

ELEMENT MATERIALS TECHNOLOGY SEVILLE SLU

WILBUR Y ORVILLE WRIGHT 41309 LA RINCONADA Spain

FOR THE ATTENTION OF Carlos ARELLANO VERA Structural Laboratory Manager Esther GARCIA DEL CASTILLO Laboratory Manager (CEO) Antonio RAMIREZ Quality Assurance Mgr *CERTIFICATE PREPARED BY* NUNEZ Cesar

YOUR QUALITY RESPONSIBLE DEPUTY NUNEZ Cesar E-MAIL cesar.nunez.external@airbus.com PHONE

+33 6 77 98 01 23

DATE 11/04/2018 OUR REFERENCE SUR2017.0148 Ind. D ARP-ID of the External Shop 277364 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 detailled in the Appendix have been either registered or modified in the Official Airbus Qualified Test Methods List (QTML) Database.

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

- On Airbus homepage for Suppliers (http://www.airbus.com/tools/airbusfor/suppliers/) 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 AP5262: Qualification Process of Couples <Test Method / External Shop>.

We remind you that the maintenance of your Test Methods Qualification depends on your monitoring on quality and technical aspects and is surveyed by Airbus on a regular basis, every year or every 2 years.

- 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 organized by Exova 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://ptp.exova.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In case of PTP results out of tolerances, the couples qualification can be downgraded to an authorisation to proceed or withdrawn and the PTP participation frequency is reduced to one year, subject to acceptance by Airbus of your Root Cause Analysis and associated Corrective Actions.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 AP5262
- Loss of Airbus Supplier Approval
- Stop of the Business

Yours faithfully,

NUNEZ Cesar TM Qualification Engineer - TM PO Central Team Your Quality Responsible Deputy

MALHOMME Muriel TM Qualification Manager - TM PO Central Team Your Quality Responsible

there

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

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

We hereby declare the External Shop:

ELEMENT MATERIALS TECHNOLOGY SEVILLE SLU

WILBUR Y ORVILLE WRIGHT 41309 LA RINCONADA Spain

CERTIFICATE PREPARED BY NUNEZ Cesar

date 11/04/2018

OUR REFERNCE

SUR2017.0148 Ind. D

ARP-ID of the External Shop 277364 TYPE of External Shop Independent

Qualified or Authorised to proceed for the following Test processes:

AIPS/AIP101- Preparation of holes in fibre reinforced plastic (FRP) and hybrid materials Low Qualified QCS161062 AIPS/AIP101- Torque tightening of screws, bolts and nuts High Qualified QCS161062 AIPS/AIP101- General assembly and installation of fasteners High Qualified QCS161062 AIPS/AIP101- Installation of parallel shank threaded fasteners High Qualified QCS161062 AIPS/AIP103- Manufacture of monolithic parts with thermoset prepreg materials High Qualified QCS161062 AIPS/AIP103- Machining of fibre reinforced plastic (FRP) components High Qualified QCS161062 AIPS/AIP105- Wet installation of fasteners High Qualified QCS161062 AIPS/AIP106- Surface preparation for thermosetting parts before structural bonding High Qualified QCS161062 AIPS/AIP106- Surface preparation of non-structural adhesive bonding Low Qualified QCS161062 AIPS/AIP106- Non-structural adhesive bonding Low Qualified QCS161062 AIPS/AIP106- Non-structural adhesive bonding Low Qualified QCS161062 AIPS/AIP106	Test Standard(s) *	Test label	Complex.	Qualif. Status	Next PTP part. **		Remark
AIPS/AIP101- 02:000 Torque tightening of screws, bolts and nuts High Qualified QCS161062 AIPS/AIP101- 02:017 General assembly and installation of fasteners High Qualified QCS161062 AIPS/AIP101- 02:0201 Installation of parallel shank threaded fasteners High Qualified QCS161062 AIPS/AIP103- 02:019 Manufacture of monolithic parts with thermoset prepreg materials High Qualified QCS161062 AIPS/AIP103- 07:002 Maching of fibre reinforced plastic (FRP) components High Qualified QCS161062 AIPS/AIP104- 00:004 Wet installation of fasteners High Qualified QCS161062 AIPS/AIP105- 00:004 Surface preparation for thermosetting parts before structural bonding High Qualified QCS161062 AIPS/AIP106- 01:004 Mechanical surface preparation of non- structural adherend prior to adhesive bonding Low Qualified QCS161062 AIPS/AIP106- 02:002 Structural onding of thermoset and thermoplastic matrices compocite parts Low Qualified QCS161062 AIPS/AIP106- Structural adhesive bonding 02:002 Fibre reinforced plastics - Determination thermoplastic matrices compocite parts Low Qualified 2017 AITM	AIPS/AIPI 01- 02-005	Preparation of holes in fibre reinforced plastic (FRP) and hybrid materials	Low	Qualified		QCS161062	
AIPS/AIP1 01- fasteners General assembly and installation of fasteners High Qualified QCS161062 AIPS/AIP1 01- installation of parallel shank threaded Q2:022 High Qualified QCS161062 AIPS/AIP1 03- Q2:021 Manufacture of monolithic parts with thermoset prepreg materials High Qualified QCS161062 AIPS/AIP1 03- Q2:019 Manufacture of monolithic parts with thermoset prepreg materials High Qualified QCS161062 AIPS/AIP1 05- Q7:002 Machining of fibre reinforced plastic (FRP) components High Qualified QCS161062 AIPS/AIP1 06- S0:004 Surface preparation for thermosetting parts before structural bonding High Qualified QCS161062 AIPS/AIP1 06- O1:004 Surface preparation of non- structural adherend prior to adhesive bonding Low Qualified QCS161062 AIPS/AIP1 06- O2:002 Structural bonding of thermoset and thermoplastic matrices compocite parts High Qualified QCS161062 AIPS/AIP1 06- O2:002 Structural bonding of thermoset and thermoplastic matrices compocite parts Low Qualified QCS161062 AIPS/AIP1 06- Structural bonding of thermoset and thermoplastic matrices compocite parts Low Qualified 2017 AIPS/AIP1 06- St	AIPS/AIPI 01- 02-008	Torque tightening of screws, bolts and nuts	High	Qualified		QCS161062	
AIPS/AIP1 01- 02:022 Installation of parallel shank threaded fasteners High Qualified QCS161062 AIPS/AIP1 03- 02:019 Manufacture of monolithic parts with thermoset prepreg materials High Qualified QCS161062 AIPS/AIP1 03- 02:019 Machining of fibre reinforced plastic 07:002 High Qualified QCS161062 AIPS/AIP1 05- 05:004 Wet installation of fasteners 05:004 High Qualified QCS161062 AIPS/AIP1 06- 01:004 Surface preparation for thermosetting parts before structural bonding High Qualified QCS161062 AIPS/AIP1 06- 01:004 Surface preparation of non- structural adherend prior to adhesive bonding Low Qualified QCS161062 AIPS/AIP1 06- 02:002 Non-structural adhesive bonding Low Qualified QCS161062 AIPS/AIP1 06- 02:005 Structural bonding of thermoset and thermoplastic matrices compocite parts High Qualified 2017 AIPS/AIP1 06- 02:006 Fibre reinforced plastics - Determination of in-plane shear properties (±45" tensile test) Low Qualified 2019 QCS 131032 AITM 1-0003 Determination of the glass transition temperatures (DMA) High Qualified 2019 QCS 110894	AIPS/AIPI 01- 02-017	General assembly and installation of fasteners	High	Qualified		QCS161062	
AIPS/AIPI 03- 02-019 Manufacture of monolithic parts with thermoset propreg materials High Qualified QCS161062 AIPS/AIPI 03- 07-002 Machining of fibre reinforced plastic (FRP) components High Qualified QCS161062 AIPS/AIPI 05- 07-002 Wet installation of fasteners High Qualified QCS161062 AIPS/AIPI 06- 05-004 Wet installation of thermosetting parts before structural bonding High Qualified QCS161062 AIPS/AIPI 06- 01-004 Surface preparation for thermosetting parts before structural bonding Low Qualified QCS161062 AIPS/AIPI 06- 01-004 Mechanical surface preparation of non- structural adherend prior to adhesive bonding Low Qualified QCS161062 AIPS/AIPI 06- 02-002 Non-structural adhesive bonding Low Qualified QCS161062 AIPS/AIPI 06- 02-002 Structural bonding of thermoset and thermoplastic matrices compocite parts Low Qualified QCS 161062 AIPS/AIPI 06- 02-005 Structural bonding of thermoset and thermoplastic matrices - Determination of inplane shear properties (±45° tensile test) Low Qualified 2017 AITM 1-0003 Determination of the glass transition temperatures (DMA) High Qualified 2018 <td< td=""><td>AIPS/AIPI 01- 02-022</td><td>Installation of parallel shank threaded fasteners</td><td>High</td><td>Qualified</td><td></td><td>QCS161062</td><td></td></td<>	AIPS/AIPI 01- 02-022	Installation of parallel shank threaded fasteners	High	Qualified		QCS161062	
AIPS/AIPI 03- 07-002 Machining of fibre reinforced plastic (FRP) components High Qualified QCS161062 AIPS/AIPI 05- 05-004 Wet installation of fasteners High Qualified QCS161062 AIPS/AIPI 06- 01-003 Surface preparation for thermosetting parts before structural bonding High Qualified QCS161062 AIPS/AIPI 06- 01-004 Mechanical surface preparation of non- structural adherend prior to adhesive bonding Low Qualified QCS161062 AIPS/AIPI 06- 02-002 Non-structural adherend prior to adhesive bonding Low Qualified QCS161062 AIPS/AIPI 06- 02-006 Structural bonding of thermoset and thermoplastic matrices compocite parts High Qualified QCS161062 AITM 1-0002 Fibre reinforced plastics - Determination of in-plane shear properties (±45° tensile test) Low Qualified 2017 AITM 1-0003 Determination of the glass transition temperatures (DMA) High Qualified 2018 QCS 110894 Fibre reinforced plastics - Determination of interlaminar fracture toughness energy - Mode I - G1c High Qualified 2017 AITM 1-007- Fibre reinforced plastics - Determination of plain, open hole and filled hole tensile strength Low Qualified 2017 <	AIPS/AIPI 03- 02-019	Manufacture of monolithic parts with thermoset prepreg materials	High	Qualified		QCS161062	
AIPS/AIP1 05- 05-004 Wet installation of fasteners High Qualified QCS161062 AIPS/AIP1 06- 01-003 Surface preparation for thermosetting parts before structural bonding High Qualified QCS161062 AIPS/AIP1 06- 01-004 Mechanical surface preparation of non- structural adherend prior to adhesive bonding Low Qualified QCS161062 AIPS/AIP1 06- 02-002 Non-structural adhesive bonding Low Qualified QCS161062 AIPS/AIP1 06- 02-002 Non-structural adhesive bonding Low Qualified QCS161062 AIPS/AIP1 06- 02-006 Structural bonding of thermoset and thermoplastic matrices compocite parts High Qualified QCS161062 AITM 1-0002 Fibre reinforced plastics - Determination of in-plane shear properties (±45° tensile test) Low Qualified 2017 AITM 1-0003 Determination of the glass transition (EN 6033) High Qualified 2019 QCS 131032 AITM 1-0005 Fibre reinforced plastics - Determination of interlaminar fracture toughness energy - Mode I - G1c Low Qualified 2017 AITM 1-0007- Fibre reinforced plastics - Determination of plain, open hole and filled hole tensile strength Low Qualified 2017 <	AIPS/AIPI 03- 07-002	Machining of fibre reinforced plastic (FRP) components	High	Qualified		QCS161062	
AIPS/AIP1 06- 01-003 Surface preparation for thermosetting parts before structural bonding High Qualified QCS161062 AIPS/AIP1 06- 01-004 Mechanical surface preparation of non- structural adherend prior to adhesive bonding Low Qualified QCS161062 AIPS/AIP1 06- 02-002 Non-structural adherend prior to adhesive bonding Low Qualified QCS161062 AIPS/AIP1 06- 02-002 Non-structural adhesive bonding Low Qualified QCS161062 AIPS/AIP1 06- 02-006 Structural bonding of thermoset and thermoplastic matrices compocite parts High Qualified QCS161062 AITM 1-0002 (ISO 14129) Fibre reinforced plastics - Determination of in-plane shear properties (±45° tensile test) Low Qualified 2017 AITM 1-0003 Determination of the glass transition temperatures (DMA) High Qualified 2018 QCS 110894 AITM 1-0005 (EN 6033) Fibre reinforced plastics - Determination of interlaminar fracture toughness energy - Mode I - G1c Low Qualified 2017 AITM 1-0007- A / B / C / D Fibre reinforced plastics - Determination of plain, open hole and filled hole tensile strength Low Qualified 2017	AIPS/AIPI 05- 05-004	Wet installation of fasteners	High	Qualified		QCS161062	
AIPS/AIP1 06- 01-004 Mechanical surface preparation of non- structural adherend prior to adhesive bonding Low Qualified QCS161062 AIPS/AIP1 06- 02-002 Non-structural adhesive bonding Low Qualified QCS161062 AIPS/AIP1 06- 02-002 Non-structural bonding of thermoset and thermoplastic matrices compocite parts High Qualified QCS161062 AIPS/AIP1 06- 02-006 Structural bonding of thermoset and thermoplastic matrices compocite parts High Qualified 2017 AITM 1-0002 (ISO 14129) Fibre reinforced plastics - Determination of in-plane shear properties (±45° tensile test) Low Qualified 2019 QCS 131032 AITM 1-0003 Determination of the glass transition temperatures (DMA) High Qualified 2018 QCS 110894 AITM 1-0005 (EN 6033) Fibre reinforced plastics - Determination of interlaminar fracture toughness energy - Mode I - G1c Low Qualified 2017 AITM 1-0007- A / B / C / D Fibre reinforced plastics - Determination of plain, open hole and filled hole tensile strength Low Qualified 2017	AIPS/AIPI 06- 01-003	Surface preparation for thermosetting parts before structural bonding	High	Qualified		QCS161062	
AIPS/AIPI 06- 02-002Non-structural adhesive bonding 02-002LowQualifiedQCS161062AIPS/AIPI 06- 02-006Structural bonding of thermoset and thermoplastic matrices compocite partsHighQualifiedQCS161062AITM 1-0002 (ISO 14129)Fibre reinforced plastics - Determination of in-plane shear properties (±45° tensile test)LowQualified2017AITM 1-0003 AITM 1-0003Determination of the glass transition temperatures (DMA)HighQualified2019QCS 131032AITM 1-0005 (EN 6033)Fibre reinforced plastics - Determination of interlaminar fracture toughness energy - Mode I - G1cHighQualified2018QCS 110894AITM 1-0007- A / B / C / DFibre reinforced plastics - Determination of plain, open hole and filled hole tensile strengthLowQualified2017	AIPS/AIPI 06- 01-004	Mechanical surface preparation of non- structural adherend prior to adhesive bonding	Low	Qualified		QCS161062	
AIPS/AIPI 06- 02-006Structural bonding of thermoset and thermoplastic matrices compocite partsHighQualifiedQCS161062AITM 1-0002 (ISO 14129)Fibre reinforced plastics - Determination of in-plane shear properties (±45° tensile test)LowQualified2017AITM 1-0003 (ISO 14129)Determination of the glass transition temperatures (DMA)HighQualified2019QCS 131032AITM 1-0005 (EN 6033)Fibre reinforced plastics - Determination of interlaminar fracture toughness energy - Mode I - G1cHighQualified2018QCS 110894AITM 1-0007- A / B / C / DFibre reinforced plastics - Determination of plain, open hole and filled hole tensile strengthLowQualified2017	AIPS/AIPI 06- 02-002	Non-structural adhesive bonding	Low	Qualified		QCS161062	
AITM 1-0002 (ISO 14129) Fibre reinforced plastics - Determination of in-plane shear properties (±45° tensile test) Low Qualified 2017 AITM 1-0003 Determination of the glass transition temperatures (DMA) High Qualified 2019 QCS 131032 AITM 1-0005 Fibre reinforced plastics - Determination of interlaminar fracture toughness energy - Mode I - G1c High Qualified 2018 QCS 110894 AITM 1-0007- A / B / C / D Fibre reinforced plastics - Determination of plain, open hole and filled hole tensile strength Low Qualified 2017	AIPS/AIPI 06- 02-006	Structural bonding of thermoset and thermoplastic matrices compocite parts	High	Qualified		QCS161062	
AITM 1-0003 Determination of the glass transition temperatures (DMA) High Qualified 2019 QCS 131032 AITM 1-0005 Fibre reinforced plastics - Determination of interlaminar fracture toughness energy - Mode I - G1c High Qualified 2018 QCS 110894 AITM 1-0007- Fibre reinforced plastics - Determination of plain, open hole and filled hole tensile strength Low Qualified 2017	AITM 1-0002 (ISO 14129)	Fibre reinforced plastics - Determination of in-plane shear properties (±45° tensile test)	Low	Qualified	2017		
AITM 1-0005 (EN 6033) Fibre reinforced plastics - Determination of interlaminar fracture toughness energy - Mode I - G1c High Qualified 2018 QCS 110894 AITM 1-0007- A / B / C / D Fibre reinforced plastics - Determination of plain, open hole and filled hole tensile strength Low Qualified 2017	AITM 1-0003	Determination of the glass transition temperatures (DMA)	High	Qualified	2019	QCS 131032	
AITM 1-0007- Fibre reinforced plastics - Determination Low Qualified 2017 A / B / C / D of plain, open hole and filled hole tensile strength 2017	AITM 1-0005 (EN 6033)	Fibre reinforced plastics - Determination of interlaminar fracture toughness energy - Mode I - G1c	High	Qualified	2018	QCS 110894	
	AITM 1-0007- A / B / C / D	Fibre reinforced plastics - Determination of plain, open hole and filled hole tensile strength	Low	Qualified	2017		
AITM 1-0008- Fiber reinforced plastics - Determination High Qualified 2017 QCS 111414 A1 (<200kN) / of plain compression strength A2	AITM 1-0008- A1 (<200kN) / A2	Fiber reinforced plastics - Determination of plain compression strength	High	Qualified	2017	QCS 111414	
AITM 1-0008- Fiber reinforced plastics - Determination Low Qualified B / C / D of open hole or filled hole compression Strength Compression	AITM 1-0008- B / C / D	Fiber reinforced plastics - Determination of open hole or filled hole compression strength	Low	Qualified			

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

We hereby declare the External Shop: **ELEMENT MATERIALS TECHNOLOGY SEVILLE SLU**

WILBUR Y ORVILLE WRIGHT 41309 LA RINCONADA Spain

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CERTIFICATE PREPARED BY NUNEZ Cesar

DATE 11/04/2018 OUR REFERNCE SUR2017.0148 Ind. D ARP-ID of the External Shop 277364

TYPE of External Shop Independent

Qualified or Authorised to proceed for the following Test processes:

Test Standard(s) *	Test label	Complex.	Qualif. Status	Next PTP part. **	Remark
AITM 1-0009- 1 / 2	Fibre reinforced plastics - Determination of bearing strength by either pin or bolt bearing configuration	High	Qualified	2018	QCS 150672
AITM 1-0010 (EN 6038)	Fibre reinforced plastics - Determination of compression strength after impact	High	Qualified	2017	QCS 150345
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	2017	
AITM 1-0024	Determination of the completeness of cure of organic coatings	Low	Qualified		
AITM 1-0025	Fiber reinforced plastics - Flatwise tensile test of composite sandwich panel	Low	Qualified	2017	
AITM 1-0029	Fibre reinforced plastics - Determination of tensile strength of a tapered or stepped joint	Low	Qualified		
AITM 1-0030	Sealants - Determination of lap shear strength	Low	Qualified		
AITM 1-0042 (ASTM E647)	Determination of fatigue crack growth rates for aluminium clad sheet and clad plate up to 12 mm in constant-load- amplitude tests - K-increasing method	High	Qualified	2018	QCS150084 restricted to specimens of the type CT.
AITM 1-0053	Carbon fibre reinforced plastics - Determination of fracture toughness energy of bonded joints - Mode I - G1c	High	Qualified	2019	QCS 120350
AITM 1-0065	Fiber reinforced plastics - Determination of joint strength of mechanically fastened joints	High	Qualified	2017	
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 1-0070	Surface roughness measurements using surface stylus methods	Low	Qualified		
AITM 1-0076	Fibre reinforced plastics - Determination of compression aand tension strength after edge impact	High	Authorised to Proceed December 2018	TBD *	Limited for thicknesses < 6 mm. Pending QCS
AITM 2-0031	Determination of electrical resistivity by ohmic method	Low	Qualified		
AITM 2-0061	Water pick up test-method to determine the impregnation level of prepeg materials	Low	Qualified		
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Airbus SAS Page 3 / 8 Registered office:					

Société par actions simplifiée au capital de 2.704.375 Euros RCS Toulouse 383 474 81

FM1504915 - V3

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

We hereby declare the External Shop: <u>ELEMENT MATERIALS TECHNOLOGY SEVILLE SLU</u>

WILBUR Y ORVILLE WRIGHT 41309 LA RINCONADA Spain *certificate prepared by* NUNEZ Cesar

DATE

11/04/2018 *our REFERNCE* SUR2017.0148 Ind. D *ARP-ID of the External Shop*

277364 *TYPE of External Shop* Independent

Qualified or Authorised to proceed for the following Test processes:

Test Standard(s) *	Test label	Complex.	Qualif. Status	Next PTP part. **		Remark
AITM 3-0002	Analysis of non metallic material (uncured) by differential scanning calorimetry (DSC)	High	Authorised to Proceed December 2018	2019	QCS Pending	
AITM 3-0003 (EN 6042)	Analysis of organic compounds by infrared spectroscopy (IR)	Low	Qualified			
AITM 3-0004 (EN 6043)	Determination of gel time and viscosity	Low	Qualified			
AITM 3-0008 (EN 6064)	Determination of the extent of cure by differential scanning calorimetry (DSC)	High	Authorised to Proceed December 2018	2019	QCS pending	
AITM 4-0003	Test method for determining the pore content of fibre reinforced plastics using automatic image analysis	High	Authorised to Proceed December 2018	2019	QCS Pending	
AITM 4-0005	Macroscopic and microscopic examination of fiber reinforced plastics	Low	Qualified			
AMS 2315	Determination of delta ferrite content	Low	Qualified			
ASTM C273	Shear properties of sandwich core materials	Low	Qualified			
ASTM C363	Node tensile strength of honeycomb core materials	Low	Qualified			
ASTM C365	Flatwise compressive properties of sandwich cores	Low	Qualified			
ASTM C393	Core shear properties of sandwich constructions by beam flexure	Low	Qualified			
ASTM D1781	Climbing drum peel for adhesives	Low	Qualified			
ASTM D1876	Peel resistance of adhesives (T-Peel test)	Low	Qualified			
ASTM D732	Standard test method for shear strength of plastics by punch tool	Low	Qualified			
ASTM E111	Young's modulus, tangent modulus, and chord modulus	High	Qualified			
ASTM E112	Determining average grain size	Low	Qualified	2018		
ASTM E1251	Analysis of aluminum and aluminum alloys by Atomic Emission Spectrometry	Low	Authorised to Proceed	2017		
			Julie 2016			

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We hereby declare the External Shop: <u>ELEMENT MATERIALS TECHNOLOGY SEVILLE SLU</u>

WILBUR Y ORVILLE WRIGHT 41309 LA RINCONADA Spain *certificate prepared by* NUNEZ Cesar

DATE 11/04/2018 OUR REFERNCE SUR2017.0148 Ind. D ARP-ID of the External Shop

277364 *TYPE of External Shop* Independent

Qualified or Authorised to proceed for the following Test processes:

Test Standard(s) *	Test label	Complex.	Qualif. Status	Next PTP part. **		Remark
ASTM E238	Pin-type bearing test of metallic materials	High	Qualified	2019	QCS 090782	
ASTM E2602	Assignment of the glass transition temperature by modulated temperature differential scanning calorimetry (DSC)	High	Authorised to Proceed December 2018		QCS Pending.	
ASTM E3	Standard guide for preparation of metallographic specimens	Low	Qualified			
ASTM E340	Macroetching metals and alloys	Low	Qualified			
ASTM E399	Linear-elastic plane-strain fracture toughness KIc of metallic materials	High	Qualified	2018	QCS 090795	
ASTM E407	Microetching metals and alloys	Low	Qualified			
ASTM E647	Measurement of fatigue crack growth rates (da/dn)	High	Qualified	2018	QCS 090788	
ASTM E8	Tension testing of metallic materials	Low	Qualified	2018		
ASTM E9	Compression testing of metallic materials at room temperature	Low	Qualified	2016		
ASTM G34	Exfoliation corrosion susceptibility in 2XXX and 7XXX series aluminum alloys (EXCO Test)	Low	Qualified			
ASTM G85	Modified salt spray (fog) testing	Low	Qualified			
EN 2002-1 (ASTM B557)	Tensile testing at ambient temperature	Low	Qualified	2018		
EN 2002-2	Tensile testing at elevated temperature	Low	Authorised to Proceed December 2018	2017		
EN 2003-9	Titanium and titanium alloys - Part 9: Determination of surface contamination (method A: Micrographic examination / Method B: Hardness testing)	Low	Qualified	2018	Method A	
EN 2243-1	Structural adhesives - Part 1: Single lap shear	Low	Qualified	2017		
EN 2243-2	Structural adhesives - Part 2: Peel metal- metal	Low	Qualified	2019		
EN 2243-3	Structural adhesives - Part 3: Peeling test metal-honeycomb core	Low	Qualified	2017		

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Page 5 / 8
Registered office:

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We hereby declare the External Shop:

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DATE 11/04/2018

OUR REFERNCE SUR2017.0148 Ind. D

ARP-ID of the External Shop 277364 TYPE of External Shop Independent

Qualified or Authorised to proceed for the following Test processes:

Test Standard(s) *	Test label	Complex.	Qualif. Status	Next PTP part. **	Remark
EN 2243-4	Structural adhesives - Part 4: Metal- honeycomb core flatwise tensile test	Low	Qualified	2017	
EN 2332	Textile glass fibre preimpregnates - Test method for the determination of the resin flow	Low	Qualified		
EN 2377 (ISO 14130)	Glass fibre reinforced plastics - Determination of apparent interlaminar shear strength	Low	Qualified		
EN 2557	Carbon fibre preimpregnates - Determination of mass per unit area	Low	Qualified		
EN 2558	Carbon fibre preimpregnates - Determination of the volatile content	Low	Qualified		
EN 2559	Carbon fibre preimpregnates - Test method for the determination of the resin and fibre content and the mass of fibre per unit area	Low	Qualified		
EN 2560	Carbon fibre preimpregnates - Determination of the resin flow	Low	Qualified		
EN 2561	Carbon Fibre reinforced plastics - Unidirectional laminates - Tensile test parallel to the fibre direction	Low	Qualified	2017	
EN 2562	Carbon fibre reinforced plastics - Unidirectional laminates - Flexural test parallel to the fibre direction	Low	Qualified	2017	
EN 2563	Carbon fibre reinforced plastics - Unidirectional laminates - determination of apparent interlaminar shear strength	Low	Qualified	2017	
EN 2564	Carbon fibre laminates - Determination of the fibre, resin and void contents	Low	Qualified	2019	
EN 2597	Carbon Fibre reinforced plastics - Unidirectional laminates - Tensile test perpendicular to the fibre direction	Low	Qualified		
EN 2667-1 (PRen)	Foaming structural adhesives - Part 1: Tensile single-lap shear	Low	Qualified		
EN 2667-2 (PRen)	Foaming structural adhesives - Part 2: Compressive tube shear	Low	Qualified		
EN 2746	Glass fibre reinforced plastics - Flexural test - Three point bend method	Low	Qualified	2017	
EN 2747	Glass fibre reinforced plastics - Tensile test	Low	Qualified		

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

We hereby declare the External Shop: <u>ELEMENT MATERIALS TECHNOLOGY SEVILLE SLU</u>

WILBUR Y ORVILLE WRIGHT 41309 LA RINCONADA Spain

certificate prepared by NUNEZ Cesar

date 11/04/2018 *our refernce* SUR2017.0148 Ind. D

ARP-ID of the External Shop 277364 TYPE of External Shop Independent

Qualified or Authorised to proceed for the following Test processes:

Test Standard(s) *	Test label	Complex.	Qualif. Status	Next PTP part. **	Remark
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	2018	QCS126664
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 3615	Fibre reinforced plastics - Determination of the conditions of exposure to humid atmosphere and of moisture absorption	Low	Qualified		
EN 3683	Titanium alloy wrought products - Determination of primary α content - Point count method and line intercept method	Low	Qualified		
EN 3684	Titanium alloy wrought products - Determination of β transus temperature - Metallographic method	Low	Qualified		
EN 6072	Constant amplitude fatigue testing (HCF)	High	Qualified	2022	QCS 090787
EN 6072 (machining)	Fatigue test specimen machining (NADCAP test code O)		Qualified		QCS 090787
ISO 1183-1	Plastics - Methods for determining the density of non-cellular plastics - Part 1: Immersion method, liquid pyknometer method and titration method	Low	Qualified		
ISO 1463	Metallic and oxide coatings - Measurement of coating thickness - Microscopical method	Low	Authorised to Proceed	2018	
ISO 1519	Paints and varnishes - Bend test (cylindrical mandrel)	Low	Qualified		
ISO 2409	Paints and varnishes - Cross-cut test	Low	Authorised to Proceed September 2018		
ISO 2808	Paints and varnishes - Determination of film thickness	Low	Authorised to Proceed September 2018	2018	Limited to Methd 7D & 12B
ISO 2812-2	Paints and varnishes - Determination of resistance to liquids - Part 2: Water immersion method	Low	Qualified	2018	
ISO 4578	Adhesives - Determination of peel resistance of high-strength adhesive bonds - Floating roller method	Low	Qualified		

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Société par actions simplifiée au capital de 2.704.375 Euros RCS Toulouse 383 474 81

APPENDIX: Matrix of qualified Couples <Test Methods / 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. **	Remark
ISO 4587	Adhesive - Determination of tensile lap- shear strength of rigid-to-rigid bonded assemblies	Low	Qualified		
ISO 527-2	Plastics - Determination of tensile properties - Part 2: Test conditions for moulding and extrusion plastics	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 527-5	Determination of tensile properties - Part 5: Test conditions for unidirectional fibre- 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	2018	
ISO 6508 (ASTM E18)	Rockwell hardness test	Low	Qualified	2018	
Z_Comp. spec. machining	Composite specimen machining / cutting / tabbing		Qualified		
Z_Comp. spec. prod.	Composite specimen production		Qualified		
Z_mechanical tests	Various mechanical tests		Qualified		
Z_mechanical tests	Various mechanical tests		Qualified		ASTM D6641 - Compressive properties of polymer matrix composite materials using a combined loading compression (CLC) test fixture
Z_Metal. Spec. prep	Metallic specimen preparation (for mechanical testing)		Qualified		
Z_Opt. metallo.	Optical metallography		Qualified		
Z_Physical tests	Various physical tests		Qualified		

* 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://ptp.exova.com/) which kits are proposed.