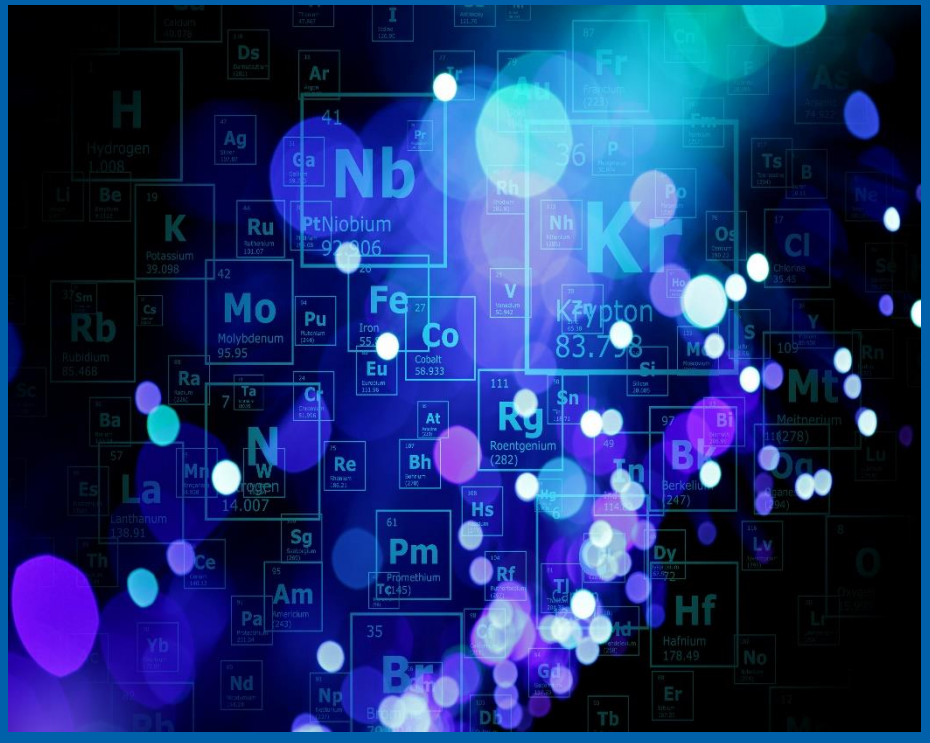
Webinar “Material Declaration according to ISO-IEC 82474-1”



ISO TC 207 / SC 1 linked to IEC TC 111 / JWG 16

Koshi Kamigaki and Solange Blaszkowski (JWG16 co-conveners)

Session 1
Date: 14 Sep 2023
Time: 07.00 – 08.15 UTC

Session 2
Date: 27 Sep 2023
Time: 13.00–14.15 UTC

Agenda

1.	Welcome and opening remarks	(S1/S2) Koshi Kamigaki (AIST)	5’
2.	Overview of ISO-IEC 82474-1	(S1) Solange Blaszkowski (Philips) (S2) Walter Jager (ECD compliance)	25’
3.	ISO-IEC 82474-1 Process chemical declaration	(S1) Josef Denzel (Airbus) (S2) Richard Shanks (Pratt & Whitney)	25’
4.	Q&A	ALL	20’

Presenters webinar session 1

Koshi Kamigaki (JP)

Standardization Officer (SO), AIST

JWG 16 convener (IEC side)

IEC TC 111 / WG 19 co-convener

Solange Blaszkowski (NL)

Dir. Standardization Environment, Philips

JWG 16 co-convener (ISO side)

IEC TC 111/WG 5 convener

Josef Denzel (DE)

Sr. Manager & Expert Environmental Affairs, Product Compliance & Stewardship, Airbus

JWG 16 member

Presenters webinar session 2

Koshi Kamigaki (JP)

Standardization Officer (SO), AIST

JWG 16 convener (IEC side)

IEC TC 111 / WG 19 co-convener

Walter Jager (CA)

Principal Consultant, ECD Compliance

JWG 16 team leader

IEC TC111 SDB 62474 co-convener

Rick Shanks (US)

Associate Dir, Global Chemicals Program Pratt & Whitney

JWG16 Liaison Member (IAEG)

2. Overview of IEC-ISO 82474-1

by

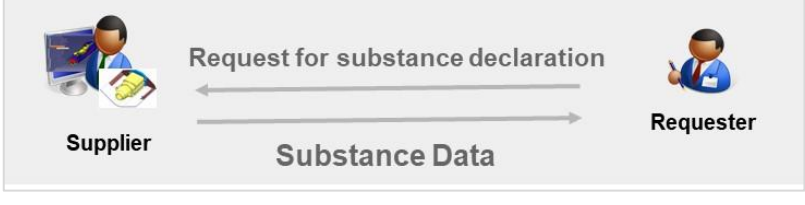
Ms. (Dr.) Solange Blaszkowski (session 1)

Mr. Walter Jager (session 2)

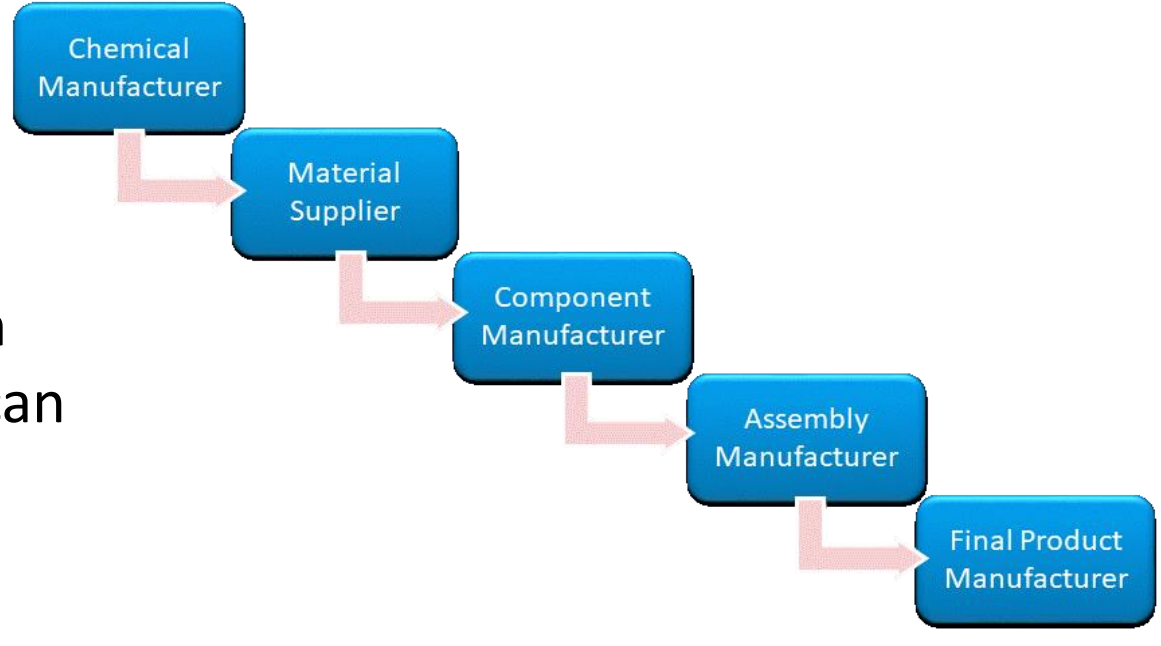
Need for understanding of the chemical content of our products increase

- What are substances and materials that our products are made of?
- What are substances and materials that are contained in our products?
- What are substances that come out of our products (leaching, emissions,)

Information can be obtained through “Material Declarations” in the supply chain



How to get better understanding of the chemical content of products



Material declaration of a single product can involve hundreds of interactions in the supply chain

About the ISO/IEC 82474-1 standard

- **Title:** IEC 82474-1 Material declaration - Part 1: General requirem.
- **Objective:** JWG16 to develop the ISO and IEC dual logo standard (jointly by IEC TC 111 and ISO TC 207/SC1)
- **Scope:** The standard proposes requirements and guidance on material declarations for products and accessories. The objective of the standard is provide data up and down the supply chain to
  - assess products against material and substance requirements,
  - assess substances used in manufacturing and other life cycle stages,
  - use information in their activities related to environmentally conscious design and
  - obtain information about material efficiency and product circularity of their products.
- **Development stage:** CDV/DIS

Facts and Figures

Co-conveners:

- Koshi Kamigaki (IEC TC 111) and
- Solange Blaszkowski (ISO TC 207/SC 1)

Membership:

- 73 members; 14 from ISO, 59 from IEC and 5 from liaisons
- Liaisons: IAEG, FEICA, ECOS, ISO TC 323, ISO/TC 61/SC 14
- Sectors represented: aeronautics & aviation, chemicals, automotive, adhesives,, EEE, etc.

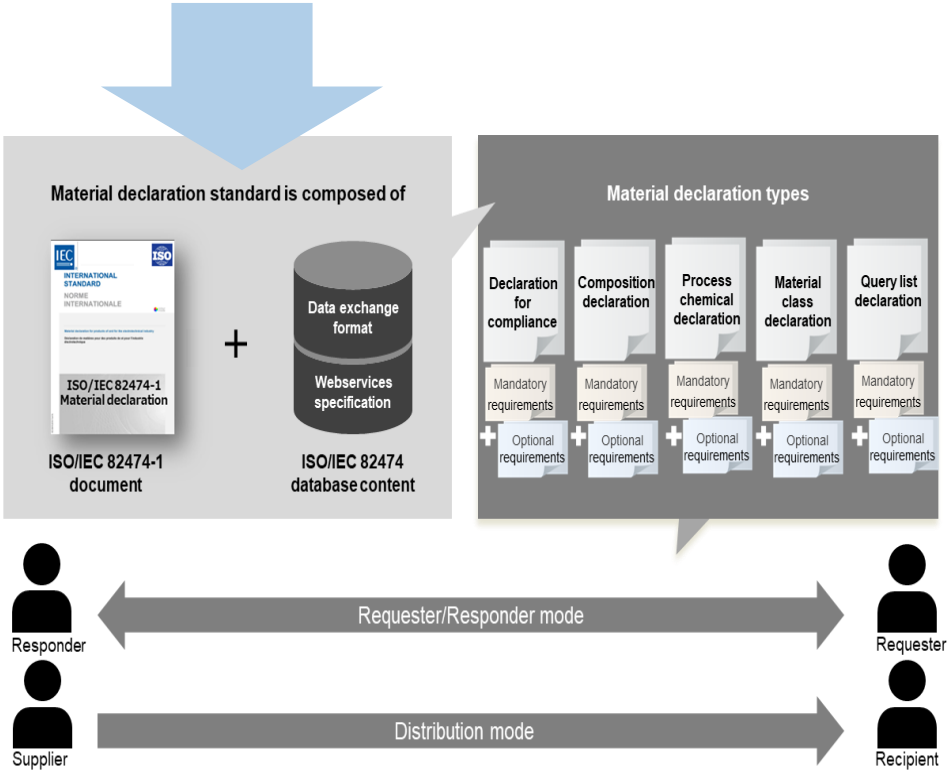
Admin leadership: IEC

ISO-IEC 82474-1 – how is it implemented

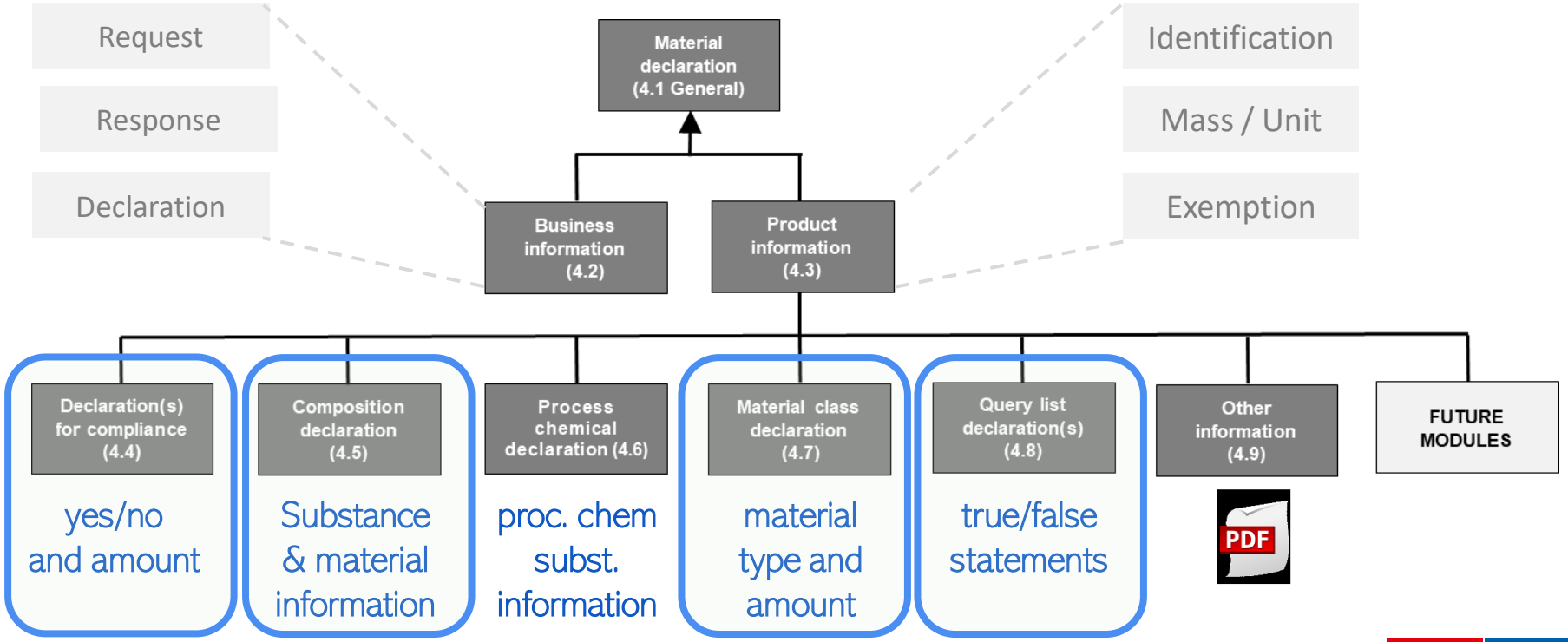
ISO/IEC 82474-1 is composed of two parts:

1. The ISO/IEC 82474-1 document :
   - Declaration procedures, general requirements and recommendations
   - Rules for updating the parts of the standard in the SDB

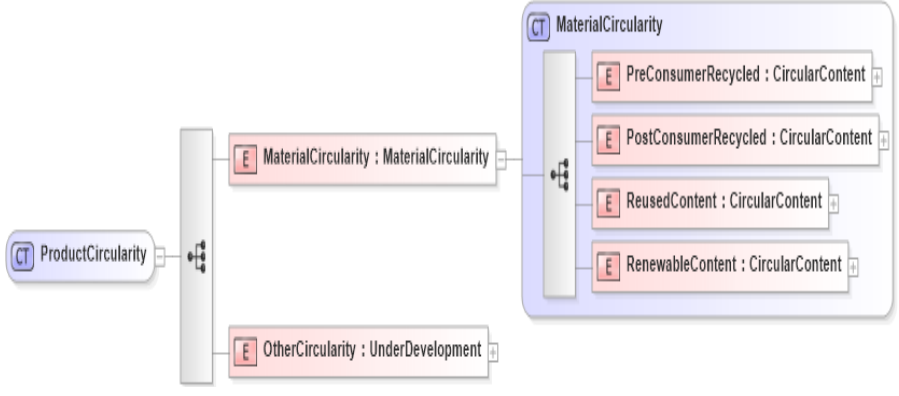
2. ISO/IEC 82474 SDB (standard in database format):
   - Specifications that need periodic updates
   - Data Exchange Format (DXF) for Material Declaration
   - DXF for Reference Lists (e.g. DSL)
   - Proprietary Substance Name List
   - Cross-Sector Material Class List (MCL)
   - Web services specification



ISO-IEC 82474-1 – what does it include



Product and business information



Business Information about the Material Declaration

- Requesting Company
- Responding Company
- Unique ID for the material declaration
- Requested Content and DSL to be used

Product Information (most are optional)

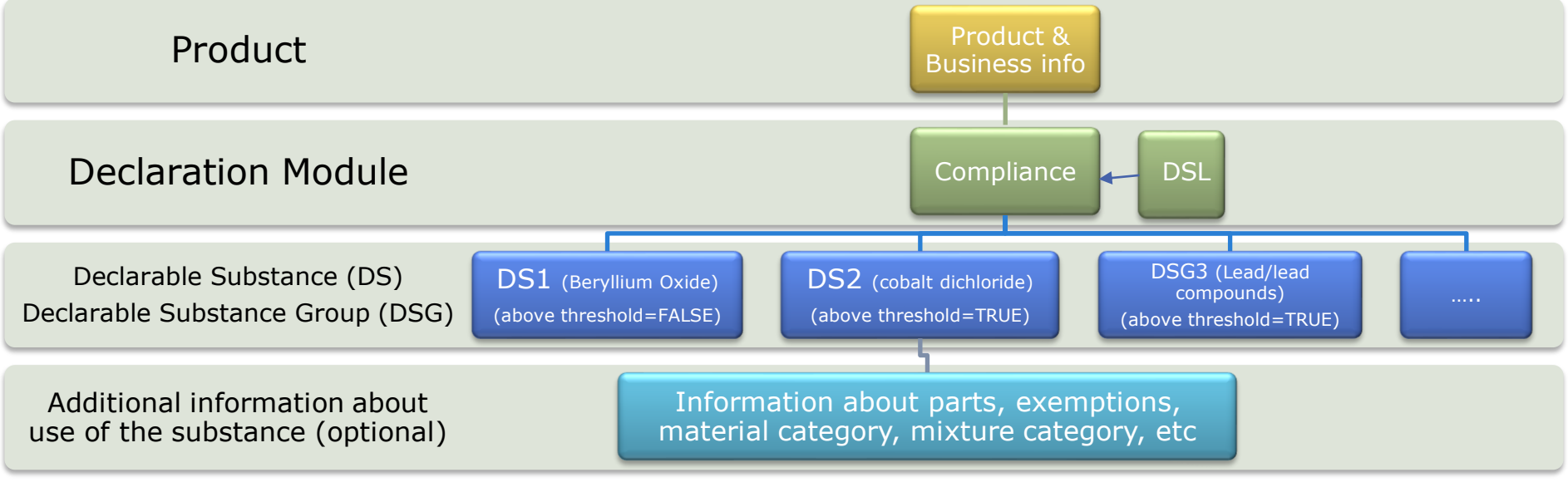
- Identification of the product and/or product family
  - Examples: Model name, MPN, UPC, GTIN , SKU, etc
  - Mass information
  - Product category if applicable
- Type of unit being declared (e.g. each, litre, metre, kg, etc)
- Product characteristics such as article or mixture/substance
- Circularity information at the product level
  - E.g. total recycled/reused/renewable content
- Safe use information – either free text or from a standardized list

Module: declaration for compliance

- Declaration against a DSL (Declarable Substance List)
  - A DSL is a list of declarable substances (and/or substance groups) with reporting threshold (e.g. 0.1 mass percent of material) and reporting application (e.g. in plastic materials)
- The responder declares whether the product contains the substance (or substance group) in a reportable application and above the reporting threshold (True/False)
- Reporting of additional information about the use of the substance (most are optional fields)
  - Examples: Mass information, exemptions, safe use, information about a part containing certain substance (e.g. battery, article) (often required by legislation)

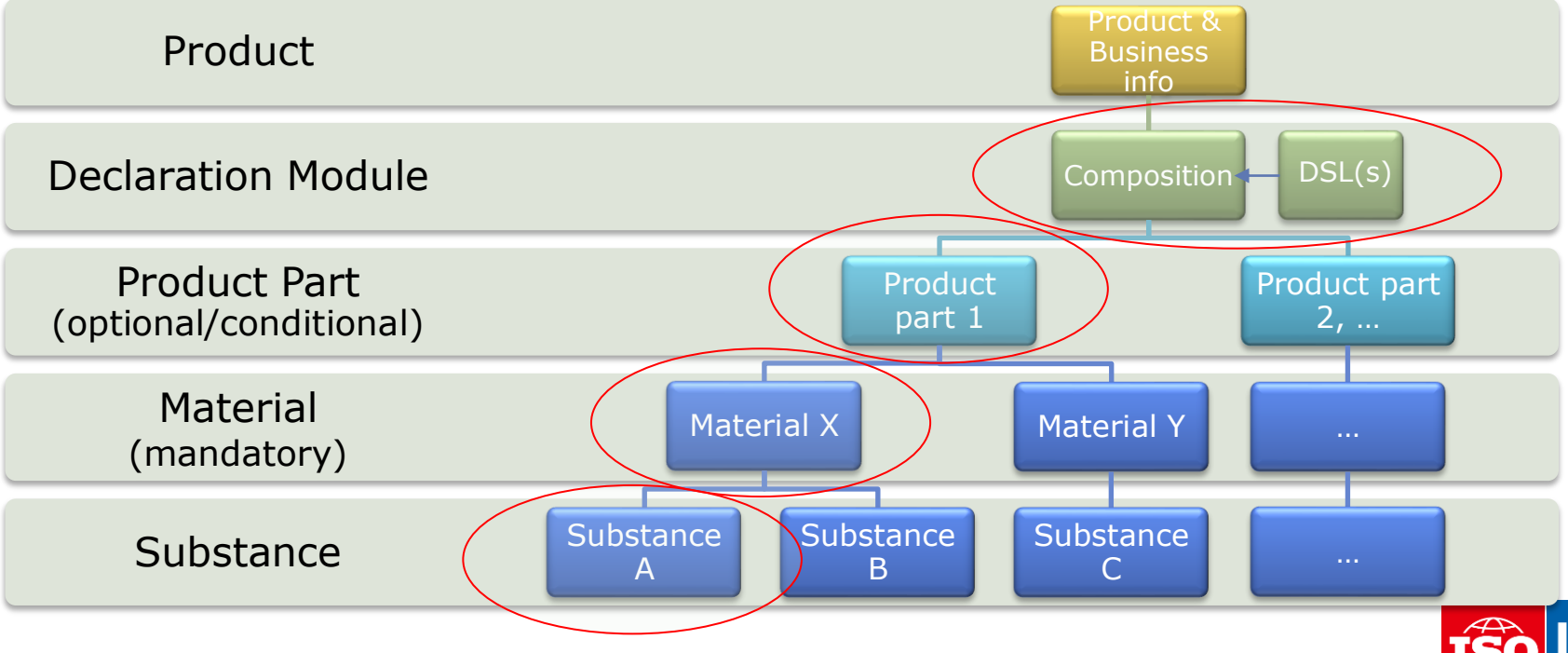
Structure of declaration for compliance

Declared information may be associated with the product or product parts



Module: composition declaration

Declared information may be associated with the product, product part, and/or material

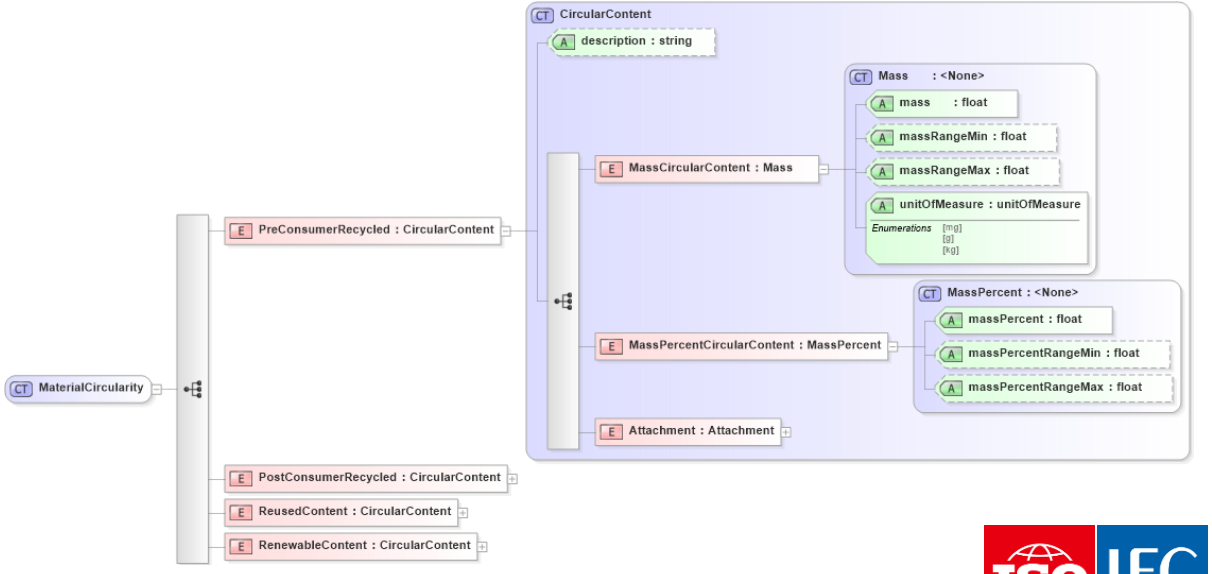


Composition declaration – material information

‘Material’ in a composition declaration typically contains information about:

- material name,
- mass information,
- material class/category,
- material type,
- material properties,
- use descriptors, and
- material circularity data

Information about materials is mandatory



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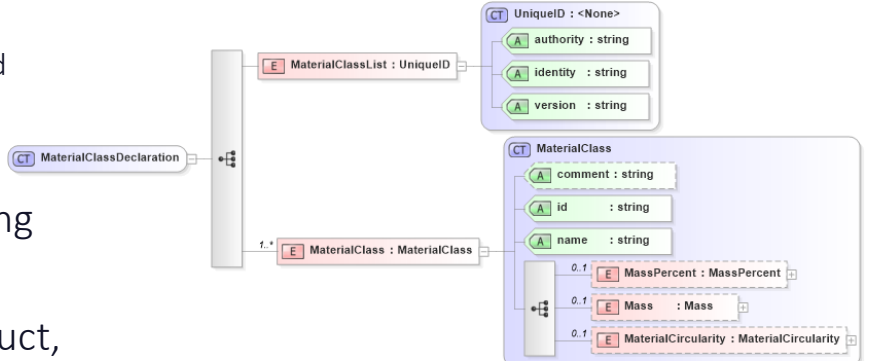
Module: Material class declaration

Material class declaration (MCL) module enables the responder to provide a summary of the materials in the product based on material categories (classes) in a standardized material classification system (e.g. listed in a MCL)

- The declaration needs to reference a material class list
  - Several industries and government authorities have defined material class/category lists for communicating the type of materials that are used
- The summary declaration can be useful for meeting certain regulatory requirements, LCA, etc.
- For each material class that is present in the product, the responder reports a summary of total amount of the material type in the product and optionally other information such as circularity characteristics.



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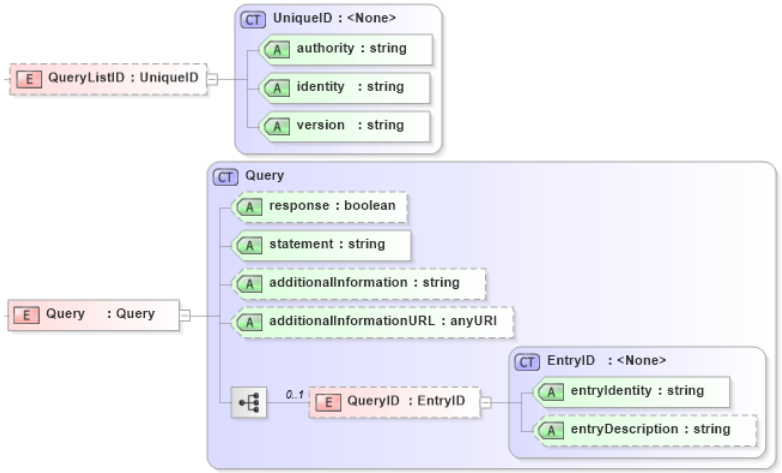
Module: Query list declaration

Query List declarations support true/false reporting against pre-defined statements

Examples:

- Compliance statements for specific regulatory
  - E.g. the product contains nickel that is externally accessible
- Critical raw material (CRM) statements
  - E.g. mass of cobalt in the battery is between 5 g and 25 g



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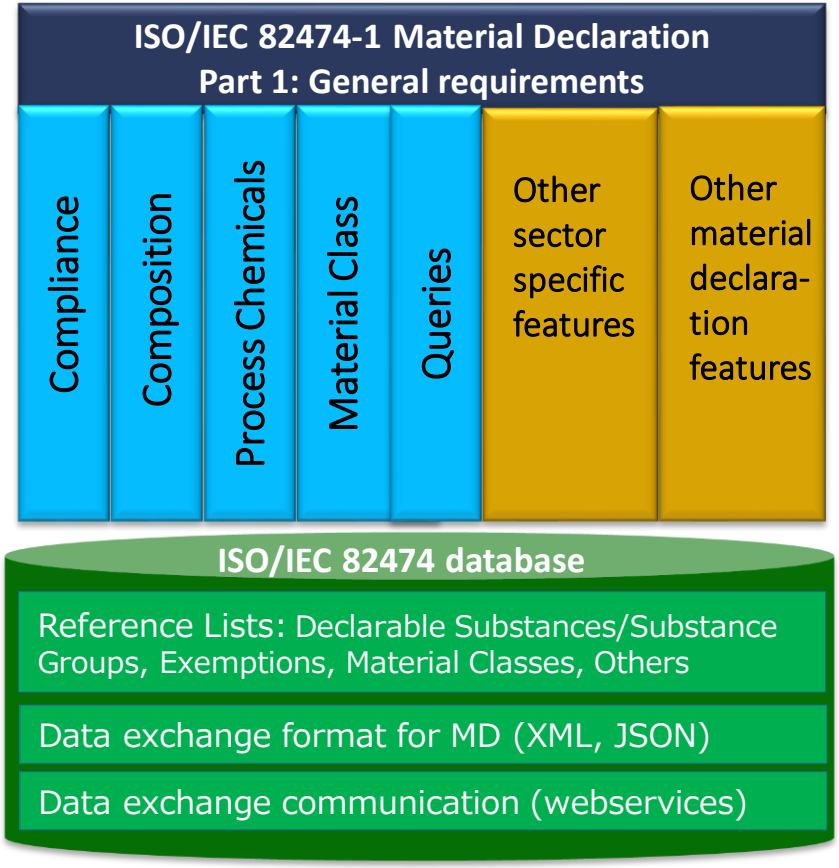
ISO-IEC 82474-1 – modular and open architecture



The dual logo standard includes:

1. the business information (requester, supplier, product ID…) as the foundation of the architecture.
2. Five material declaration types: Compliance, Composition, Material Classes, Process Chemicals and Queries
3. Modular approach that enables integration of sector specific features and other types of material declaration
4. Reference lists formats and requirements
5. Build a data exchange format that supports a variety of reference data
6. Specifies IEC 82474 webservice methods and details the applications interaction

Reference lists

Format and requirements for industry sectors to create references lists so that the information can be easily exchanged from one company to another for

- Declarable substances list (DSL) (incl. DSG substance list)
- Material class list (MCL)
- Query list (QL)

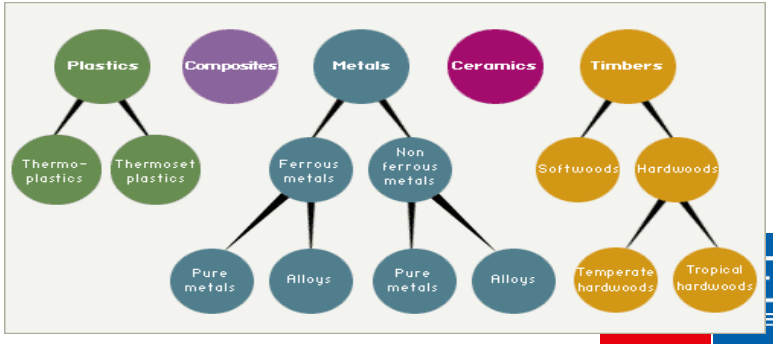
General requirements for other types of lists such as

- Product class list (PCL)
- Exemption list (EL)
- Application list (AL)
- Use descriptor list (UDL)

Cross-Sector Material Class List (MCL)

The ISO/IEC 82474-1 standard (Clause 7) specifies the creation of a cross-sector harmonized material class list.

The details of the list will be created by the SDB Team 82474.



ISO/IEC 82474 – Data exchange webservices

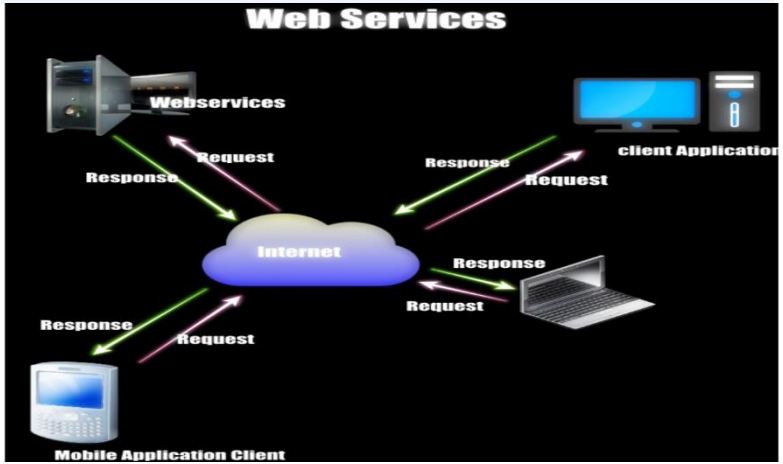
ISO/IEC 82474 specifies webservices for system-to-system data exchange:

- optional to use.
- when used, they utilize XML, JSON, or both.

ISO/IEC 82474 webservices:

- ISO/IEC 82474 authentication service,
- ISO/IEC 82474 upload and download service,
- ISO/IEC 82474 declaration service,
- ISO/IEC 82474 regulation service,
- ISO/IEC 82474 other requirements service.

The SDB 82474 Team may develop additional webservices as necessary to meet emerging requirements.



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3. Introduction to IEC-ISO 82474-1 process chemical declaration

by

Mr. Josef Denzel (session 1)

Mr. Richard Shanks (session 2)

What are process chemicals?

Process Chemicals are substances used in the product manufacturing or maintenance processes, but they often volatilize, react or transform into other compounds during the process and are not present in the final product.
They include gases, alcohols, solvents, acids/alkyls, polymerization catalysts, etc. (approximately 720-730 types)

Process chemicals can be monomers,
a process solution mixture,
or be part of a formulation used
in a manufacturing process

Photograph shows open drums containing chromium trioxide flakes

What drives a process chemical declaration?

Several regulatory and government regulations globally require reporting of use of chemicals for the manufacture, maintenance and overhaul/repair of products that require declarations within a supply chain. Examples:

- EU REACH Annex XIV,
- European Sustainable Product Regulation (ESPR)
- AIA-NAS 411 Hazardous Material Management
- Korea REACH (proposed)

Obsolescence risk due to regulations on sub-tier processes

- Industries with safety certification requirements require long lead times for testing and incorporation of alternatives (years, not months)

Information for global regulatory advocacy

- OEM's and Industry Associations need supply chain use data for effective advocacy

Process chemical declarations

- Are distinct from a composition declaration or a declaration for compliance and are *optional* in IEC-ISO 82474. Not all industries, not all end users, will require the use of a process chemical declaration
- Defer to composition declarations if a substance, used in a process, remains on products above a specified declarable threshold
- Are reported against the contracted product – a part or product part (sub-assembly)
- Will only be used when required by downstream customers as part of business-to-business contractual requirements. Contracts may be for manufacture, maintenance or overhaul/repair of a product (product life cycle stage)

Example - EU REACH Regulation Annex XIV (Chromium Trioxide)

Chromium Trioxide (CrO_3), aka Chromium (VI) oxide, is used in many manufacturing processes throughout a complex supply chain, globally, potentially subject to specific local regulations and restrictions.

CrO_3 , a hexavalent chromium compound, is a substance of very high concern (SVHC) listed in Annex XIV (ban of substance use) with sunset date - Sept. 2017:

Cannot be used or imported without authorisation and associated monitoring/reporting

CrO_3 does not remain on final processed part/article, so it will not be included in a composition declaration:

No one in the upstream supply chain receives indications of any potential delivery or obsolescence risks for the concerned parts/articles

Photograph shows parts after surface treatment.

Safety Data sheet of CrO_3 formulation

Revision No.: 004.1

1. PRODUCT AND COMPANY IDENTIFICATION

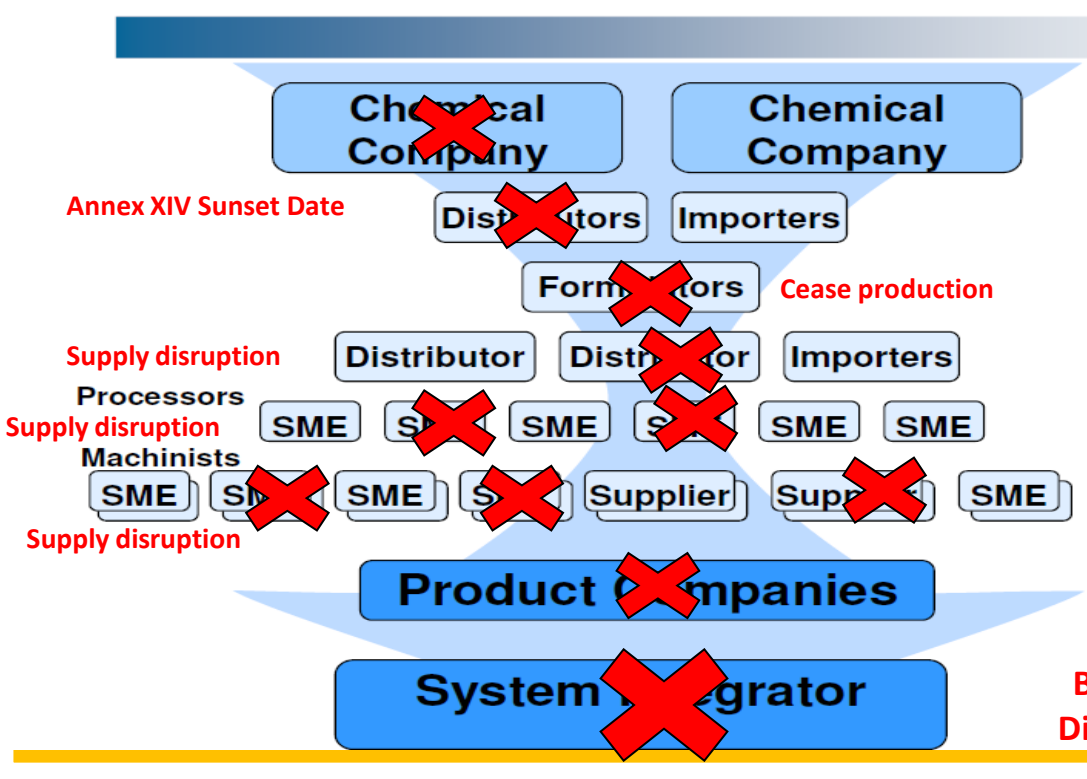
Product name: ALODINE 1200S **IDH number:** 592728
Product type: Conversion coating

3. COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous components	CAS-No.	%
Chromium(VI) oxide	1333-82-0	30 - 60
K-fluoroborate	14075-53-7	10 - 30
Tripotassium hexacyanoferrate	13746-66-2	10 - 30
sodium fluoride	7681-49-4	5 - 10
Dipotassium hexafluorozirconate	16923-95-8	5 - 10

Example - EU REACH Regulation Annex XIV (Chromium Trioxide)

Supply chain impacts : Disruption risks



Long/Complex Supply Chains, 8+ layers

No relationship between ends of chain

Low understanding in mid-Chain SMEs

CBI and Export Control Barriers

Business Disruption

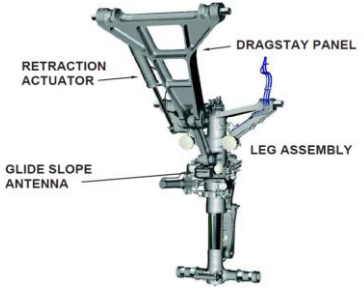
Example: Chromium trioxide uses in aircraft manufacture

Use Description
Surface Treatment of Metal Parts

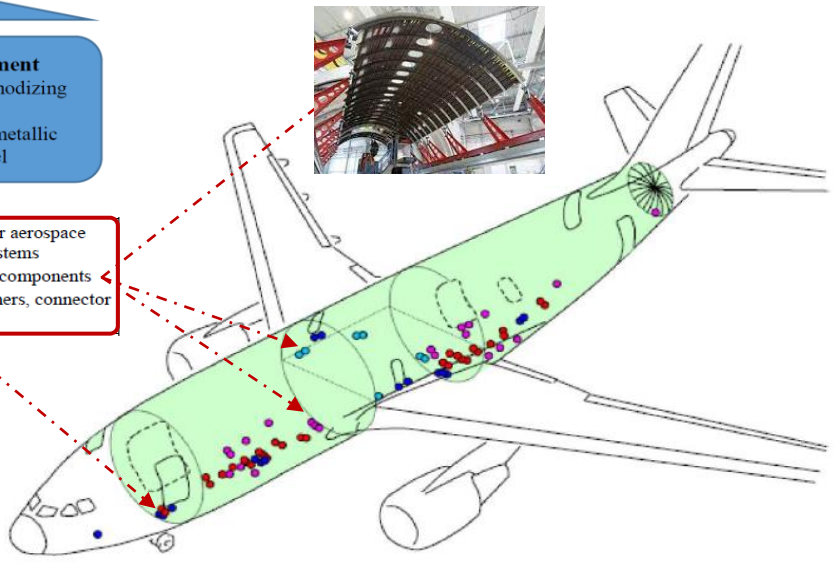
Pre-treatment	Treatment	Post-treatment
• Cleaning • Pickling/Etching • Deoxidising • Stripping	• Conversion Coating • Anodizing	• Sealing after Anodizing • Rinsing • Passivation of metallic coatings on steel

Surface Treatment Processes steps where chromium trioxides might be involved

Chromic acid anodising (CAA)	Bath Brush	*Electrolytic oxidation process in which the surface of a metal, when anodic, is converted to an oxide having desirable protective or other functional properties.*	– Structural parts for aerospace equipment and systems – Metallic airframe components – Small parts: fasteners, connector shells



Nose landing gear equipment for aircraft



Clips
Stringer / Frames
Rivets / Rivet holes
Skin panels

What is / isn't in a process chemical declaration?

What it includes:

- Declarations to a DSL
- Process chemical
- Intended use substance
- Product using the process chemical
- Product life cycle stage
- Optional: Process name, formulation or material ID

What is excluded:

- Reporting thresholds
- Intermediate substance
- Residual / impurities / trace substance
- Substance in product data
- Chemical not used for product processes (e.g. facility maintenance)

Declarable substance lists

Process chemical declarations may use the same or unique business-specific declarable substance lists as composition declarations

- e.g. the EU REACH Candidate List and the IEC-62474 DSL include **Boric Acid** – commonly used in plating baths

Because the substance used do not remain with the product, any threshold specified in a DSL is not used.

The criteria for inclusion is that a substance is intentionally used (not a residual, impurity or a trace substance).

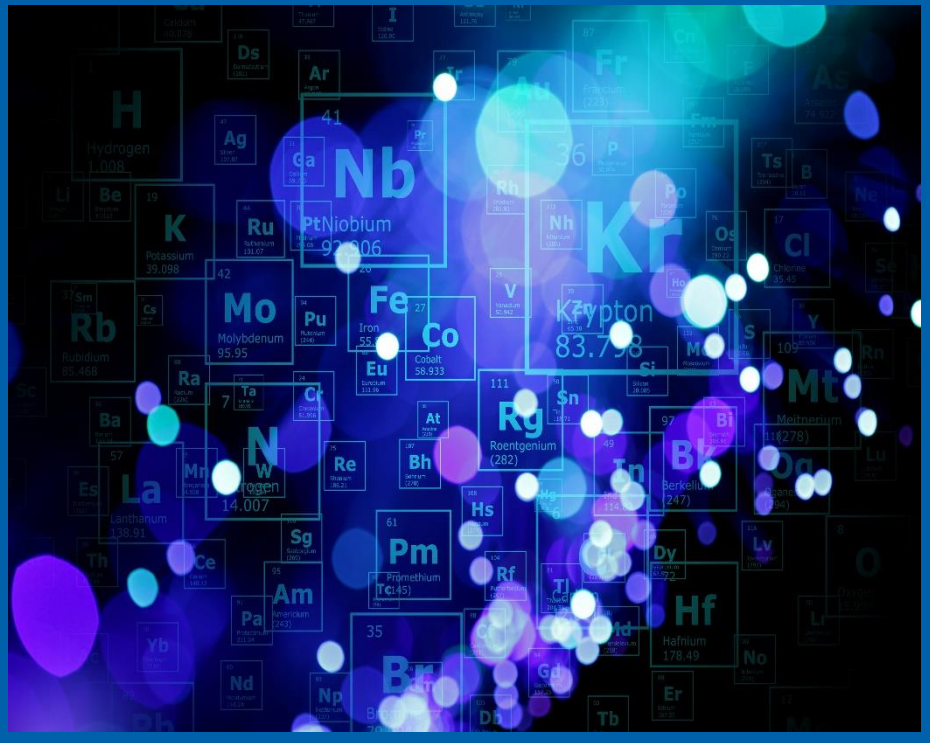
3.7 Other considerations for Process Chemical Declaration

- **Product Life Cycle Stage** is the particular use level of the substance that is being contracted and is of concern for the downstream customer e.g. manufacturing, maintenance or repair. End of life product stages are not generally contracted, so any process chemical used is not likely going to require a process chemical declaration.
- **Proprietary uses** of substances in processes are common. A process chemical declaration requires declaration of DSL substances. However, if agreed by the contracting parties in the B2B exchange (e.g., non-disclosure agreement), a generic confidential business information designation may be used.
- **"Full Process Chemical Disclosure"** Because all process chemical declarations will be based on an identified DSL, this concept is not relevant or required.

Q&A Session

Attendees are invited to place their questions and comments in the CHAT or otherwise use raise your hand function if you wish to speak

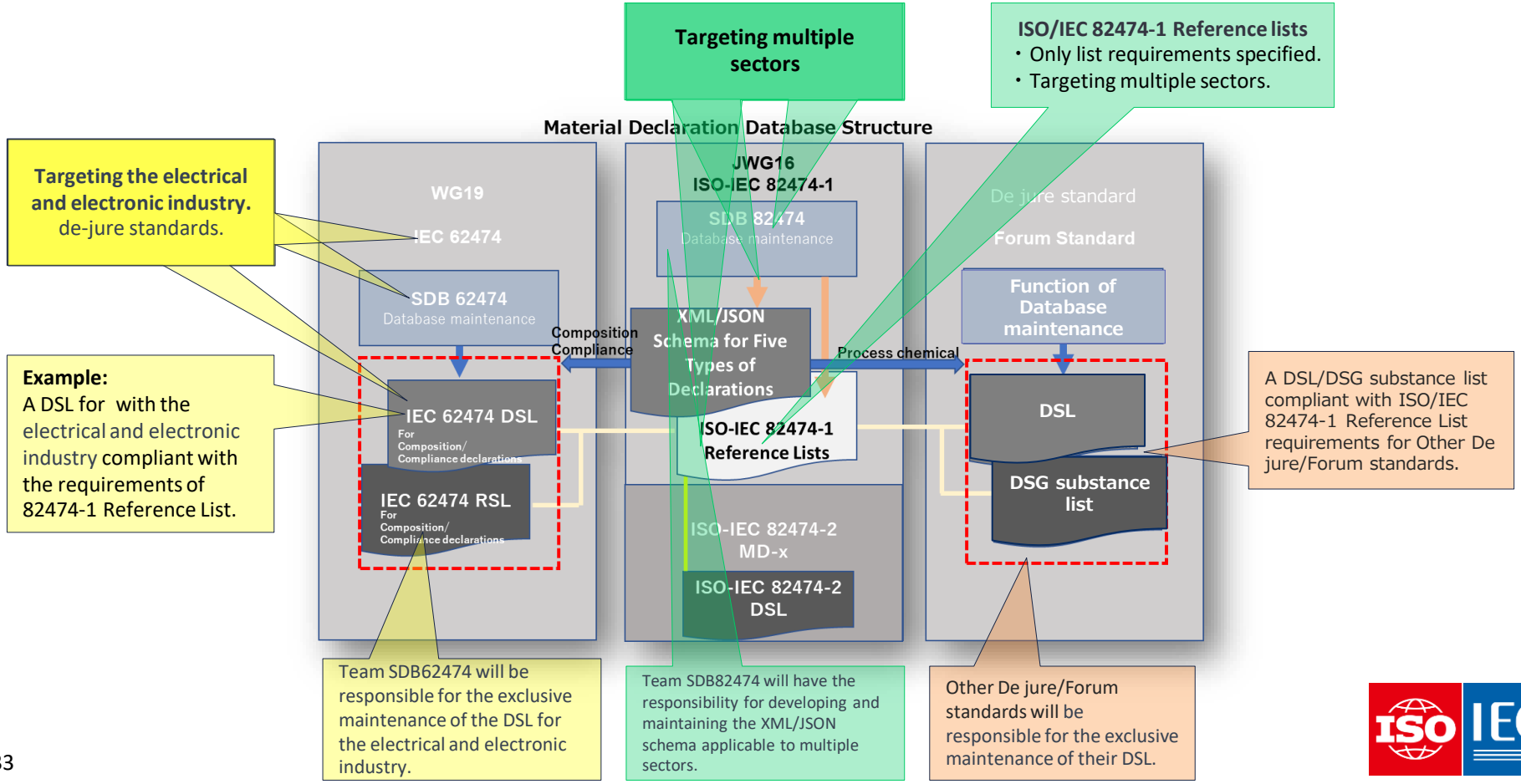
Thank you for joining this webinar



Koshi Kamigaki and Solange Blaszkowski (JWG16 co-conveners)

Session 2

Date: 27 September 2023

Time: 15.00 – 16.15 UTC

Comparison of 82474 vs. 62474, including SDBs