

## 1. BLUE ORIGIN SPECIAL PROCESS LIST: EXTERNAL SUPPLIERS

Blue Origin Special Process Suppliers shall have relevant NADCAP accreditation for any Special Process performed for Blue Origin, or have their processing otherwise approved by Blue Origin Supplier Quality or M&P. NADCAP accreditation does not guarantee compliance to Blue Origin Special Process requirements. Blue Origin reserves the right to audit all suppliers.

Process Category	NADCAP Code	Process Name	Reference Documents
Additive Manufacturing	AC7131	LPB (Laser Powder Bed) AM (aka SLM)	CMMF-SP0003, CMMF-SP0007
Additive Manufacturing	AC7131	LPS (Laser Powder Spray) AM (aka LENS)	CMMF-SP0003, CMMF-SP0007
Aero Structure Assembly	AC7135/4	Sealing of Aerostructure Assemblies and Components	CMSP-08633
Chemical Processing	AC7108/8	Anodization	MIL-PRF-8625
Chemical Processing		Boron-Nitride Coating – Spray	CMMF-PR6055
Chemical Processing	AC7108/11	Chemical Conversion Coating Application	CMPR-01274, MIL-DTL-5541
Chemical Processing	AC7108/5	Chemical etching for precision material removal	Supplier internal process specifications require Blue Origin review and approval.
Chemical Processing	AC7108/6 AC7108/12	CPV (Cleaning, Passivation and Verification)(Note: Gross Clean not included)	CMSP-02291, CMSP-02292, CMSP-02544, AMS 2700
Chemical Processing	AC7108/9, AC7108/10	Hard Plating (Electroplating, Electroless Plating)	Supplier internal process specifications require Blue Origin review and approval.
Chemical Processing	AC7108/12	Pickling (Chemical Descaling)	ASTM A380
Chemical Processing	AC7108/12	Precision Cleaning (Note: Gross Clean not included)	CMSP-02292, IEST-STD-CC1246
Chemical Processing	AC7108/2	Pre-Penetrant Etch	CMPR-02689
Chemical Processing	AC7108/1	Application of Paint and Dry Film Lubricants, and Application of Sol Gel as a Preparation for Paint	CMPR-23823, MIL-DTL-18264, MIL-DTL-53072
Chemical Processing		Surface Preparation	CMPR-14254
Coatings		Cold Spray Coatings	ENSP-27007
Coatings	AC7109/1	HVOF (High Velocity Oxygen Fuel Coating)	ENSP-26526
Composites	AC7118	Composite Bagging (reusable and non-reusable bags)	CMMF-SP0009, NGSP-03697, NGSP-06520
Composites	AC7118	Composite Bonding	CMMF-SP0009
Composites	AC7118	Composite Cure	CMMF-SP0009, NGSP-03697, NGSP-06520
Composites	AC7118	Composite Layup – Automated Fiber Placement	CMMF-SP0009, NGSP-06520
Composites	AC7118	Composite Layup – Automated Tape Layup	CMMF-SP0009, NGSP-06520

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Composites	AC7118	Composite Layup - Hand Laminated Prepreg	CMMF-SP0009, NGSP-03697, NGSP-06520, NSPR-08015
Composites	AC7118	Composite Overwrap Installation	CMMF-SP0009, NSPR-08857
Composites	AC7118	COPV (Composite Overwrapped Pressure Vessel) Manufacturing	KNPR 8715.3, AIAA S-081, AFSPCMAN 91-710
Composites	AC7118	Composite Potting Installation	CMMF-SP0009, NGSP-03697, NGSP-06520
Composites	AC7124/1 AC7124/2 AC7124/3 AC7124/4 AC7124/5	Composite raw material manufacturing	CMSP-00289, CMSP-00758, CMSP-00918, CMSP-00960, CMSP-01454, CMSP-01821, CMSP-01916
Composites	AC7118	Composite Repair	CMMF-SP0009, NGSP-03697, NGSP-06520
Composites	AC7118	Contact Materials	CMMF-SP0009, NGSP-03697, NGSP-06520
Composites	AC7118	Core Splice	CMMF-SP0009, NGSP-03697, NGSP-06520
Composites	AC7118	Honeycomb Core Kitting	CMMF-SP0009, NGSP-03697, NGSP-06520
Composites	AC7114	Nondestructive Inspection of Composite Components	CMMF-SP0009, NGSP-03697, NGSP-06520, ASTM E2580
Composites	AC7118	Tool Manufacturing and Approval	CMMF-SP0009, NGSP-03697, NGSP-06520
Composites	AC7118	Tool Preparation	CMMF-SP0009, NGSP-03697, NGSP-06520
Composites	AC7118	Trim and Drill of Cured Composite Components (automated and manual)	CMMF-SP0009, NGSP-03697, NGSP-06520
Electronics		Click Bond installs	CMMF-PR0030, CMMF-PR4002
Electronics		Component Filleting & Bonding	J-STD-001, J-STD-001XS
Electronics	AC7120/7	Conformal Coating	J-STD-001, J-STD-001XS
Electronics	AC7120/8	Encapsulation	J-STD-001, J-STD-001XS
Electronics		Instrumentation Installation	CMMF-PR0022, CMPR-04981, CMPR-04983
Electronics	AC7120/5	Reballing, Ball Grid Array	IEC TS 62647-7
Electronics	AC7120/6	Soldering, General (excluding PWA/CCA)	J-STD-001, J-STD-001XS
Electronics	AC7120/2	Soldering, General, Printed Wiring Assemblies/Circuit Card Assemblies	J-STD-001, J-STD-001XS
Electronics	AC7120/3	Soldering, Plated Through-Hole Technology	J-STD-001, J-STD-001XS
Electronics	AC7120/4	Surface Mount Technology	J-STD-001, J-STD-001XS
Electronics	AC7121	Wire Harness Assembly	CMFM-PR3006, CMFM-PR3007, IPC/WHMA-A-620/Space Addendum

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Electronics		Wire Harness Installation (Dressing)/Safe to Mate	CMMF-PR6001
Fitting Installation		Fluid Fitting install and Torque	CMMF-PR4003
Fitting Installation		Swaging Fluid Fittings (Rynglok)	CMMF-PR4003, AS5959
Heat Treating	AC7102/2	Heat Treating: Aluminum	AMS 2770, AMS 2771, AMS 2772
Heat Treating	AC7102	Heat Treating: Austenitic Corrosion-Resistant Parts	AMS 2759/4
Heat Treating	AC7102	Heat Treating: Hydrogen Embrittlement Relief of Steel Parts	AMS 2759/9
Heat Treating	AC7102	Heat Treating: Martensitic Corrosion-Resistant Steel Parts	AMS 2759/5
Heat Treating	AC7102	Heat Treating: Nickle or Cobalt	AMS 2773, AMS 2774
Heat Treating	AC7102	Heat Treating: Precipitation-Hardening Corrosion-Resistant, Maraging, and Secondary Hardening Steel Parts	AMS 2759/3
Heat Treating	AC7102	Heat Treating: Stress Relief of Steel Parts	AMS 2759/11A
Heat Treating	AC7102	Heat Treating: Titanium	AMS2801, AMS-H-81200
Heat Treating	AC7102/6	Hot Isostatic Pressing	CMSP-64039, CMSP-32089, CMSP-04185
Heat Treating	AC7102/4	Ion Nitriding	AMS 2759/8
Heat Treating		Melting of Special Alloys	Supplier internal process specifications require Blue Origin review and approval.
Heat Treating	AC7102/1	Vacuum Brazing	AWS C3.6, AMS 2678
Heat Treating	AC7102, AC7102/5	Vacuum Heat Treating	AMS 2750, AMS 2769
Insulation		Comet Bonding	CMSP-05876
Insulation		Cork Bonding	CMMF-PR0048
Insulation		Foam Insulation	CMMF-PR0039, NGPR-15996
Insulation		Thermal Protective System Application (FastBlock)	CMMF-PR0006, CMMF-PR0018, CMMF-PR0019
Materials Testing Laboratories	AC7101/1	Materials Testing General	Supplier processes may be reviewed by Blue Origin
Metallic Materials Manufacturing		Bump Forming	Supplier internal process specifications require Blue Origin review and approval.
Metallic Materials Manufacturing	AC7141 AC7142	Casting	Supplier internal process specifications require Blue Origin review and approval.
Metallic Materials Manufacturing		Extrusion	Supplier internal process specifications require Blue Origin review and approval.
Metallic Materials Manufacturing	AC7140	Forging	Supplier internal process specifications require Blue Origin review and approval.

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Metallic Materials Manufacturing		Spin Forming	Supplier internal process specifications require Blue Origin review and approval.
Metallic Materials Manufacturing		Thermoforming	Supplier internal process specifications require Blue Origin review and approval.
Nonconventional Machining	AC7116/1	ECM (Electrochemical Machining)	Supplier internal process specifications require Blue Origin review and approval.
Nonconventional Machining	AC7116/3	EDM (Electrical Discharge Machining)	CMSP-02320
Nonconventional Machining	AC7116/4	Laser Beam Machining (Laser Cutting/Laser Drilling)	CMMF-SP0015, ENSP-61362
Nondestructive Testing		Computed Tomography	CMPR-26579, ASTM E1695
Nondestructive Testing	AC7114/8	Computed Radiography	CMPR-02455
Nondestructive Testing	AC7114/10	Digital Radiography	Supplier internal process specifications require Blue Origin review and approval.
Nondestructive Testing	AC7114/5	Eddy Current Testing	CMPR-16440, CMPR-07901, CMPR-07902, ASTM E215, ASTM E426, ASTM E571
Nondestructive Testing		Infrared Thermography	CMPR-09285, ASTM E2582
Nondestructive Testing	AC7114/2	Magnetic Particle Testing	CMPR-09631, ASTM E1444
Nondestructive Testing	AC7114/1	Penetrant Inspection	CMMF-PR0037, ASTM E1417
Nondestructive Testing	AC7114/4	Radiographic Inspection	CMPR-104941, CMPR-02677, ASTM E1742
Nondestructive Testing		Shearography	CMMF-PR0039, CMPR-09632, ASTM E2581
Nondestructive Testing	AC7114/3	Ultrasonic Inspection	AMS 2628, AMS 2630, AMS 2631, AMS 2632, AMS 2634, AMS 2636, AMS-STD-2154, ASTM A 388, ASTM B594, ASTM E164, ASTM E213, ASTM E2375, ASTM E2580, ASTM E2700, CMPR-29613
Nondestructive Testing		Visual Weld Inspection	AWS D17.1, AWS D17.3, CMMF-PR0023, CMMF-SP0014, CMPL-05456
Non-Metallic Materials Testing	AC7122/1 AC7122/P	Non-Metallic Tensile Testing	Supplier processes may be reviewed by Blue Origin
Structures Integration		Liquid Shim Install	CMMF-PR0030
Structures Integration		Potted Insert Installation	CMMF-PR0030
Structures Integration		Structural Adhesive Bonding	CMMF-PR0030

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Surface Enhancement	AC7117	Shot peening	Supplier internal process specifications require Blue Origin review and approval.
Welding	AC7110/3	Electron Beam Welding	AMS2680
Welding	AC7110/7	Friction Stir Welding	AWS D17.3
Welding	AC7110/5	Fusion Welding	AWS D17.1
Welding	AC7110/5	Laser Cladding	CMSP-05448
Welding	AC7110/6	Laser Welding	CMMF-SP0014
Welding	AC7110/5	Orbital Tube Welding	CMMF-PR0023
Welding	AC7110/4	Resistance Welding	AWS D17.2