

**APPLUS+ BKWerkstofftechnik GMBH**

**ZUR AUMUNDSWIESE 2  
28279 BREMEN  
Germany**

**FOR THE ATTENTION OF**

Michele COLLEVECCHIO Project Engineer  
Sven HAGEMANN Quality Manager  
Sascha MÜLLER Technical Manager

**CERTIFICATE PREPARED BY**  
NUNEZ Cesar

**YOUR QTML FOCAL POINT**  
NUNEZ Cesar

**E-MAIL**  
cesar.nunez.external@airbus.com

**PHONE**  
+33 6 77 98 01 23

**DATE**  
12/12/2018

**OUR REFERENCE**  
SUR2018.0584 Ind. A

**ARP-ID of the External Shop**  
143041

**TYPE of External Shop**  
Independent

**Attestation letter for Qualification on Test Methods**

Dear Madam, Dear Sir,

We herewith inform that the couples <Test Methods / External Shop> as detailed in the Appendix have been either registered or modified in the Official Airbus Qualified Test Methods List (QTML).

The latest valid status of all qualified <Test Methods / External Shop> couples is published by regular QTML reports:

- On Airbus homepage for Suppliers (<https://www.airbus.com/be-an-airbus-supplier.html>) - Only Independent Labs.
- On Airbus Supply Portal A2QS - All External Shops.

A qualified couple is not linked to a specific product. It is the proof that the External Shop is meeting the requirement of the M20691.2: Perform Couple <Product/Supplier Site> Compliance and Maturity's Activities for Material Products Suppliers and/or M20691.3: Perform Couple <Product/Supplier Site> Compliance and Maturity's Activities for Aerostructure Parts Suppliers.

- On a quality aspect: we kindly ask you to indicate us any modification which could have a quality impact.
- Concerning technical requirements:
  - \* We kindly ask you to participate at least every 2 years to the PTP for the tests you perform on Airbus Products (see Appendix for details on next PTP participation requirements).  
You can find all necessary information about PTP participation process on the website: <https://ptpscheme.com>.  
In case of PTP results out of tolerances, the couples qualification can be downgraded to an authorisation to proceed or withdrawn and the PTP participation frequency is reduced to one year, subject to acceptance by Airbus of your Root Cause Analysis and associated Corrective Actions.
  - \* On the other hand, you shall supply at least every 2 years the results of your Internal Homogeneity Studies per Test Families.

Airbus reserves the right to withdraw or suspend the qualification at any time for specific reason, e.g.

- Any major incident(s) detected on one or several Test processes
- Lack in quality
- Evidence non-compliance with the M20691.2 and/or M20691.3
- Loss of Airbus Supplier Approval
- Stop of the Business

Yours faithfully,

**NUNEZ Cesar**  
**Airbus Test Methods Auditor POMDT – CE**  
**Your QTML Focal Point**



**SAUX Alexandra**  
**Test Methods Coordinator POMDT – CE**  
**Your Quality Responsible**



Appendix: Matrix of qualified Couples <Test Methods / External Shop>

## APPENDIX: Matrix of qualified Couples <Test Methods / External Shop>

We hereby declare the External Shop:

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Qualified or Authorised to proceed for the following Test processes:

Test Standard(s) *	Test label	Complex.	Qualif. Status	Next PTP part. **	QCS Ref.	Remark
AITM 1-0001	Fiber reinforced plastics - Determination of mechanical degradation due to chemical paint strippers	Low	Qualified			
AITM 1-0002 (ISO 14129)	Fibre reinforced plastics - Determination of in-plane shear properties ( $\pm 45^\circ$ tensile test)	Low	Qualified	2019		
AITM 1-0003	Determination of the glass transition temperatures (DMA)	High	Qualified	2020	170021	
AITM 1-0005 (EN 6033)	Fibre reinforced plastics - Determination of interlaminar fracture toughness energy - Mode I - G1c	High	Qualified	2020	090554	Also according to ASTM D5528
AITM 1-0006 (EN 6034)	Fibre reinforced plastics - Determination of interlaminar fracture toughness energy - Mode II - GIIC	High	Qualified	TBD *	090555	
AITM 1-0007-A / B / C / D	Fibre reinforced plastics - Determination of plain, open hole and filled hole tensile strength	Low	Qualified	2019		
AITM 1-0008-A1	Fiber reinforced plastics - Determination of plain compression strength (Thick specimens, <200kN)	High	Qualified	2018	110519-V02	
AITM 1-0008-A2	Fiber reinforced plastics - Determination of plain compression strength (Thin specimens, <100 kN)	High	Qualified with limitations	2019	110519-V02	Limited up to 250 kN
AITM 1-0008-B / C / D	Fiber reinforced plastics - Determination of open hole or filled hole compression strength	Low	Qualified			
AITM 1-0009-1 / 2	Fibre reinforced plastics - Determination of bearing strength by either pin or bolt bearing configuration	High	Qualified	2020	090547	
AITM 1-0010 (EN 6038)	Fibre reinforced plastics - Determination of compression strength after impact	High	Qualified	2018	131072	
AITM 1-0018	Fibre reinforced plastics - Sandwich flexural test - Four-point bending	Low	Qualified			
AITM 1-0019	Determination of tensile lap shear strength of composite joints	Low	Qualified	2019		
AITM 1-0029	Fibre reinforced plastics - Determination of tensile strength of a tapered or stepped joint	Low	Qualified			
AITM 1-0048	Compression test method of fibre metal laminates (Glare materials)	Low	Qualified			
AITM 1-0049	Tensile test method of fibre metal laminates (Glare materials)	Low	Qualified			

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AITM 1-0050-A / B	Test method for the determination of blunt notch open and filled hole tensile strength of fibre metal laminates (Glare materials)	Low	Qualified			
AITM 1-0051	Fibre metal laminates (Glare material) - Determination of bearing strength	High	Qualified		090547/56	
AITM 1-0053	Carbon fibre reinforced plastics - Determination of fracture toughness energy of bonded joints - Mode I - G1c	High	Qualified	2019	090554	Including Load Introduction using Blocks
AITM 1-0060	T-Type tensile tests on welded joints	High	Qualified		ST-120	
AITM 1-0065	Fiber reinforced plastics - Determination of joint strength of mechanically fastened joints	High	Qualified with limitations	2019	180540	-QCS generated on: 26/11/2018 - Test machine ID: Z250 (P003900) / Z200 (MP008700) -No specimen type restriction, both types I, II and III are covered. -Only pre-assembled specimens are covered. -Full test temperature range is covered, typically -60°C to 180°C. -Qualified on 26/11/2018
AITM 1-0066	Fibre reinforced plastics – Determination of pull-out / pull-through strength on riveted joints	Low	Qualified			
AITM 1-0067	Determination of tension through the hole strength on fastened joints	Low	Qualified			
AITM 1-0069	Fibre reinforced plastics - Determination of curved-beam failure load	High	Qualified	2019	150836	
AITM 2-0061	Water pick up test-method to determine the impregnation level of prepreg materials	Low	Qualified			
AITM 3-0002	Analysis of non metallic material (uncured) by differential scanning calorimetry (DSC)	High	Qualified	2020	170022	
AITM 3-0008 (EN 6064)	Determination of the extent of cure by differential scanning calorimetry (DSC)	High	Qualified	2020	170023	
AITM 3-0027	Determination of the melting behaviour and the extent of cristallinity of semi-cristalline materials by differential scanning calorimetry (DSC)	High	Authorised to Proceed December 2019			QCS Missing
AITM 4-0002	Microstructural characterization of welded aluminium structures	Low	Qualified			

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AITM 4-0003	Test method for determining the pore content of fibre reinforced plastics using automatic image analysis	High	Qualified	2019	090257	
AITM 4-0005	Macroscopic and microscopic examination of fiber reinforced plastics	Low	Qualified			
ASTM A604 (EN 2003-7)	Macroetch testing of consumable electrode remelted steel bars and billets	Low	Qualified			
ASTM E112	Determining average grain size	Low	Qualified	2020		
ASTM E238	Pin-type bearing test of metallic materials	High	Qualified	2019	090556	
ASTM E3	Standard guide for preparation of metallographic specimens	Low	Qualified			
ASTM E340	Macroetching metals and alloys	Low	Qualified			
ASTM E384	Microindentation hardness of materials	Low	Qualified	2019		
ASTM E407	Microetching metals and alloys	Low	Qualified			
ASTM E9	Compression testing of metallic materials at room temperature	Low	Qualified	2020	QSC 090556	
ASTM G110	Evaluating intergranular corrosion resistance of heat treatable aluminium alloys by immersion in sodium chloride + hydrogen peroxide solution	Low	Qualified			
ASTM G34	Exfoliation corrosion susceptibility in 2XXX and 7XXX series aluminum alloys (EXCO Test)	Low	Qualified			
EN 2002-1 (ASTM B557)	Tensile testing at ambient temperature	Low	Qualified	2019		
EN 2243-1	Structural adhesives - Part 1: Single lap shear	Low	Qualified	2019		
EN 2243-2	Structural adhesives - Part 2: Peel metal-metal	Low	Qualified	2019		Also according to QVA-Z10-46-03
EN 2243-3	Structural adhesives - Part 3: Peeling test metal-honeycomb core	Low	Qualified	2019		
EN 2377 (ISO 14130)	Glass fibre reinforced plastics - Determination of apparent interlaminar shear strength	Low	Qualified			

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EN 2378	Fibre reinforced plastics - Determination of water absorption by immersion	Low	Qualified			
EN 2561	Carbon Fibre reinforced plastics - Unidirectional laminates - Tensile test parallel to the fibre direction	Low	Qualified	2019		
EN 2562	Carbon fibre reinforced plastics - Unidirectional laminates - Flexural test parallel to the fibre direction	Low	Qualified	2020		
EN 2563	Carbon fibre reinforced plastics - Unidirectional laminates - determination of apparent interlaminar shear strength	Low	Qualified	2019		
EN 2564	Carbon fibre laminates - Determination of the fibre, resin and void contents	Low	Qualified	2019		Also according to QVA-Z10-46-12
EN 2597	Carbon Fibre reinforced plastics - Unidirectional laminates - Tensile test perpendicular to the fibre direction	Low	Qualified			
EN 2746	Glass fibre reinforced plastics - Flexural test - Three point bend method	Low	Qualified	2020		
EN 2747	Glass fibre reinforced plastics - Tensile test	Low	Qualified			
EN 2823 (prEN)	Fibre reinforced plastics - Determination of the effect of exposure to humid atmosphere on physical and mechanical characteristics	Low	Qualified			
EN 2850-A (Pren) (ISO 14126-1)	Carbon fibre thermosetting resin unidirectional laminates - Compression test parallel to fibre direction - Method A	High	Qualified	2019	126629	
EN 2850-B (Pren) (ISO 14126-2)	Carbon fibre thermosetting resin unidirectional laminates - Compression test parallel to fibre direction - Method B	Low	Qualified	2018		
EN 3683	Titanium alloy wrought products - Determination of primary $\alpha$ content - Point count method and line intercept method	Low	Qualified			Also according to EN 3114-1
EN 3684	Titanium alloy wrought products - Determination of $\beta$ transus temperature - Metallographic method	Low	Qualified			Also according to EN 3114-1
EN 6018	Determination of density according to displacement method	Low	Qualified			

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EN 6072	Constant amplitude fatigue testing (HCF)	High	Qualified	2019	090560	
ISO 148-1 (low temp.)	Charpy pendulum impact test (low temperature)	Low	Qualified	2020		
ISO 148-1 (room temp.)	Charpy pendulum impact test (ambient temperature)	Low	Qualified	2019		
ISO 178	Plastics – Determination of flexural properties	Low	Qualified			
ISO 4578	Adhesives - Determination of peel resistance of high-strength adhesive bonds - Floating roller method	Low	Qualified			
ISO 4587	Adhesive - Determination of tensile lap-shear strength of rigid-to-rigid bonded assemblies	Low	Qualified			
ISO 527-4	Plastics - Determination of tensile properties - Part 4: Test conditions for isotropic and orthotropic fiber reinforced plastic composites	Low	Qualified			
ISO 604	Plastics - Determination of compressive properties	Low	Qualified			
ISO 643	Steels - Micrographic determination of the apparent grain size	Low	Qualified	2020		
ISO 6506 (ASTM E10)	Brinell hardness test	Low	Qualified	2019		
ISO 6507 (ASTM E92)	Vickers hardness test	Low	Qualified	2019		
ISO 6508 (ASTM E18)	Rockwell hardness test	Low	Qualified	2019		
NASM 1312-04	Fastener test methods - Method 4: Lap joint shear	Low	Qualified			
NASM 1312-06	Fastener test methods - Method 6: Hardness	Low	Qualified			
NASM 1312-08	Fastener test methods - Method 8: Tensile strength	Low	Qualified	2018		
NASM 1312-13	Fastener test methods - Method 13: Double shear test	Low	Qualified	2018		
NASM 1312-18	Fastener test methods - Method 18: Elevated temperature tensile strength	Low	Qualified			

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Z_Comp. spec. machining	Composite specimen machining / cutting / tabbing	None	Qualified			
Z_Metal. Spec. prep	Metallic specimen preparation (for mechanical testing)	None	Qualified			
Z_Opt. metallo.	Optical metallography	None	Qualified			
Z_Spectro. OES	Spectrometry: optical emission (OES)	None	Qualified	2019		

\* Unless otherwise specified, last issue of the standard shall apply.

\*\* Next PTP participation year is given for information - It is the External Shop's responsibility to check every year on the PTP Website (<https://ptpscheme.com/>) which kits are proposed.