

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

We hereby declare the External Shop:

### **METAL IMPROVEMENT COMPANY - IMR TEST LAB** **SUZHOU**

Jiangpu Road 75  
Shengpu Township  
Suzhou Industrial Park  
215126 Suzhou Jiangsu

*CERTIFICATE PREPARED BY*  
BAVARD Karine  
*DATE*  
27/11/2018  
*OUR REFERENCE*  
SUR2018.0317 Ind. D  
*ARP-ID of the External Shop*  
302737  
*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. **	QCS Ref.	Remark
ASTM A262	Standard practices for detecting susceptibility to intergranular attack in austenitic stainless steels	Low	Qualified			
ASTM E112	Determining average grain size	Low	Qualified	2019		Fe, Al, Cu, Ni, Co, Ti base materials
ASTM E139	Creep, creep-rupture, and stress-rupture tests of metallic materials	Low	Authorised to Proceed December 2019	2019		Fe, Al, Cu, Ni, Co, Ti base materials 2019 PTP participation mandatory on kits 3-1 AND 3-2, if not -> disqualification
ASTM E1409	Determination of oxygen and nitrogen in titanium and titanium alloys by the inert gas fusion technique	Low	Authorised to Proceed December 2019	2019		2019 PTP participation mandatory on kit 8-4, if not -> disqualification
ASTM E1447	Determination of hydrogen in titanium and titanium alloys by inert gas fusion thermal conductivity / infrared detection method	Low	Authorised to Proceed December 2019	2019		2019 PTP participation mandatory on kit 8-4, if not -> disqualification
ASTM E1941	Determination of carbon in refractory and reactive metals and their alloys by combustion analysis	Low	Qualified	2020		
ASTM E21	Standard test methods for elevated temperature tension tests of metallic materials	Low	Qualified	2019		Ni/Ti base materials
ASTM E3	Standard guide for preparation of metallographic specimens	Low	Qualified			Fe, Al, Cu, Ni, Co, Ti base materials
ASTM E340	Macroetching metals and alloys	Low	Qualified			Fe, Al, Cu, Ni, Co, Ti base materials
ASTM E384	Microindentation hardness of materials	Low	Qualified	2020		Fe, Al, Cu, Ni, Co, Ti base materials
ASTM E407	Microetching metals and alloys	Low	Qualified			All
ASTM E45	Determining the inclusion content of steel	Low	Qualified	2019		wrought steel
ASTM E8	Tension testing of metallic materials	Low	Qualified with limitations	2019		Fe, Al, Cu, Ni, Co, Ti base materials Without Young's Modulus
ASTM F519	Mechanical hydrogen embrittlement evaluation of plating/coating processes and service environments	Low	Qualified	2020		All
EN 2002-1 (ASTM B557)	Tensile testing at ambient temperature	Low	Qualified	2019		Fe/Ni base Only according to ASTM E8 / ASTM B557 Without Young's Modulus

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Test Standard(s) *	Test label	Complex.	Qualif. Status	Next PTP part. **	QCS Ref.	Remark
ISO 148-1 (low temp.)	Charpy pendulum impact test (low temperature)	Low	Authorised to Proceed December 2019	2019		Fe/Ni base 2019 PTP participation mandatory on kit 5-2, if not -> disqualification
ISO 148-1 (room temp.)	Charpy pendulum impact test (ambient temperature)	Low	Qualified	2019		Fe/Ni base
ISO 6506 (ASTM E10)	Brinell hardness test	Low	Qualified with limitations	2019		Fe, Al, Cu, Ni, Co, Ti base materials Only according to ASTM E10
ISO 6508 (ASTM E18)	Rockwell hardness test	Low	Qualified with limitations	2020		Fe, Al, Cu, Ni, Co, Ti base materials Only according to ASTM E18 (HRC only)
Z_Combustion	Analysis by combustion	None	Qualified	2020		Cast/steel, Ni, Co, Ti
Z_IGF	Inert gas fusion	None	Authorised to Proceed December 2019	2019		Ti, Steel, Ni, Co 2019 PTP participation mandatory on kits applicable, if not -> disqualification
Z_Metal. Spec. prep	Metallic specimen preparation (for mechanical testing)	None	Qualified			Fe, Al, Cu, Ni, Co, Ti base materials
Z_Spectro. OES	Spectrometry: optical emission (OES)	None	Authorised to Proceed December 2019	2019		Fe, Al, Cu, Ni, Co, Ti base materials 2019 PTP participation mandatory on kits applicable, if not -> disqualification

\* 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.