

 <p><b>Program Document CPBOK</b></p> <p>161 Thorn Hill Road Warrendale, PA 15086-7527</p>	<p><b>PD 6103</b></p> <p><b>CPBoK-007/OW-3- REV. A</b></p> <hr/> <p>Issued: Feb-2015</p> <p>Revised: 29-Nov-18</p> <p>Superseding: Feb-2015</p>
<p style="text-align: center;"><b>BODY OF KNOWLEDGE:</b></p> <p><b>ROLE DESCRIPTION:</b> OWNER  <b>SPECIAL PROCESS:</b> Chemical Processing  <b>METHOD:</b> Anodizing</p>	
<p>All PRI Qualification<sup>SM</sup> program examinations are created using the applicable PRI Qualification<sup>SM</sup> program Body of Knowledge (BoK), which defines the baseline knowledge and experience required to be considered competent to perform the specified job role in aerospace special process manufacturing.</p> <p>All BoKs are created by subject matter experts who participate in the PRI Qualification<sup>SM</sup> Body of Knowledge Review Boards. All BoKs are updated periodically according to the latest revision of PRI Qualification<sup>SM</sup> program documentation (PD6100: Industry Managed Special Process Bodies of Knowledge) to ensure consistency with current industry practice</p>	

## 1. INTRODUCTION

This document has been created by the PRI Qualification<sup>SM</sup> program Chemical Processing Body of Knowledge Review Board (CP-BoKRB) according to the requirements of PD6100.

This document constitutes the PRI Qualification<sup>SM</sup> program BoK for Chemical Processing, Anodize including Chromic Acid Anodizing, Sulphuric Acid Anodizing, Hardcoat/Hard Anodizing, Anodizing for Bonding, Anodizing for Titanium, Magnesium, Boric Acid Anodizing, Tartaric Sulphuric Anodizing for the Owner Level. It defines the baseline knowledge and experience required to be considered competent to perform this role.

Unless otherwise stated, the CP-BoKRB has followed guidelines as detailed in the current version of IAQG Guidance PCAP 001 (Competence Management Guideline) to develop this BoK.

The information in this BoK will provide guidance for the following:

- Training providers who wish to develop training courses intended to support PRI Qualification<sup>SM</sup> program examination candidate preparation
- Chemical Processing Examination Review Board (CP-ERB) for the development of PRI Qualification<sup>SM</sup> program examinations
- Candidates taking PRI Qualification<sup>SM</sup> program examinations who wish to prepare in advance

## 2. REFERENCES

PRI Qualification<sup>SM</sup> program documents:

PD6000	Governance & Administration of PRI Qualification <sup>SM</sup> Program
PD6100	Industry Managed Special Process Bodies of Knowledge
PD6200	Industry Managed Special Process Examinations System

IAQG International Aerospace Quality Group

IAQG documents:

IAQG Guidance PCAP 001 Competence Management Guideline

### 3. DEFINITIONS

**Definitions described within are specific to the Special Process BoK. For program-specific definitions, please refer to either the PD 6000 or the PRI Qualification<sup>SM</sup> Dictionary.**

**BODY OF KNOWLEDGE (BoK):** Baseline knowledge and experience required to be considered competent for a target position.

**GENERAL EXAMINATION:** The General Examination is designed to ascertain the candidate's general knowledge required for a particular job, role or activity. All of the questions will be derived from the corresponding BoK.

**EXPERIENCE:** The accumulation of knowledge or skill that results from direct participation in events or activities over a period of time.

**KNOWLEDGE:** Information / understanding acquired over a period of time. Information acquired through study and retained over that period of time (education, training, experience etc.) The combination of data and information, to which is added expert opinion, skills and experience, to result in a valuable asset which can be used to aid decision making and problem solving.

**LEVEL:** A class or division of a group based on education, training and experience. There are 3 levels: Operator/Technician, Planner and Owner. Please refer to the current version of PD 6000 for definitions.

**METHOD:** A well-defined division of a SPECIAL PROCESS widely recognised by industry. A specific area of a special process for example anodizing within Chemical Processing

**NON-SPECIAL PROCESS RELATED REQUIREMENTS:** Miscellaneous requirements such as Health and Safety, Environmental, etc.

**PERSONAL ATTRIBUTES:** A quality or characteristic expected and required for a particular job, role or activity.

**PRACTICAL EXAMINATION:** The Practical Examination shall consist of a demonstration of proficiency in performing tasks that are typical of those to be accomplished in the performance of the candidate's duties. The examination content is derived from the corresponding BoK.

**SKILL:** Ability to perform a particular task. Skill is the quality of being able to do something that is acquired or developed through training or experience.

**SPECIFIC EXAMINATION:** The Specific Examination shall cover requirements and use of the specifications, codes, equipment, operating procedures and test techniques the candidate may use in the performance of his/her duties with the employer. Examination content will be derived from the corresponding BoK where applicable.

**WEIGHTING:** The "weighting" of each line item, using a scale of 1, 3, 7, 10, (1 being least important; 10 being most important) indicates the relative importance of that aspect of the BoK and will determine the likelihood and frequency of a question on that topic appearing in the examination.

#### 4. GUIDANCE TO EXAMINATION CANDIDATES

All PRI Qualification<sup>SM</sup> program examination candidates are recommended to read all documents referenced in section 2 of this document.

As stated in PRI Qualification<sup>SM</sup> program document PD6200, every exam question shall relate directly to and be derived from the information as detailed in the current version of the BoK.

Re-assessment to this BoK is required every 5 years, unless otherwise specified.

Candidates are therefore advised to ensure familiarity with all aspects of the BoK as detailed in Table 1. This can be done through:

- Self-study
- Completion of internal training
- Completion of external training (a list of Approved Training Providers can be found at <https://p-r-i.org/>)

Records of all qualified personnel shall be maintained and include:

- Date of Qualification
- Results of Written Exam
- Results of Practical Exam (if applicable)
- Summary of Experience (Owner level only)

5. LEVELS

<i>Descriptors</i>	<b>Level</b>		
	<i>Operator (OP) / Technician (T)</i>  <i>For descriptions, please refer to current versions of PD6000</i>	<i>Planner (PL)</i>  <i>For descriptions, please refer to current versions of PD6000</i>	<i>Owner (OW)</i>  <i>For descriptions, please refer to current versions of PD6000</i>
<b>Anodize Process Specific Criteria</b>	No additional criteria for the Anodize process.	No additional criteria for the Anodize process	No additional criteria for the Anodize process
<b>Technical Knowledge</b>	Basic knowledge of the Anodize process, its main processes, methods and tools.	Good level of knowledge in all aspects of the Anodize process, all its processes, methods and tools.  Ability to coach others on contents and methods in the context of their workplace.	High or extensive knowledge in all aspects of the Anodize process, all its processes, methods and tools to assess and validate improvements.  Able to contribute to set externally recognized standards.  Ability to define contents and methods for using knowledge effectively in influencing and developing international processes. Ability to influence the process with one's knowledge.
<b>Experience</b>	Sufficient experience to deal with recurrent activity.	Has enough experience to deal with unforeseen issues.	Wide proven experience of the subject. Is recognized specialist within the special process.
<b>Personal Attributes</b>	Takes into consideration behavioral characteristics such as but not limited to: team working, communication, direction and purpose, innovation and problem solving, mutual trust and respect, confidentiality and trustworthiness.		
<b>Skills</b>	Describes the activities necessary to perform each level of job function to comply with the Anodize Body of Knowledge		
<b>Non-Special Process Related Requirements</b>	Health & Safety, Environmental, Quality System Requirements.		

**6. TABLE 1**

**ROLE DESCRIPTION:** Owner

**SPECIAL PROCESS:** Chemical Processing

**METHOD:** Anodizing

**REFERENCE GUIDELINES:** *Addendum 1 is a list of the International Standards and Reference Documents applicable to Chemical Processing processes*

Row #	COMPETENCE	Weight (1,3,7,10)	Exam Type Written (W) /Practical (P)	Reference Guidelines
	<b>KNOWLEDGE:</b> The basic knowledge of the special processes, methods and tools			
	<b>GENERAL KNOWLEDGE:</b>			
1.	Understand how to determine if there has been damage to the part surface.	10	W	AC 7108/8, AC 7108/3
2.	Full and complete understanding of Internal Work instructions	10	W	AC 7108/8, AC 7108/3
3.	Know how to access customer specifications and requirements (i.e. where to find them).	10	W	AC 7108/8, AC 7108/3
4.	Understand how to interpret customer specification and requirements in the context of performing the Anodize process.	10	W	General Industry, MIL-A-8625
5.	Understand Industry Standards (see Addendum 1 of this document)	10	W	Addendum 1
6.	Knowledge and understanding of the Accept/Reject Criteria	10	W	AC 7108/8, AC 7108/3
7.	Knowledge of the Surface Preparation procedures	10	W	MIL-A-8625, General Industry
8.	Basic understanding of the control and calibration requirements for equipment.	10	W	AC 7108, General Industry
9.	Know how to perform the Water Break Free Cleanliness Verification	10	W	ASTM F22
10.	Knowledge and understanding of mathematics, including decimal and fractions	10	W	General Industry
11.	Know how to use precision measuring instruments and equipment	10	W	General Industry
12.	Know and understand Job Documentation including Fixed and Frozen Process requirements.	10	W	AC 7108
13.	Know and understand proper chemistry, both usage and application.	10	W	AC 7108, AC 7108/8
14.	Know and understand General Cleaning, Mechanical Cleaning and Chemical Cleaning prior to Anodize.	10	W	MIL-A-8625F, AC 7108/8, AC 7108/3
15.	Know and understand Sealing performance and process requirements.	10	W	AC 7108/8, AC 7108/3
16.	Know and understand how to properly calculate the Ramp Rate and ASF for the Anodize process.	10	W	General Industry
17.	Know and understand how to properly calculate Surface Area, especially of complex geometric parts/shapes	10	W	General Industry
18.	Know and understand Laboratory Procedures.	7	W	General Industry, AC7108/4
19.	Know and understand Analytical requirements and limits.	10	W	MIL-A-8625, AC 7108/8, AC 7108/3
20.	Know and understand how to review and take action on Analytical data & limits.	7	W	AC 7108/8, AC 7108/3
21.	Understand the need for pre-process checks (such as calibration status and solution temperatures.	10	W	AC 7108/8, AC 7108/3
22.	Understand the mechanics and importance of Racking, Part Set-Up and Masking.	10	W	AC 7108/8, AC 7108/3
23.	Knowledge and ability to write and review internal procedures and practices.	7	W	General Industry
24.	Know how to recognize unsafe and/or inappropriate work practices.	10	W	General Industry, OSHA, ILO
25.	Know and understand the effects and aspects of the Anodize process on different alloys and materials (including chemicals, masking materials, tanks, work environment, etc.)	10	W	General Industry, MIL-A-8625, AC 7108/8, AC 7108/3
26.	Understand how to deal with incorrect or inappropriate Anodizing.	10	W	General Industry, MIL-A-8625, AC 7108/8, AC 7108/3
27.	Knowledge and understand about the selection of appropriate equipment for use in the Anodize process.	10	W	General Industry
28.	Understanding of the significance of pH and grades of water purity and their measurement.	7	W	MIL-A-8625, AC 7108, General Industry
29.	General knowledge and understand of all the Anodize processes.	10	W	MIL-A-8625, AC 7108/8, AC 7108/3, General Industry
30.	<b>CHROMIC ACID ANODIZING</b>		W	

31.	Understand "Accept & Reject" Criteria including thickness and color range.	10	W	MIL-A-8625, AC 7108/8, General Industry
32.	Know uses, features and applications for this type of Anodize.	10	W	MIL-A-8625, AC 7108/8, General Industry
33.	Understand the limitations for this type of Anodize.	10	W	MIL-A-8625, AC 7108/8, General Industry
34.	Understand the dying and sealing options and requirements.	10	W	MIL-A-8625, AC 7108/8, General Industry
35.	Understand the environmental, worker safety and health concerns associated with this type of Anodize.	10	W	OSHA (USA), MSDS (MATERIAL, WHMIS (CANADA), General Industry
36.	<b>SULFURIC ACID ANODIZE</b>		W	
37.	Understand "Accept & Reject" Criteria including thickness and color range.	10	W	MIL-A-8625, AC 7108/8, General Industry
38.	Know uses, features and applications for this type of Anodize.	10	W	MIL-A-8625, AC 7108/8, General Industry
39.	Understand the limitations for this type of Anodize.	10	W	MIL-A-8625, AC 7108/8, General Industry
40.	Understand the dying and sealing options and requirements.	10	W	MIL-A-8625, AC 7108/8, General Industry
41.	Understand the environmental, worker safety and health concerns associated with this type of Anodize.	10	W	OSHA (USA), MSDS (MATERIAL, WHMIS (CANADA), General Industry
42.	Understand the comparison of Sulfuric Acid Anodize related to other types of Anodize in regard to cost of chemicals used, heating, power consumption and length of time to obtain required thickness.	10	W	MIL-A-8625, AC 7108/8, General Industry
43.	Knowledge of "Thin-film Sulfuric Acid Anodize" and similar options.	10	W	MIL-A-8625, AC 7108/8, General Industry
44.	<b>HARDCOAT OR HARD ANODIZING</b>		W	
45.	Understand "Accept & Reject" Criteria including thickness.	10	W	MIL-A-8625, AC 7108/8, General Industry
46.	Know uses, features and applications for this type of Anodize.	10	W	MIL-A-8625, AC 7108/8, General Industry
47.	Understand the limitations for this type of Anodize.	10	W	MIL-A-8625, AC 7108/8, General Industry
48.	Understand the dying and sealing options and requirements.	10	W	MIL-A-8625, AC 7108/8, General Industry
49.	Understand the environmental, worker safety and health concerns associated with this type of Anodize.	10	W	OSHA (USA), MSDS (MATERIAL, WHMIS (CANADA), General Industry
50.	<b>PHOSPHORIC ACID ANODIZE</b>		W	
51.	Understand "Accept & Reject" Criteria.	10	W	MIL-A-8625, AC 7108/8, General Industry
52.	Know uses, features and applications for this type of Anodize.	10	W	MIL-A-8625, AC 7108/8, General Industry
53.	Understand the limitations for this type of Anodize.	10	W	MIL-A-8625, AC 7108/8, MIL-A-8625, AC 7108/8, General Industry
54.	Understand the dying and sealing options and requirements.	10	W	MIL-A-8625, AC 7108/8, General Industry
55.	Understand the environmental, worker safety and health concerns associated with this type of Anodize.	10	W	OSHA (USA), Material Safety Data Sheet (MSDS), WHMIS (Canada)
56.	Knowledge and understanding of post anodize – pre-bond handling and storage requirements.	10	W	AC 7108/3, General Industry
57.	<b>ANODIZING FOR BONDING</b>			
58.	Understand "Accept & Reject" Criteria.	10	W	AC 7108/3, General Industry
59.	Know uses, features and applications for this type of Anodize.	10	W	AC 7108/3, General Industry
60.	Understand the limitations for this type of Anodize.	10	W	AC 7108/3, General Industry
61.	Understand the environmental, worker safety and health concerns associated with this type of Anodize.	10	W	OSHA (USA), MSDS (MATERIAL, WHMIS (CANADA), General Industry
62.	What type of base materials are used for this type of Anodizing?	10	W	AC 7108/3, General

				Industry
63.	Type of surface preparations used for Anodize bonding.	10	W	AC 7108/3, General Industry
64.	Knowledge and understanding of post anodize – pre-bond handling and storage requirements.	10	W	AC 7108/3, General Industry
65.	<b>TITANIUM ANODIZING</b>			
66.	Understand “Accept & Reject” Criteria.	10	W	AMS2488, General Industry
67.	Know uses, features and applications for this type of Anodize.	10	W	AMS2488, General Industry
68.	Understand the limitations for this type of Anodize.	10	W	AMS2488, General Industry
69.	Understand the differences between achieving color on Titanium and other metals, such as aluminum.	10	W	AMS2488, General Industry
70.	Know cleaning restrictions when using Titanium.	10	W	AMS2488, AC7108/2, AC 7108/8, General Industry
71.	Understand the environmental, worker safety and health concerns associated with this type of Anodize.	10	W	OSHA (USA), MSDS (MATERIAL, WHMIS (CANADA), General Industry
72.	<b>MAGNESIUM ANODIZING</b>			
73.	Understand “Accept & Reject” Criteria.	10	W	MIL-A-8625, AC 7108/8, General Industry
74.	Know uses, features and applications for this type of Anodize.	10	W	MIL-A-8625, AC 7108/8, General Industry
75.	Understand the limitations for this type of Anodize.	10	W	MIL-A-8625, AC 7108/8, General Industry
76.	Understand the dyeing and sealing options and requirements.	10	W	MIL-A-8625, AC 7108/8, General Industry
77.	Understand the environmental, worker safety and health concerns associated with this type of Anodize.	10	W	OSHA (USA), MSDS (MATERIAL, WHMIS (CANADA), General Industry
78.	<b>BORIC SULFURIC ACID ANODIZING (BSAA)</b>			
79.	Understand “Accept & Reject” Criteria.	10	W	MIL-A-8625, AC 7108/8, General Industry
80.	Know uses, features and applications for this type of Anodize.	10	W	MIL-A-8625, AC 7108/8, General Industry
81.	Understand the limitations for this type of Anodize.	10	W	MIL-A-8625, AC 7108/8, General Industry
82.	Understand the dyeing and sealing options and requirements.	10	W	MIL-A-8625, AC 7108/8, General Industry
83.	Understand the environmental, worker safety and health concerns associated with this type of Anodize.	10	W	OSHA (USA), MSDS (MATERIAL, WHMIS (CANADA), General Industry
84.	<b>TARTARIC SULPHURIC ANODIZING</b>			
85.	Understand “Accept & Reject” Criteria.	10	W	MIL-A-8625, AC 7108/8, General Industry
86.	Know uses, features and applications for this type of Anodize.	10	W	MIL-A-8625, AC 7108/8, General Industry
87.	Understand the limitations for this type of Anodize.	10	W	MIL-A-8625, AC 7108/8, General Industry
88.	Understand the environmental, worker safety and health concerns associated with this type of Anodize.	10	W	OSHA (USA), MSDS (MATERIAL, WHMIS (CANADA), General Industry
	<b>SKILLS:</b>			
	Defined within these rolls describes the range of skills. The skills required to perform a particular special process task			
89.	<b>READ AND UNDERSTAND WRITTEN INSTRUCTIONS:</b>			
90.	Ability to understand specification requirements and customer flow-down requirements	10	P	MIL-A-8625, AC 7108, AC 7108/3, AC 7108/8, General Industry
91.	Apply Anodizing techniques appropriately	10	P	MIL-A-8625, AC 7108/3, AC 7108/8, General Industry
92.	Verify and validate the Anodize results.	10	P	MIL-A-8625, AC 7108/3, AC 7108/8, General



				<b>Industry</b>
93.	Properly report nonconformances	10	P	AC 7108, General Industry
94.	Apply technical knowledge in a skillful way when solving problems	10	P	General Industry
95.	Be familiar with the scope and limitations of Anodizing.	10	P	AC 7108/8, AC 7108/2, AC 7108/3, General Industry
96.	Use of appropriate equipment for the Anodize process.	10	P	AC 7108, AC 7108/8, General Industry
97.	Ability to follow instructions	10	P	AC 7108, General Industry
98.	Ability to write Work Instructions and Procedures	10	P	General Industry
99.	Interpretation of an acceptable Anodize process	10	P	MIL-A-8625, AC 7108, AC 7108/3, AC 7108/8, AC 7108/2, General Industry
100.	Must be able to read drawings and specifications	10	P	General Industry
101.	Must be able to interpret specification requirements	10	P	General Industry
102.	Must be able to set-up operations (equipment, rates, timers & temperatures) including alternate procedures as appropriate	10	P	MIL-A-8625, AC 7108, AC 7108/3, AC 7108/8, General Industry
103.	Must be able to understand and interpret shop travelers	10	P	AC 7108, General Industry
104.	Ability to identify training needs and coordinate the training	10	P	General Industry
105.	Be able to identify strengths and weaknesses in the personnel involved in the anodizing activity	10	P	General Industry
	<b>PERSONAL ATTRIBUTES:</b> Are statements that will enable judgment of the person's personal attributes			
107.	Be able to work independently with a minimum of supervision	10	P	General Industry
108.	Must have a high degree of integrity	10	P	General Industry
109.	Be attentive to details	10	P	General Industry
110.	Be flexible	7	P	General Industry
111.	Tolerate stress	10	P	General Industry
112.	Exhibit conflict resolution	10	P	General Industry
113.	Decision making ability	10	P	General Industry
114.	Team Worker	10	P	General Industry
115.	Ethical Behavior	10	P	General Industry
116.	Exhibit Leadership	10	P	General Industry
	<b>EXPERIENCE:</b> Are the minimum experience requirement expected to demonstrate their competence.			
117.	<b>EDUCATION:</b>			
118.	High School Diploma or GED or Secondary Education	10	P	General Industry
119.	Apprenticeship	7	P	General Industry
120.				
121.	Industry Training or Courses		P	General Industry
122.	<b>TRAINING / HANDS-ON-EXPERIENCE:</b>	10	P	General Industry
123.	Complete on the job training: Minimum number of hours-			
124.	OPERATOR – 160 Hours			
125.	PLANNER – 160 Hours			
126.	OWNER – 640 Hours	10	P	General Industry
	<b>NON-SPECIAL PROCESS RELATED REQUIREMENTS:</b> Defined within these rolls are other general or pre-requisite needed			
127.	Capability to lift up to 50 lbs. (23 kg)	3	W	General Industry
128.	Able to deal with repetitive bending and stooping	3	W	General Industry
129.	General understand of Quality Systems AS/EN/JISQ 9100, or AC 7400, or equivalent	7 10	W	Aerospace Standard
130.	<b>SAFETY &amp; ENVIRONMENTAL REQUIREMENTS:</b>			
131.	Knowledge and understanding of safety and handling of hazardous material, chemicals, etc. including safe storage, interpretation of Health & Safety Data Sheets and Regulatory Requirements	10	W	OSHA (USA), MSDS (MATERIAL SAFETY DATA SHEET), WHMIS (CANADA), General Industry
132.	Understand Safety Data Sheets (SDS) and Personal Protective Equipment (PPE) Requirements: When and how to use appropriate personal protective equipment (goggles, gloves, rubber boots, aprons, etc.)	10	W	OSHA (USA), MSDS (MATERIAL SAFETY DATA SHEET), WHMIS (CANADA), General Industry
133.	Ability to prepare and administer appropriate safety and environmental procedures and	7	W	OSHA (USA), MSDS



	controls.			(MATERIAL SAFETY DATA SHEET), WHMIS (CANADA), General Industry
134.	Understand which personal protective equipment to use, when and why	10	W	OSHA (USA), MSDS (MATERIAL SAFETY DATA SHEET), WHMIS (CANADA), General Industry
135.	Understand the safe storage, shelf life and mixing of chemicals	10	W	OSHA (USA), MSDS (MATERIAL SAFETY DATA SHEET), WHMIS (CANADA), General Industry
136.	Ability to recognize symbols associated with chemicals and their usage	10	W	OSHA (USA), MSDS (MATERIAL SAFETY DATA SHEET), WHMIS (CANADA), General Industry

## 7. PORTFOLIO REQUIREMENTS

Row #	COMPETENCE	Exam Type Written/ Practical	Reference Guidelines
	<b>PORTFOLIO REQUIREMENTS (for OWNER LEVEL Qualification Only)</b> Portfolio must include the following components for consideration		
137.	Planner Exam Score <i>(Must receive at least 80%)</i>		
138.	Planner Exam Validity <i>(Must be within 6 months of requalification)</i>		
139.	Experience Survey		
140.	Resume of Experience <i>(Description of Current and Previous Jobs)</i>		
141.	Employer / Client Verification <i>(Signed Statement of Corroboration by either current employer or client)</i>		
142.			
143.	NOTE: The above components will be scored accordingly		

## 8. DOCUMENT REVISION HISTORY

REVISION DATE	SUMMARY
16 May 18	Updated to new template, added REACH wording
29 November 2018	Reviewed by eQualified Content Developer to ensure it is up to date.
3 December 2019	Editorial revision to update program name from eQualified to PRI Qualification <sup>SM</sup> .

**ADDENDUM 1**

**LIST OF INTERNATIONAL STANDARDS FOR & REFERENCE DOCUMENTS FOR CHEMICAL PROCESSING ANODIZING**

<b>SPECIAL PROCESS</b>	<b>DOCUMENT TITLE</b>	<b>DOCUMENT NUMBER</b>
Chemical Process	Audit Criteria for Chemical Processing	AC 7108
Chemical Process	Audit Criteria for Etch Inspection Process (Blue Etch Anodize)	AC 7108/2
Chemical Process	Audit Criteria for Surface Preparation Prior to Metal Bond	AC 7108/3
Chemical Process	Audit Criteria for Anodizing	AC 7108/8
Chemical Process	Hard Anodic Coating Treatment of Aluminum Alloys	AMS2468
Chemical Process	Hard Anodic Coating on Aluminum and Aluminum Alloys	AMS2469
Chemical Process	Anodic Treatment of Aluminum Alloys, Chromic Acid Process	AMS2470
Chemical Process	Anodic Treatment of Aluminum Alloys Sulfuric Acid Process, Undyed Coating	AMS2471
Chemical Process	Anodic Treatment of Aluminum Alloys, Sulfuric Acid Process, Dyed	AMS2472
Chemical Process	Standard Test Method for Hydrophobic Surface Films by the Water-Break Test	ASTM F22
Chemical Process	Occupational Health and Safety Management	BS OSHAS 18001
Chemical Process	Anodic Coatings for Aluminum and Aluminum Alloys	MIL-A-8625
Chemical Process	Material Safety Data Sheet	MSDS
Chemical Process	Occupational Safety and Health Administration	OSHA
Chemical Process	Titanium Anodizing Type I and Type II	SAE AMS2488
Chemical Process	Workplace Hazardous Materials Information Systems	WHMIS

## ADDENDUM 2

### ADDITIONAL SAFETY & ENVIRONMENTAL REQUIREMENTS

#### REACH REGULATION INFORMATION

Several metal finishing processes (painting, anodize, chromate conversion, passivate, electroplating) may have REACH regulated substances that are either used as process chemicals or are contained within the finished product after a process is completed. Chemical suppliers are obliged to provide a legislatively compliant safety data sheet.

Below are topics of concern that a chemical processing owner should be aware of and have adequate understanding if products are produced within or shipped to the European Union.

- REACH (Regulation on Registration, Evaluation, Authorization and Restriction of Chemicals)
- Affects raw materials/substances that go into products either produced within or shipped to the European Union.
- Under EU REACH regulation, substances that are one of the following can be regarded as substance of very high concern (SVHC):
  - carcinogenic, mutagenic or toxic to reproduction (CMRs);
  - persistent, bio-accumulative and toxic (PBTs);
  - very persistent and bio-accumulative (vPvBs);
  - seriously and / or irreversibly damaging the environment or human health, as substances damaging the hormone system;
- The SVHC candidate list is a moving target that will continue to grow with 168 substances as of January 2016. This list is reviewed nominally twice a year by ECHA.
- Some typically used SVHC's contained in or used but not limited to during chemical processing are;
  - Cadmium
  - Strontium Chromate
  - Chromium trioxide
  - Sodium dichromate
- SVHC content is allowable up to 0.1% of an article produced within or shipped to the EU.
- Additionally, SVHC's may at some time be added to the Authorization List known as Annex 14 or XIV which contains a sunset date for each SVHC in this list.
- Owner needs to be aware of sunset dates for SVHC's contained in the Authorization list. Once an SVHC from the Authorization List reaches the sunset date, it can no longer be used in the EU without specific authorization from ECHA (European Chemicals Agency).
- Manufacturing sites either located within or if shipping product to the EU must comply with all aspects of REACH. Chemical suppliers in the EU must provide safety data sheets that reflect any conditions of an authorization.
- Further information/current SVHC and Authorization list with sunset dates can be obtained by accessing (<http://www.echa.europa.eu/web/guest/candidate-list-table>)