



*Materials and Processes Department*

*O/Ref. :* AQPS 412\_20181001

*Phone :* (33) 1.69.87.88.08

*Evry, the* October 1<sup>st</sup>, 2018

*Your correspondant :* M. Dominique BLAIZE  
[dominique.blaize@safrangroup.com](mailto:dominique.blaize@safrangroup.com)

**Element Materials Technology-Milwaukee**

4949 SE Johnson Cree Blvd

PORTLAND - OR 97222

U.S.A.

**To Mrs Tatiana Russel  
Quality Manager**

Subject : **Renewal Laboratory Qualification (AQPS 412) :  
Corrective Action Request closed**

Dear Madam,

Following the audit realized on July 10, 11 and 12, 2018, the deviations associated and the response of the Correctives Actions Requets n° 200010356 and n° 200010357, please find attachment the AQPS n° 412 and the Special Processes Qualification Report updated.

This qualification is pronounced according to GRP-0087 and GRM-0123 procedures and to the new process of qualification and monitoring special process suppliers Safran (see attached letter)

Your faithfully.

The auditor Safran Group

Dominique BLAIZE

Laboratory Special Processes  
Qualification Manager

Antoine ROSSIGNOL

**Enclosed** : - AQPS n° 412  
- Report CRQPS\_412\_20181001\_Ind. 1  
- CAR n° 200010356 and n° 200010357 closed  
- Letter

**Safran Aircraft Engines**

SAS au capital de 154 063 215 Euros – 414 815 217 RCS Paris

Siège social : 2, bd du Général Martial-Valin - 75724 Paris Cedex 15 – France

[www.safran-aircraft-engines.com](http://www.safran-aircraft-engines.com)

# Attestation de Qualification des Procédés Spéciaux Laboratoires

## 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.  
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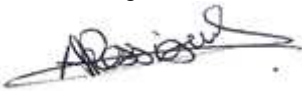
| N° PS<br>SP No.                                                         | Code<br>Lab N° | Procédés<br>Processes                                                                                   | Référentiel Technique<br>Technical Specification  | Statut<br>Status | Restrictions<br>techniques<br>Technical<br>limitation | Fin de<br>Validité<br>Expiration<br>Date |
|-------------------------------------------------------------------------|----------------|---------------------------------------------------------------------------------------------------------|---------------------------------------------------|------------------|-------------------------------------------------------|------------------------------------------|
| <b>8.00 - Physique et physico-chimie / Physic and physico-chemistry</b> |                |                                                                                                         |                                                   |                  |                                                       |                                          |
| 8.00.00.03                                                              | G              | Métaux - Dosage du Carbone / Metals - Carbon determination                                              | ASTM E1019                                        | Qualification    | Included TiAl alloys                                  | NOT LIMITED                              |
| 8.00.00.04                                                              | H              | Métaux - Dosage du Soufre / Metals - Sulfur determination                                               | ASTM E1019                                        | Qualification    | Included TiAl alloys                                  | NOT LIMITED                              |
| 8.00.00.05                                                              | I              | Métaux - Dosage de l'hydrogène / Metals - Hydrogen determination                                        | ASTM E1447                                        | Qualification    | Included TiAl alloys                                  | NOT LIMITED                              |
| 8.00.00.06                                                              | J              | Métaux - Dosage de l'azote / Metals - Nitrogen determination                                            | ASTM E1019<br>ASTM E1409                          | Qualification    | Included TiAl alloys                                  | NOT LIMITED                              |
| 8.00.00.07                                                              | K              | Métaux - Dosage de l'oxygène / Metals - Oxygen determination                                            | ASTM E1019<br>ASTM E1409                          | Qualification    | Included TiAl alloys                                  | NOT LIMITED                              |
| 8.00.00.08                                                              | F1             | Métaux - Fluorescence X / Metals - X Ray Fluorescence                                                   | ASTM E539 - ASTM E5672<br>ASTM E1085 - ASTM E2465 | Qualification    | Included TiAl alloys                                  | NOT LIMITED                              |
| 8.00.00.10                                                              | F2             | Métaux - Spectrométrie d'émission plasma (SEP) / Metals - Inductively Coupled Plasma Spectrometry (ICP) | ASTM D5673                                        | Qualification    |                                                       | NOT LIMITED                              |
| 8.00.00.12                                                              | F3             | Métaux - Spectrométrie d'émission optique par étincelle / Metals - Spark Optical emission spectrometry  | ASTM E45 - ASTM E1086                             | Qualification    |                                                       | NOT LIMITED                              |

**N° de rapport :** CRQPS 412\_20181001\_Ind. 1  
*Report n°*

**Ind. 0 : October 1<sup>st</sup>, 2018 : Renewal Qualification after Correctives Actions Request closed**

La validité des qualifications des fournisseurs est confirmée et actualisée par la publication d'une liste des procédés spéciaux qualifiés. L'adresse pour accéder à cette liste est disponible dans la GRM-0123, paragraphe « Qualification et surveillance des procédés spéciaux ». L'activation des accès fournisseurs à cette liste se fait par demande à l'adresse suivante : [saf.admin-gps@safran.fr](mailto:saf.admin-gps@safran.fr) / *The supplier qualification validity is confirmed and updated by the publication of qualified special process list. The address to access to this list is available in GRM-0123, paragraph "Special Process Qualification and Monitoring". The activation of suppliers access to this list is done by request to the following address: [saf.admin-gps@safran.fr](mailto:saf.admin-gps@safran.fr)*

**Auditeur / Responsable de la qualification**  
**Auditor / Qualification leader**

| Date                           | Nom/Signature/Name                                                                                                          | Nom/Signature/Name                                                                                                                                                 |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| October 1 <sup>st</sup> , 2018 | The Auditor Group : Dominique BLAIZE<br> | Laboratory Special Processes<br>Qualification Manager : Antoine ROSSIGNOL<br> |

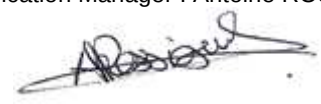
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| N° PS<br>SP No.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Code<br>Lab N°                                                                                                              | Procédés<br>Processes                                                                       | Référentiel Technique<br>Technical Specification                                                                                                                   | Statut<br>Status | Restrictions<br>techniques<br>Technical<br>limitation                                        | Fin de<br>Validité<br>Expiration<br>Date |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|----------------------------------------------------------------------------------------------|------------------------------------------|
| 8.01 - Eprouvettes / Samples                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                             |                                                                                             |                                                                                                                                                                    |                  |                                                                                              |                                          |
| 8.01.00.02                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Z2                                                                                                                          | Métaux - Usinage des échantillons hors fatigue / Metals - Specimen machining except fatigue | DMC0107                                                                                                                                                            | Qualification    | Except : sample polishing of TiAl conducted at Portland lab machining at Santa Fe laboratory | NOT LIMITED                              |
| 8.02 - Mécanique / Mechanic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                             |                                                                                             |                                                                                                                                                                    |                  |                                                                                              |                                          |
| 8.02.00.01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | A                                                                                                                           | Métaux - Traction à température ambiante / Metals - Tensile test at room temperature        | ASTM E8/8M                                                                                                                                                         | Qualification    | Sans module d'Young / Without Young Modulus                                                  | NOT LIMITED                              |
| 8.02.00.02                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | B                                                                                                                           | Métaux - Traction à température élevée / Metals - Tensile test at elevated temperature      | ASTM E21                                                                                                                                                           | Qualification    |                                                                                              | NOT LIMITED                              |
| 8.02.00.04                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | C                                                                                                                           | Métaux - Fluage rupture / Metals - Stress rupture creep test                                | ASTM E139                                                                                                                                                          | Qualification    |                                                                                              | NOT LIMITED                              |
| 8.02.00.18                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | M2                                                                                                                          | Métaux - Dureté Vickers / Metals - Vickers hardness                                         | ASTM E140 - ASTM E384                                                                                                                                              | Qualification    | Only Low load - 1 to 1000 / Charge réduite                                                   | NOT LIMITED                              |
| 8.02.00.19                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | M3                                                                                                                          | Métaux - Dureté Rockwell / Metals - Rockwell hardness                                       | ASTM E140 - ASTM E18                                                                                                                                               | Qualification    |                                                                                              | NOT LIMITED                              |
| N° de rapport : CRQPS 412_20181001_Ind. 1<br>Report n°                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                             |                                                                                             | Ind. 0 : October 1 <sup>st</sup> , 2018 : Renewal Qualification after Correctives Actions Request closed                                                           |                  |                                                                                              |                                          |
| La validité des qualifications des fournisseurs est confirmée et actualisée par la publication d'une liste des procédés spéciaux qualifiés. L'adresse pour accéder à cette liste est disponible dans la GRM-0123, paragraphe « Qualification et surveillance des procédés spéciaux ». L'activation des accès fournisseurs à cette liste se fait par demande à l'adresse suivante : <a href="mailto:saf.admin-gps@safran.fr">saf.admin-gps@safran.fr</a> / The supplier qualification validity is confirmed and updated by the publication of qualified special process list. The address to access to this list is available in GRM-0123, paragraph "Special Process Qualification and Monitoring". The activation of suppliers access to this list is done by request to the following address: <a href="mailto:saf.admin-gps@safran.fr">saf.admin-gps@safran.fr</a> |                                                                                                                             |                                                                                             |                                                                                                                                                                    |                  |                                                                                              |                                          |
| Auditeur / Responsable de la qualification<br>Auditor / Qualification leader                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                             |                                                                                             |                                                                                                                                                                    |                  |                                                                                              |                                          |
| Date                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Nom/Signature/Name                                                                                                          |                                                                                             | Nom/Signature/Name                                                                                                                                                 |                  |                                                                                              |                                          |
| October 1 <sup>st</sup> , 2018                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | The Auditor Group : Dominique BLAIZE<br> |                                                                                             | Laboratory Special Processes<br>Qualification Manager : Antoine ROSSIGNOL<br> |                  |                                                                                              |                                          |

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| <b>8.03 - Microscopie, Macroscopie / Microscopy</b> |                |                                                                                                                                  |                                                  |                  |                                                       |                                          |
| 8.03.00.01                                          | L1a            | Métaux - Taille de grains / Metals - Grain size                                                                                  | ASTM E112                                        | Qualification    |                                                       | NOT LIMITED                              |
| 8.03.00.03                                          | L1f            | Métaux - Taux de porosités / Metals - Porosity content                                                                           | Supplier methods                                 | Qualification    | LP3.20 .5<br>Only by Image<br>analyser                | NOT LIMITED                              |
| 8.03.00.04                                          | L1e            | Métaux - Contamination des alliages de Titane (Alpha-case) / Metals - Contamination on Ti alloy (Alpha Case)                     | Supplier methods                                 | Qualification    | LP3.48                                                | NOT LIMITED                              |
| 8.03.00.05                                          | L1g            | Métaux - Taux de phase (alpha sur titane; ferrite sur Aciers) / Metals - Phasis content (alpha for titanium, ferrite for steels) | Supplier methods                                 | Qualification    | LP3.28<br>Only delta ferrite                          | NOT LIMITED                              |
| 8.03.00.09                                          | L1k            | Métaux - Examen fonderie / Metals - Examination on castings                                                                      | Supplier methods                                 | Qualification    | LP3.27<br>Only moldind<br>contact reaction<br>layer   | NOT LIMITED                              |

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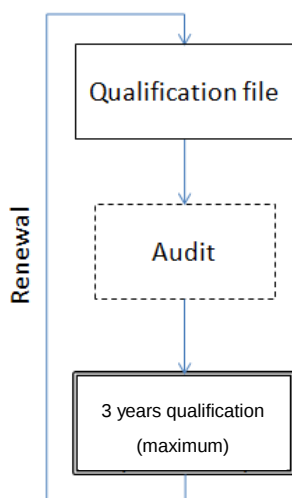
Since the **1<sup>st</sup> July 2016**, the **qualification and monitoring process for Safran special processes suppliers has evolved**.

From that date, when renewing or initiating your qualifications, you will receive from concerned Safran societies, a qualification certificate **without expiry date**. To maintain your qualification, **Safran monitoring actions** (GRM-0123 §12.5.1) will be performed by Safran auditors. These actions will be determined based on your **Nadcap audit results and your performance on Safran parts**. Our auditors **will contact you** for their implementation.

The **suppliers approved qualification list** is available and updated on the web site **WeShare**:  
<https://welcome.weshare.safran-group.com/>

If you do not have any WeShare account or if you face difficulties with the website, please contact: [saf.admin-gps@safran.fr](mailto:saf.admin-gps@safran.fr)

#### GRM-0123 §12 before 01/07/2016



#### GRM-0123 §12 after 01/07/2016

