMENTATION THE FOLLOWING INFORMATION (AS APPLICABLE): TRADE NAME, CHEMICAL NAME, PERCENTAGE BY WEIGHT OR VOLUME OF EACH COMPONENT, SPECIFICATION, LOT AND/OR BATCH NUMBER, SIZE AND FORM, AND QUANTITY. MATERIAL SAFETY DATA SHEETS (MSDS) SHALL BE PROVIDED FOR ALL MATERIALS TO BE BATCH TESTED.

4.3 VARIANCES. MATERIALS NOT LISTED MAY BE USED PROVIDED THEY HAVE BEEN EVALUATED IN ACCORDANCE WITH NASA–STD–6001, TEST 13 [MECHANICAL IMPACT FOR MATERIALS IN AMBIENT PRESSURE LOX (TEST 13A) AND MECHANICAL IMPACT FOR MATERIALS IN VARIABLE PRESSURE GOX AND LOX (TEST 13B)]. VARIANCES FROM THE CRITERIA OF THIS DOCUMENT AND NASA–STD–6001 SHALL BE APPROVED IN ACCORDANCE WITH SOI–8080–0016. THE MATERIALS USAGE AGREEMENT FORM FROM SOI–8080–0016 SHALL BE USED TO DOCUMENT VARIANCES AND USAGE OF MATERIALS NOT LISTED.

4.4 IDENTIFICATION. THE VENDOR SHALL ATTACH THE FOLLOWING INFORMATION TO MATERIAL ORDERED PER THIS SPECIFICATION FOR USE IN OXYGEN SERVICE.

A. PURCHASE ORDER NUMBER

B. MATERIAL CERTIFICATION (PER SECTION 4.2)

C. MANUFACTURER OF DELIVERED PRODUCT

D. VENDOR PART NUMBER (OR PART DESCRIPTION IF VENDOR P/N IS NOT AVAILABLE)

E. SSC PART NUMBER (IF APPLICABLE)

F. LOT AND/OR BATCH NUMBER FOR:

–RAW MATERIAL (POWDER, PELLETS, ETC.)

–MOLDED MATERIAL (SHEETS, RODS, CYLINDERS, ETC.)

–FINISHED PRODUCTS (PIECE PARTS) WHEN REQUESTED BY PURCHASE ORDER

G. DATE OF MANUFACTURE (CURE DATE)

4.5 QUALITY REQUIREMENTS FOR ELASTOMERS AND PLASTICS

4.5.1 NO INK OR DYE STAMPING OR COLORING PIGMENTS WILL BE PERMITTED IN OR ON THE MATERIAL OR FINISHED PART.

4.5.2 LOCALIZED SURFACE SCRATCHES, IMPERFECTIONS, OR FOREIGN BODIES FOUND IN MATERIAL WILL BE CAUSE FOR REJECTION. MATERIAL SHALL BE FREE OF VOIDS, FISSURES, FOREIGN INCLUSIONS OR BUBBLES. RAW MATERIAL SHALL CONTAIN NO DEFECTS THAT WILL PREVENT FABRICATION OF A VOID–FREE PART.

4.5.3 MATERIALS THAT FAIL TO MEET THE REQUIREMENTS OF THIS SPECIFICATION SHALL BE RETURNED TO THE VENDOR AT NO COST TO THE GOVERNMENT.

5.0 QUALITY ASSURANCE (SSC ONLY)

5.1 UPON RECEIPT OF MATERIALS THAT MEET THE REQUIREMENTS OF THIS SPECIFICATION, QUALITY ASSURANCE SHALL INITIATE A CERTIFICATION/TRACEABILITY INSPECTION RECORD (CTIR), FORM SSC–113, FOR EACH ITEM, AND SHALL INSURE THAT EACH ITEM IS PACKAGED INDIVIDUALLY WITH ITS RESPECTIVE CTIR.

5.1.1 THE CTIR SHALL BE GENERATED PER SQP–5300–0078.

5.2 FOR ALL "B.T." RATED MATERIALS AND FOR THOSE "A" RATED MATERIALS WITH USE PRESSURES OR TEMPERATURES EXCEEDING THE LIMITATIONS OF THIS SPECIFICATION, TEST SAMPLES MUST BE PROCURED AND PROCESSED FOR OXYGEN COMPATIBILITY IMPACT TESTING IN ACCORDANCE WITH STP–8810–0040.

NOTICE: THE GOVERNMENT DRAWINGS, SPECIFICATIONS, AND/OR DATA ARE PREPARED FOR THE OFFICIAL USE BY, OR ON THE BEHALF OF, THE UNITED STATES GOVERNMENT. THE GOVERNMENT NEITHER WARRANTS THESE DRAWINGS, SPECIFICATIONS, OR OTHER DATA, NOR ASSUMES ANY RESPONSIBILITY OR OBLIGATION, FOR THEIR USE FOR PURPOSES OTHER THAN THE GOVERNMENT PROJECT FOR WHICH THEY WERE PREPARED AND/OR PROVIDED BY THE GOVERNMENT, OR AN ACTIVITY DIRECTLY RELATED THERETO. THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED, BY IMPLICATION OR OTHERWISE, AS LICENSING IN ANY MANNER THE HOLDER OR ANY OTHER PERSON OR CORPORATION, NOR CONVEYING THE RIGHT OR PERMISSION, TO MANUFACTURE, USE, OR SELL PATENTED INVENTION THAT MAY RELATE THERETO.

6.0 MATERIAL SELECTION LIST FOR OXYGEN SYSTEMS

CODE	MATERIAL CLASS OR CHEMICAL NAME	TRADE NAME	MANUFACTURER	LOX RATING (PSIG)	GOX RATING (PSIG)	REMARKS AND APPLICABLE SPECIFICATIONS
	ELASTOMERS					
E01	FLUOROELASTOMER	VITON A	E.I. DUPONT	C	A≤1650	
		DYNEON FKM (FORMALLY FLUOREL)	3M COMPANY			
		COMPOUNDS V0747, V747, V0709, V709, V0835, V835, VM835	PARKER HANNIFIN CORPORATION			COMPOUNDS V0835 AND V835 ARE OBSOLETE AND REPLACED BY VM835
	IN ADDITION TO BEING PURCHASED BY THE LISTED TRADE NAME, ALL FLUOROELASTOMERS SHALL MEET THE REQUIREMENTS OF ONE OF THE FOLLOWING SPECIFICATIONS:					
	FOR O–RINGS, COMPRESSION SEALS, AND O–RING CORD WITH A 75 DUROMETER, THE APPLICABLE SPECIFICATION IS:					SAE AMS 7276 (SUPERSEDES MIL–R–83248, TYPE 1, CLASS 1)
	FOR O–RINGS, COMPRESSION SEALS, AND O–RING CORD WITH A 90 DUROMETER, THE APPLICABLE SPECIFICATION IS:					SAE AMS 7259 (SUPERSEDES MIL–R–83248, TYPE 1, CLASS 2)
	FOR SHEET, STRIP, TUBING, EXTRUSIONS, AND MOLDED SHAPES WITH A 75 DUROMETER, THE APPLICABLE SPECIFICATION IS:					SAE AMS 3216 (SUPERSEDES MIL–R–83248, TYPE 2, CLASS 1)
	FOR SHEET, STRIP, TUBING, EXTRUSIONS, AND MOLDED SHAPES WITH A 90 DUROMETER, THE APPLICABLE SPECIFICATION IS:					SAE AMS 3218 (SUPERSEDES MIL–R–83248, TYPE 2, CLASS 2)
	FOR SHEETS, STRIPS, MOLDED PARTS, AND EXTRUDED SHAPES WITH IMPROVED LOW TEMPERATURE PERFORMANCE, THE APPLICABLE SPECIFICATION IS:					SAE AMS–R–83485 (SUPERSEDES MIL–R–83485)
	FOR O–RINGS WITH IMPROVED LOW TEMPERATURE PERFORMANCE, THE APPLICABLE SPECIFICATION IS:					SAE AMS–R–83485/1 (SUPERSEDES MIL–R–83485/1)
E08	PERFLUOROELASTOMER	KALREZ	E.I. DUPONT	C	A≤1650	
		CHEMRAZ	GREENE, TWEED & CO.			

CODE	MATERIAL CLASS OR CHEMICAL NAME	TRADE NAME	MANUFACTURER	LOX RATING (PSIG)	GOX RATING (PSIG)	REMARKS AND APPLICABLE SPECIFICATIONS
		LUBRICANTS				
L06	PERFLUOROPOLYALKYLETHER (PFPAE) OIL	KRYTOX 143AC FOMBLIN Y06 FOMBLIN Y16 BRAYCO 815Z OIL	E.I. DUPONT AUSIMONT, INC. AUSIMONT, INC. CASTRO NORTH AMERICA	A≤1500	A≤6700	ALSO CALLED PERFLUOROPOLYETHER (PFPE) PERFLUOROALKYLETHER (PFAE)
L01.1	PFPAE OIL WITH PTFE THICKENER	KRYTOX 240AC GREASE BRAYCOTE 640AC GREASE	E.I. DUPONT CASTROL NORTH AMERICA	A≤10000	A≤10000 (TO +550° F)	
L01.1	PERFLUOROPOLYETHER (PFPE) OIL WITH PTFE THICKENER	CHRISTO–LUBE MCG 111 GREASE	LUBRICATION TECHNOLOGY, INC.	A≤10000	A≤10000 (TO +550° F)	APPROVED ALTERNATE FOR KRYTOX 240AC GREASE
L01.1	PERFLUOROPOLYALKYLETHER (PFPAE) GREASE (PTFE THICKENER)	BRAYCOTE 600EF TRIBOLUBE 16 BRAYCOTE 601EF	CASTROL NORTH AMERICA AEROSPACE LUBRICANTS, INC. CASTROL NORTH AMERICA	A≤1500	A≤6700	
L01.2	PERFLUOROPOLYALKYLETHER (PFPAE) GREASE	TRIBOLUBE 10C CHRISTO–LUBE BRAYCOTE 806	AEROSPACE LUBRICANTS, INC. LUBRICATION TECHNOLOGY, INC. CASTROL NORTH AMERICA	B.T.	A≤1650	
L05	LOX PUMP OIL		KSC BLENDED	A≤1500	B.T.	KSC SPECIFICATION 79K22280
L09	POLYCHLOROTRIFLUORETHYLENE (PCTFE) OIL	HALOCARBON FLUOROLUBE	HALOCARBON PRODUCTS CO. OCCIDENTAL CHEMICAL CORP.	A≤1500	A≤1650	
L08	PCTFE/SILICA THICKENED OR PCTFE/PCTFE POLYMER THICKENED GREASE	HALOCARBON FLUOROLUBE	HALOCARBON PRODUCTS CO. OCCIDENTAL CHEMICAL CORP.	B.T.	A≤1650	
L08.1	PCTFE/SILICA THICKENED GREASE	HALOCARBON 25–5S GREASE	HALOCARBON PRODUCTS CO.	A≤400	A≤1650	
L10		DRILUBE 701, DRILUBE 703, DRILUBE 831, DRILUBE 842	DRILUBE COMPANY	B.T.	A≤1650	
L11	SOLID FILM LUBRICANT	EVERLUBE 812 MICROSEAL 200–1	E/M CORPORATION	A≤1500	A≤6700	
L12	SOLID DRY FILM LUBRICANT WITH MOLYBDENUM DISULFIDE	TIOLUBE 1175	TIODIZE CO.	A≤1500	A≤1650	
L13	DRY FILM LUBRICANT	DOW CORNING LUBRICANT 321	DOW CORNING CORP.	A≤1500	A≤1050	DISPERSION OF MoS_2 GRAPHITE AND RESIN IN A SOLVENT (CURES TO A DRY LUBRICATING FILM)
L14	PERFLUOROPOLYETHER (PFPE) OIL WITH SOLUBLE ADDITIVES	KRYTOX XP1A7 OIL	E.I. DUPONT	A≤500	A≤500	LIMITED TO INDIRECT (NON–WETTED) LOX SERVICE APPLICATIONS (i..e. LOX PUMP COUPLING)
L15	PERFLUOROPOLYETHER (PFPE) OIL	KRYTOX GPL–103 OIL	E.I. DUPONT	A≤10000	A≤10000	TEMPERATURE RATING IS ≤180°F

CODE	MATERIAL CLASS OR CHEMICAL NAME	TRADE NAME	MANUFACTURER	LOX RATING (PSIG)	GOX RATING (PSIG)	REMARKS AND APPLICABLE SPECIFICATIONS
	MISCELLANEOUS					
M01	CARBON SEALS		ALL MANUFACTURERS	B.T.	A≤1650	
M25	PTFE/ELECTROLESS NICKEL COATING	NIFLOR	DRESSER INDUSTRIES, CAL. TECH. PLATING	A≤6700	A≤6700	
M26		FLUOROLON 325 COATING (0.001" THICKNESS)	SOUTHWEST IMPREGLON, INC.	A≤500	A≤500	
M27	DYE PENETRANTS		ALL MANUFACTURERS	B.T.	B.T.	
M31	LEAK DETECTOR FLUID	SHERLOCK	WINTON PRODUCTS	A≤1500	A≤6700	
M40	BEARING MATERIAL (PTFE/Pb/TIN–BRONZE MATRIX)	DU–B OR DU(B)	GLACIER GARLOCK BEARINGS INC.	A≤720	A≤720	LIMITED TO USE AS LINEAR, RADIAL OR THRUST BEARING AT RUNNING SPEEDS ≤ 0.5 FT/SEC. (MFG. SPEC. GBMS–102 REV. E)
	PLASTICS					
P01	POLYTETRAFLUOROETHYLENE (VIRGIN PTFE)	TEFLON TFE	E.I. DUPONT	A≤6700	A≤6700	
		TETRAFLUOR VIRGIN TEFLON	TETRAFLUOR, INC.			
		HALON	AUSIMONT, INC.			
		ALGOFLON	AUSIMONT, INC.			
		HOSTAFLON	HOECHST AG			
		FLUON	ICI AMERICAS, INC.			
	FOR RESINS, APPLICABLE SPECIFICATIONS ARE:.....	.....	.....	.....	.....	ASTM D4894, ASTM D4895
	FOR MOLDED PRODUCTS, APPLICABLE SPECIFICATIONS ARE:.....	.....	.....	.....	.....	ASTM D3294, AMS 3668, AMS 3669
	FOR ANTISIEZE TAPE, APPLICABLE SPECIFICATION IS:.....	.....	.....	.....	.....	A–A–58092 OR MIL–T–27730
	FOR RESIN SKIVED TAPE, APPLICABLE SPECIFICATION IS:.....	.....	.....	.....	.....	ASTM D3308
	FOR CAST FILM, APPLICABLE SPECIFICATION IS:.....	.....	.....	.....	.....	ASTM D3369
P03	PTFE, GLASS FILLED	FLUOROGOLD	FURON CO.	A≤6700	A≤6700	MAXIMUM FILL 50% BY WEIGHT
		GARLOCK 8573	GARLOCK, INC.			

CODE	MATERIAL CLASS OR CHEMICAL NAME	TRADE NAME	MANUFACTURER	LOX RATING (PSIG)	GOX RATING (PSIG)	REMARKS AND APPLICABLE SPECIFICATIONS
		PLASTICS				
P06	PTFE, GLASS FILLED	ALGOFLON	AUSIMONT, INC.	A≤1650	A≤1650	MAXIMUM FILL 50% BY WEIGHT
		HALON	AUSIMONT, INC.			
		CHEMFLUOR	NORTON PERFORMANCE PLASTICS			
		RT/DUROID	ROGERS CORP.			
		TETRAFLUOR	TETRAFLUOR, INC.			
		TETRALON	TETRAFLUOR, INC.			
		POLYCOMP	ICI AMERICAS, INC.			
		HOSTAFLON	HOECHST AG			
		GARLOCK 9405	GARLOCK, INC.			
P29	PTFE, CARBON OR GRAPHITE–FILLED	HALON	AUSIMONT, INC.	A≤1650	A≤1650	MAXIMUM FILL 50% BY WEIGHT
		CHEMFLUOR	NORTON PERFORMANCE PLASTICS			
		TETRAFLUOR	TETRAFLUOR, INC.			
		HOSTAFLON	HOECHST AG			
P12	PTFE, MINERAL FILLED	RULON A	DIXON CORP.	A≤6700	A≤6700	
		HYPERLOX	SPECIALTY BALL VALVE			
P32	PTFE, CRYSTALLINE SILICA FILLED	GYLON 3502	GARLOCK, INC.	A≤1650	A≤1650	
M30	PTFE, BRONZE FILLED	HALON	AUSIMONT, INC.	B.T.	A≤1650	MAXIMUM FILL 50% BY WEIGHT
		HOSTAFLON	HOECHST AG			
		FLUOROCOMP	ICI AMERICAS, INC.			
		CHEMFLUOR	NORTON PERFORMANCE PLASTICS			
		TETRAFLUOR	TETRAFLUOR, INC.			
		TETRALON	TETRAFLUOR, INC.			
M28	PTFE, COMBINED GRAPHITE AND GLASS FILLED	HALON	AUSIMONT, INC.	B.T.	A≤1650	MAXIMUM FILL 50% BY WEIGHT
		TETRAFLUOR	TETRAFLUOR, INC.			
P13	PTFE, CARBON, GLASS AND GRAPHITE FILLED	MULTIFILL 427	GARLOCK INC.	A≤1650	A≤1650	
		POLYFILL	WORCESTER CONTROLS			
M29	PTFE, COMBINED GLASS AND MOLYDISULFIDE FILLED	HALON	AUSIMONT, INC.	B.T.	A≤1650	MAXIMUM FILL 50% BY WEIGHT
		TETRAFLUOR	TETRAFLUOR, INC.			
		RT/DUROID	ROGERS CORP.			
P04	PTFE, GLASS & CR OXIDE FILLED	FLUOROGREEN E–600	THE AMICON GROUP, UFC FLUOROGREEN DIVISION	A≤6700	A≤6700	
P33	EXPANDED PTFE GASKET MATERIAL	GORE–TEX JOINT SEALANT	W.L. GORE ASSOCIATES	A≤1650	A≤1650	

CODE	MATERIAL CLASS OR CHEMICAL NAME	TRADE NAME	MANUFACTURER	LOX RATING (PSIG)	GOX RATING (PSIG)	REMARKS AND APPLICABLE SPECIFICATIONS
	PLASTICS					
P02	PERFLUORO (ETHYLENE PROPYLENE) COPOLYMER (VIRGIN FEP)	TEFLON FEP NEOFLON FEP FLUOROMELT	E.I. DUPONT DAIKIN INDUSTRIES ICI AMERICAS, INC.	A≤6700	A≤6700	
	FOR MOLDED AND EXTRUDED PRODUCTS, APPLICABLE SPECIFICATION IS:.....	.....	.....	.....	.....	ASTM D2116
	FOR FILM AND SHEET PRODUCTS, APPLICABLE SPECIFICATION IS:.....	.....	.....	.....	.....	AMS 3647
	FOR BAGGING AND PACKAGING MATERIAL, SEE:.....	.....	.....	.....	.....	SSC 54000-GM08
P07	PERFLUOROALKOXYALKANE	TEFLON PFA NEOFLON PFA FLUOROMELT	E.I. DUPONT DAIKIN INDUSTRIES ICI AMERICAS, INC.	B.T.	A≤1650	
P09	POLYCHLOROTRIFLUOROETHYLENE (PCTFE)			A≤1650	A≤1650	
	FOR RAW MATERIAL (POWDER OR PELLET), THE APPLICABLE SPECIFICATION IS:.....	.....	.....	.....	.....	ASTM D1430 (TYPE I GRADE 3 ONLY)
	FOR COMPRESSION MOLDED MATERIAL (SHEET, ROD, HEAVY WALL TUBING, PIECE PARTS, ETC.), APPLICABLE SPECIFICATIONS ARE:.....	.....	.....	.....	.....	ASTM D1430 (TYPE I GRADE 3 ONLY) <u>AND</u> AMS 3645
	FOR BAGGING AND PACKAGING MATERIAL, SEE:.....	.....	.....	.....	.....	SSC 54000-GM09
P09.1	POLYCHLOROTRIFLUOROETHYLENE (PCTFE)	KEL-F 81	3M COMPANY	A≤1650	A≤1650	NO LONGER MANUFACTURED
P14	POLYIMIDE		ALL MANUFACTURERS	B.T.	B.T.	
P14.1	POLYIMIDE, GRAPHITE FILLED	VESPEL SP-21	E.I. DUPONT	B.T.	A≤1650	NOMINAL FILL 15% BY WEIGHT
P14.2	POLYIMIDE, GRAPHITE FILLED	VESPEL SP-22	E.I. DUPONT	B.T.	A≤10000	NOMINAL FILL 40% BY WEIGHT
P34	AMORPHOUS FLUOROPOLYMERS	TEFLON AF	E.I. DUPONT	B.T.	B.T.	

CODE	MATERIAL CLASS OR CHEMICAL NAME	TRADE NAME	MANUFACTURER	LOX RATING (PSIG)	GOX RATING (PSIG)	REMARKS AND APPLICABLE SPECIFICATIONS
	PLASTIC HOSE LINERS AND PLASTIC COATINGS					
PH1	HOSE LINER – POLYTETRAFLUOROETHYLENE		RESISTOFLEX AEROQUIP TITEFLEX	B.T.	A≤1650	SEE "POLYTETRAFLUOROETHYLENE (VIRGIN PTFE)" FOR LINER MATERIAL TRADE NAMES.
PH2	HOSE LINER – POLYTETRAFLUOROETHYLENE WITH CARBON ADDITIVE		RESISTOFLEX AEROQUIP TITEFLEX TELEFLEX	B.T.	A≤1650	SEE "PTFE, CARBON OR GRAPHITE–FILLED" FOR LINER MATERIAL TRADE NAMES.
PS1	POLYTETRAFLUOROETHYLENE COATED 300 SERIES STAINLESS STEEL			A≤1650	A≤1650	SEE "POLYTETRAFLUOROETHYLENE (VIRGIN PTFE)" FOR COATING MATERIAL TRADE NAMES AND SPECIFICATIONS.
PS2	PERFLUORO (ETHYLENE PROPYLENE) COPOLYMER COATED 300 SERIES STAINLESS STEEL			A≤1650	A≤1650	SEE "PERFLUORO (ETHYLENE PROPYLENE) (VIRGIN FEP)" FOR COATING MATERIAL TRADE NAMES AND SPECIFICATIONS.