

Engineering of Materials and Processes
Division
YQG (AQPS009_20180416)

IMR Test Labs
5687-A SE International Way

PORTLAND – OR- 97222
USA

Attention to Alexis PUERTA

Contact :
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COLOMBES, 16th of April 2018

SUBJECT : Laboratory Qualification AQPS 009

Dear Sir,

As your Laboratory is currently awarded by Nadcap (certificate MTL176024) and a2La accredited (certificate 1140-07), we are pleased to inform you that you have been qualified as a testing laboratory according to SAFRAN procedures GRP-0087 and GRM-0123 for the tests defined on the AQPS N° 009.

This certificate is extended for codes L1k (Metallographic inspection on casting) and L1h (Case depth determination by microhardness : Nitriding, carburizing, decarburizing) to formalize the tests already performed on SAFRAN parts but not clearly notified on your certificate. This extension is based on Nadcap certificate.

The continuation of this qualification depends on conditions outlined in SAFRAN procedures GRP-0087 and GRM-0123. At any time, the qualification can be retracted or suspended by SAFRAN.

This qualification does not guarantee the acceptance of all articles produced for SAFRAN.

Yours faithfully

Laboratory Special Processes qualification manager



Antoine ROSSIGNOL

Laboratory Special Processes Qualification Certificate

Safran Aircraft Engines

**Prononce la qualification sur les référentiels indiqués pour l'ensemble des sociétés du
Groupe Safran suivant GRP-0087 – GRM-0123.**
*Grants the qualification on the specifications indicated for all companies of Safran Group
following GRP-0087 – GRM-0123*

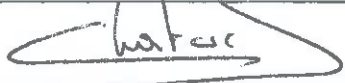

**IMR KHA PORTLAND
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Safran Process N°	Code Labo N°	Procédés ² Processes ²²	Référentiel Technique Technical ²²²	Statut Status	Restrictions techniques Technical limitation	Fin de Validité Expiration Date
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8.00 - Physique et physico-chimie / Physic and physico-chemistry						
8.00.00.03	G	Metals - Carbon determination	ASTM E1019, E1941	Qualification (*)	Base Ni, Co, Fe, Ti only	Not Limited
8.00.00.04	H	Metals - Sulfur determination	ASTM E1019	Qualification (*)	Base Ni, Co, Fe, Ti only	Not Limited
8.00.00.05	I	Metals - Hydrogen determination	ASTM E 1447	Qualification (*)	Base Co, Fe, Ti only	Not Limited
8.00.00.06	J	Metals - Nitrogen determination	ASTM E1019, E1409	Qualification (*)	Base Ni, Co, Fe, Ti only	Not Limited
8.00.00.07	K	Metals - Oxygen determination	ASTM E1019, E1409	Qualification (*)	Base Ni, Co, Fe, Ti only	Not Limited
8.00.00.10	F2	Metals - Inductively Coupled Plasma Spectrometry (ICP)	ASTM E34, / Supplier Method	Qualification (*)	CPP-014 Base Al, Ni, Co, Fe, Ti, Cu only	Not Limited
8.00.00.12	F3	Metals - Spark Optical emission spectrometry	ASTM A751, E415, E1086, E1251, Supplier Method	Qualification (*)	Supplier Method CPP-003 Base Al, Ni, Co, Fe, Ti only	Not Limited
8.01 - Eprouvettes / Samples						
8.01.00.02	Z2	Metals - Specimen machining except fatigue		Qualification (*)		Not Limited
8.02 - Mécanique / Mechanic						
8.02.00.01	A	Metals - Tensile test at room temperature	ASTM E8	Qualification (*)	Base Al, Ni, Co, Fe, Ti, Cu only	Not Limited
8.02.00.02	B	Metals - Tensile test at elevated temperature	ASTM E21	Qualification (*)	Base Al, Ni, Co, Fe, Ti, Cu only	Not Limited
8.02.00.04	C	Metals - Stress rupture creep test	ASTM E139	Qualification (*)	Base Al, Ni, Co, Fe, Ti, Cu only	Not Limited
8.02.00.05	XA	Metals - Creep elongation test	ASTM E139	Qualification (*)	Base Al, Ni, Co, Fe, Ti, Cu only	Not Limited
8.02.00.14	N	Metals - Impact test	ASTM E23	Qualification (*)	Base Al, Ni, Co, Fe, Ti, Cu only	Not Limited
8.02.00.17	M1	Métaux - Dureté Brinell / Metals - Brinell hardness	ASTM E10	Qualification (*)	HBW Base Al, Ni, Co, Fe, Ti, Cu only	Not Limited

N° de rapport Report n°	CRQPS009-Rev1.0_20180416	Observations : Remarks :	Ind 00 : 2017/09/17 Extension of the validity from November 1st, 2017 till April 30th, 2018 Ind01 : 2018/04/16 Qualification with no expiration date according to monitoring process, Add codes L1k and L1h
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(*) La validité des qualifications des fournisseurs est confirmée et actualisée par la publication de la liste des procédés spéciaux qualifiés sur le site AIRCOLLAB www.boostaerospace.com/aircollab/. L'activation des accès fournisseurs à ce site se fait par demande à l'adresse suivante : saf.admin-gps@safran.fr
The supplier qualification validity is confirmed and updated by the publication of qualified special processes list on the website AIRCOLLAB www.boostaerospace.com/aircollab/. The activation of suppliers access to this website is done upon request to the following email address: saf.admin-gps@safran.fr

	Date	Nom Name	Signature
Auditeur Groupe Laboratoire	2018/04/16	Sylvie CHATARD	
Pilote de la qualification Procédés Spéciaux laboratoire	2018/04/16	Antoine ROSSIGNOL	

Laboratory Special Processes Qualification Certificate

Safran Aircraft Engines

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8.02 - Mécanique / Mechanic						
8.02.00.19	M3	Metals - Rockwell hardness	ASTM E18	Qualification (*)	Base Al, Ni, Co, Fe, Ti, Cu only HRA-HRB-HRC only	Not Limited
8.03 - Microscopie, Macroscopie / Microscopy						
8.03.00.01	L1a	/ Metals - Grain size	ASTM E112	Qualification (*)	Base Al, Ni, Co, Fe, Ti, Cu only	Not Limited
8.03.00.02	L1b	Metals - Inclusion content (Except Maraging 250 and ML340)	ASTM E45	Qualification (*)	Base Al, Ni, Co, Fe, Ti only	Not Limited
8.03.00.03	L1f	Metals - Porosity content	Pr-6000 / DMC0090	Qualification (*)	Base Al, Ni, Co, Fe, Ti only	Not Limited
8.03.00.04	L1e	Metals - Contamination on Ti alloy (Alpha Case)	DMC0090 Supplier Method	Qualification (*)	Base Ti only FPP-006	Not Limited
8.03.00.06	L1h	Metals - Case depth determination by microhardness (Nitriding, carburizing, decarburizing...)	Pr-6000	Qualification (*)		Not Limited
8.03.00.09	L1k	Metals - Examination on castings	Pr-6000 / DMC0090	Qualification (*)	Base Ni Ti only	Not Limited
8.03.00.13	L4	Metals - Microhardness (< 300g)	ASTM E384 ASTM E 684	Qualification (*)	HV, HK	Not Limited
8.03.00.16	XL3	Métaux - Examens macrographiques / Metals - Macrographic examinations	ASTM E340, ASTM E381	Qualification (*)	Grain flow Base Al, Ni, Co, Fe, Ti only	Not Limited

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