Control of Substances in UTAS Products: Procedure

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1.0 PURPOSE / SCOPE

This Procedure identifies and outlines the requirements for the control of substances that are specified for use in all United Technologies Aerospace Systems (UTAS) parts. This includes all vendor designed and supplied items.

These requirements are applicable to all new designs, established designs and engineering changes, including those made by UTAS design owner suppliers.

MOC management not mandated by new design activity will be managed as required within by each SBU

This procedure applies to materials/substances which are required by the product definition, and which remain with the delivered product. In all instances, the use of chemicals identified and controlled by this procedure shall be eliminated whenever possible

This procedure is necessary to control risk and mandate actions due to customer and regulatory requirements and obligations as well as environmental concerns.

Full disclosure of product constituents identified by UTAS as Prohibited, Restricted, and Highly Restricted is required to comply with regulatory and/or customer requirements, and to manage their associated business and environmental risks.

This document communicates UTAS procedures for the identification, reduction, and elimination of hazardous materials in the design, manufacture, and repair of UTAS products. The controls on substances described herein will apply to delivered hardware in addition to substances required for manufacturing, operating, packaging, maintaining, and preserving hardware. It is the policy of UTAS to identify, reduce, and eliminate the use of Materials of Concern (MOCs) wherever this is feasible.

This procedure is also applicable to previously established designs as directed by each SBU. This activity is defined by program/project criteria. “Fit-to-use”, “Off-the-shelf” or “Re-use” parts (legacy designs) will be evaluated as determined through this procedure and contractual activity.

Full disclosure of product constituents identified by UTAS as Prohibited, Highly Restricted and Restricted is required. UTAS uses these categories to manage associated customer, business and environmental risks.

Environmental regulatory standards such as, REACH (EU Regulation on Registration, Evaluation and Authorization of Chemicals; reference UTAS-ENG-POL-0001) and other International Regulatory Standards are mandated through legislative compliance at point of manufacture and/or customer contracts. Compliance to these standards can be achieved through use of information gathered in this procedure.

Note: Compliance to regulatory standards are managed independently from this procedure

2.0 RESPONSIBILITY

It is a joint responsibility across UTAS organizations to assure compliance to this procedure. Each SBU and their associated functional groups are responsible to implement this procedure and the controls necessary to show compliance. The functional group terms below are considered representative and may vary based on individual SBU job descriptions

Design Engineering or equivalent function shall be responsible for product design, including the selection of materials, substances and processes required to meet the design intent.

Engineering has the overall responsibility for ensuring that all UTAS specifications and drawings comply with this procedure. Engineering shall ensure that processes are in place to implement the requirements of this procedure on new programs and to provide technical reviews of any customer MOC documents. Engineering shall work with Program Office to reconcile customer requirements with this procedure. Engineering shall develop and use MOC checklists, as outlined in this procedure, to identify future risk associated with MOC use, propose mitigation plans, and review MOC risk management issues throughout the Integrated Design Process.

Engineering shall also ensure that all UTAS drawings and specifications are reviewed for the use of MOCs at time of release and/or change. Engineering shall designate the applicable function to perform the review for use of MOCs.

Any existing work performed by use of Process or Product Families may be used.

Engineering (typically Materials Engineering) shall be responsible for reviewing and approving the materials/substances and process selections including the approval of alternate substances, as defined on the MOC list located at: https://global.utas.utc.com/sites/OPS_REACH/UTASMOC/Lists/MoCSubstances/AllItems.aspx

Engineering drawings and/or purchase orders (PO) shall assure this procedure is properly flowed down to the supply chain.

Purchasing has the responsibility to ensure that suppliers and their sub-tier suppliers comply with MOC requirements for supplier designed items by flow down and enforcement of engineering documents implementing these requirements.

Supply Chain is responsible for the collection, reporting, and submission for approval of the UTAS list for substances on supplier designed purchased items (this includes but not limited to COTs, military standard parts, NAS, etc.)

The design owner is responsible for compliance to this procedure and all associated requirements.

Customer Support has the responsibility to ensure that the overhaul and repair operations, including all product maintenance and repair documentation at UTAS facilities are controlled to the requirements of this procedure. All product maintenance and repair documentation shall comply with these procedures.

Central Engineering partners with Central Environment, Health and Safety to identify and promote awareness of current or proposed regulations and emerging customer and public concerns regarding the MOC.

Program Office and Contracts have the responsibility to review contractual requirements and technical requirements for compliance with this procedure and work with UTAS customers to resolve conflicting requirements.

Each Strategic Business Unit (SBU)/design site has the responsibility to track, approve, and report on Prohibited Material Usage. Use of prohibited substances will be for a limited period. Prohibited substances will require justification for use, detailed plans for elimination, and safe use instructions.

Executive management of each SBU and Site is responsible for the implementation of and compliance with this procedure. Managerial and

supervisory staff at each site will be responsible for supporting implementation and compliance based upon their individual levels of authority and control.

It is the responsibility of each respective SBU Engineering and Supply Chain to develop a process in order to comply with the requirements of this procedure for Legacy parts.

The company or department that provides products and/or services covered in whole or in part by this procedure is responsible for compliance with the technical requirements of this procedure.

UTAS is responsible for the technical requirements of this procedure for Build-to-Print parts. Note: Only in cases where the supplier has a choice of substances will they be required to inform UTAS of substance content in accordance with this procedure.

Suppliers that design parts for use in UTAS products shall be responsible for compliance with the technical requirements of this procedure. All supplier designs will be reviewed and approved by the appropriate SBU and engineering support teams.

Changes to this procedure are the responsibility of Engineering. All changes shall be approved by authorized representatives.

The functions identified in this procedure may not be specific to all SBUs. While each SBU is required to complete these actions, they have the option to assign the requirements to equivalent functions within their specific SBU.

3.0 REFERENCES

- REACh: Registration, Evaluation, Authorization, and Restriction of Chemicals
- UTAS-ENG-POL-0001 – REACh Management System
- UTAS-ENG-FRM-0147 – MOC recording form
- UTAS-ENG-FRM-0146 – Prohibited MOC reporting form

4.0 DEFINITIONS / ABBREVIATIONS

- IAEG: International Aerospace Environmental Group (IAEG) industry standard list of potentially harmful substances that may be incorporated into aerospace and defense products. Updated periodically. Located at the official IAEG website.
- Article: An object that during production is given a special shape, surface, or design that determines its function to a greater degree than does its chemical composition.

- Approved Suppliers: Suppliers approved for procurement by UTAS Quality System.
- Business Unit: Refers to the high-level internal divisions within UTAS.
- COTS: Commercial Off-the-shelf (COTS): A term used to describe the purchase of packaged solutions, such as catalog items, which then may be adapted to satisfy the needs of the purchaser
- Design: Refers to any part designed and controlled by UTAS specifications and drawings.
- Design Owners: Company and/or organization that owns design authority of a part or product.
- EH&S: Environment, Health, and Safety
- Engineering: The functional area within Engineering that has the responsibility of defining the product. Actions assigned to Engineering, unless otherwise stated, are assigned to the appropriate Director, General Manager, Chief Engineer or equivalent of Engineering, or their designees.
- Highly Restricted Material: A material is classified as 'Highly Restricted' when it poses a high Environmental Health & Safety risk, is likely to be more stringently regulated in the future, and is highly restricted by our customers. Suitable alternatives may not exist for all materials/applications in this group but technology to qualify suitable replacements is being actively pursued. Highly restricted materials shall be moved to the prohibited list when technically and economically viable alternatives are qualified for use or when policies and regulatory activity dictate.
- Legacy Parts: parts designed and/or manufactured prior to the newer regulations and rigorous MOC review processes
- Materials of Concern (MOC): Substances the use of which is prohibited, highly restricted, or restricted.
- Military Standard Parts: A part manufactured to a military design standard.
- Process Family: Database of chemical processes defined by Green Products office, which identifies common constituents with similar specifications.
- Product: A UTAS product includes sub-assemblies, parts, substances, components, articles, and packaging.
- Product Family: Group of products that have definable characteristics that are expected to result in consistent material compositions.
- Prohibited Material: Group of substances identified as prohibited by UTAS. A material is classified as 'Prohibited' when it poses high Environmental Health and Safety (EH&S) risk and it is regulated and/or it is banned by our customers.
- REACh: REACh (Registration, Evaluation, Authorization and restriction of Chemicals) is the European Union regulation for chemical usage, which went into effect in June 2008. The European Chemicals Agency (ECHA), located in Helsinki, Finland was formed in 2006 to manage technical, scientific and administrative aspects of REACH including providing information on chemicals to ensure their safe use, competitiveness and consistency across the European Union. The ECHA website is a source of information on

REACH. This site provides the latest technical guidance, tools, data on chemicals and the Regulation. Reference link: https://echa.europa.eu/web/guest/home

- Restricted Material: A material is classified as 'Restricted' when it poses high EH&S risk, and/or its use is restricted by our customers. Restricted materials shall be moved to the prohibited list when technically and economically viable alternatives are qualified for use or to the highly restricted list when policies and regulatory activity dictate.
- SBU: Strategic Business Unit
- Suppliers/Supply Chain: First-tier and all sub-tier direct material suppliers for supplier designed and UTAS Build-to-Print parts.

5.0 REQUIREMENTS

Materials of Concern are defined by a UTAS Engineering. UTAS uses many different sources such as the IAEG, UTC, UTAS and customer inputs. The UTAS MOC list is managed by Central Materials Engineering and is located at central location:
https://global.utas.utc.com/sites/OPS_REACH/UTASMOC/Lists/MoCSubstances/AllItems.aspx

For new designs, UTAS and/or UTAS suppliers shall identify and manage the use of prohibited substances per this process. Prohibited substances shall not be introduced into new designs, or any manufacturing, assembly, test, maintenance, or repair operation unless required by contract, specification, or engineering drawing.

For legacy parts incorporated into new designs, and for engineering changes, prohibited substance usage shall be identified. Prohibited substance usage substantiation requires both technical and economic feasibility review. Legacy parts, not being incorporated into new designs, will be evaluated as appropriate to meet customer and regulatory requirements

All use of identified Prohibited Substances identified in legacy parts shall be documented by the SBU and reported using form UTAS-ENG-FRM-0146 or equivellent electronic form. A Materials Engineer or equivalent function is responsible for approval.

The form and verification of associated management policies (i.e., operator, hazard awareness, personal protective equipment, emission controls, and waste disposal training procedures) must be submitted to Materials Engineering for approval.

For new and existing designs, including legacy parts introduced in newer designs. UTAS and/or UTAS suppliers shall identify and manage the use of highly restricted and restricted substances per this process. UTAS and/or UTAS suppliers shall change from highly restricted and restricted substances to alternate substances and processes whenever feasible. Highly restricted and restricted substances shall not be introduced into any manufacturing, assembly, test, maintenance or repair operation, when technically and economically feasible alternatives are available.

The determination of possible alternatives for any application is best made by Materials Engineering. Economic feasibility on Legacy parts shall consider the entire life cycle of the product, material, or process, including disposal.

All use of identified Highly Restricted and Restricted Substances shall be documented by each SBU and reported for approval by Materials Engineering using UTAS-ENG-FRM-0146 or equivalent electronic form.

Approval of adherence to the requirements of this procedure shall be indicated by completing form(s) UTAS-ENG-FRM-0147 and/or UTAS-ENG-FRM-0146. Other methods of approval may include completion of approved engineering drawing, specification, or work performed by the use of Process or Product Family Model.

All substances identified in the UTAS Substance List and outlined below will require identification, documentation and approval in accordance with this procedure.

5.1 Declarable Substances from Suppliers

Suppliers are required to obtain approval from UTAS prior to the replacement or introduction of any substance on the UTAS Substance List, even if required by specification.

5.2 Engineered Nanomaterials

If the supplier uses, or is aware of the presence and/or use of any engineered nanomaterials in the manufacturing of products sold to UTAS, the supplier shall inform UTAS about the presence and type of such engineered nanomaterials at or prior to shipment of the product.

5.3 Prohibited Substances

Introduction of prohibited substances into the article and or process for any manufacturing, assembly, test, maintenance, repair and overhaul operation is not allowed unless required by contract, specification, engineering drawing or emergency need; and then only after authorized by SBU Engineering Director .The use of prohibited substances may be authorized on an interim basis if the

SBU/Supplier submits a UTAS-ENG-FRM-0146 or equivalent electronic form in accordance with this process.

5.4 Highly Restricted Substances

Use of highly restricted substances is only allowed after completing a Materials Engineering review to assure no alternate approved substances are available. Highly restricted substances will not be used for new designs or engineering changes when a viable alternative is qualified. The use of highly restricted substances in new designs and at time of Engineering Change (E/C) shall be permitted after authorized approval per UTAS-ENG-FRM-0147 or equivalent electronic form.

5.5 Restricted Substances

Use of restricted substances requires documentation of use and brief review by Materials Engineering to assure compliance. The use of restricted substances shall be permitted after authorized approval per UTAS-ENG-FRM-0147 or equivalent electronic form.

5.6 Changes to Existing Designs

Engineering changes to existing designs shall remove substances to comply with all applicable regulatory and customer requirements.

5.7 Maintenance, Repair and Overhaul (MRO)

All repair processes performed on parts shall be reviewed to determine if any of the MRO activities have met REACh reporting requirements.

5.8 SBU Specific Substances

SBU specific substances shall be managed and controlled locally.

5.9 Supply Chain

Suppliers are responsible to meet all UTAS and REACh requirements as defined herein.

5.10 Control and Data Reporting

Data management is required for MOC reviews, validation, and compliance.

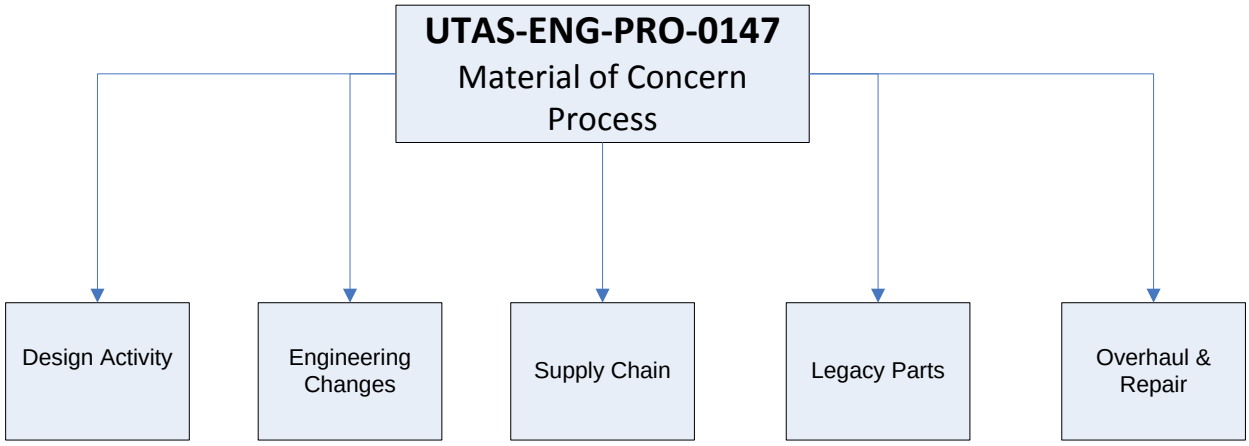
6.0 SUPERSEDED DOCUMENTS

- Control of Substances in Goodrich Products (GRMA-001-SPEC)
- Control of Substances from Supply Chain (GRMA-003-SPEC)
- Declarable Substance List (GRMA-002-SPEC)
- Declarable Substances Recommended Practice (ASD-STAN TR 9536)
- Declarable Substances Recommended Practice (SAE9536)

- Materials of Concern (SP0124.1)
- Substance Declaration (ASD-STAN TR 9535)
- Substances Declaration Standard (SAE9535)

7.0 FLOWCHART

7.1 Activity Map



8.0 REVISION HISTORY

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