



#101

Material Regulation Application Details & Comparisons

Practical view of the regulations

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Material Declaration Training

100 Series:
Material
Regulations

You
Are
Here

200 Series:
Reporting
Parts

300 Series:
Project
Management

Regulation Overviews

RoHS

REACH

Conflict Minerals

CA Prop 65

Canada DSL

Workflow & Examples

Reporting Options

Report Training & Templates

Supplier Data Requirement

Letter Templates

Supporting Details

Assessment

Planning

Execution

Simplified Reporting

Advanced Techniques

Additional Resources

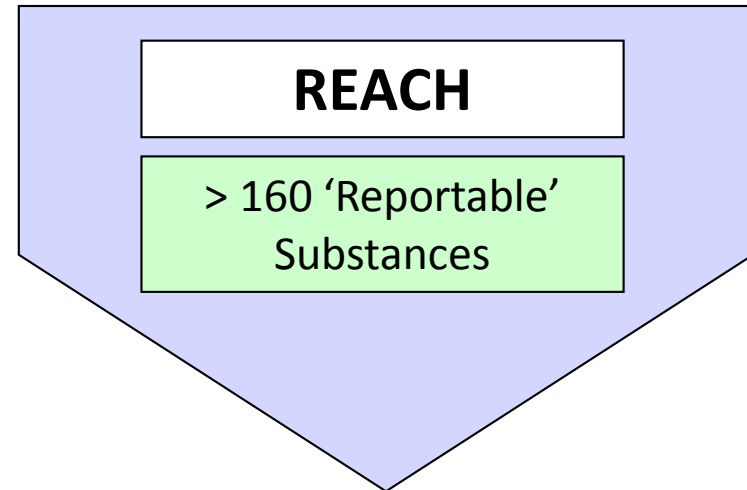
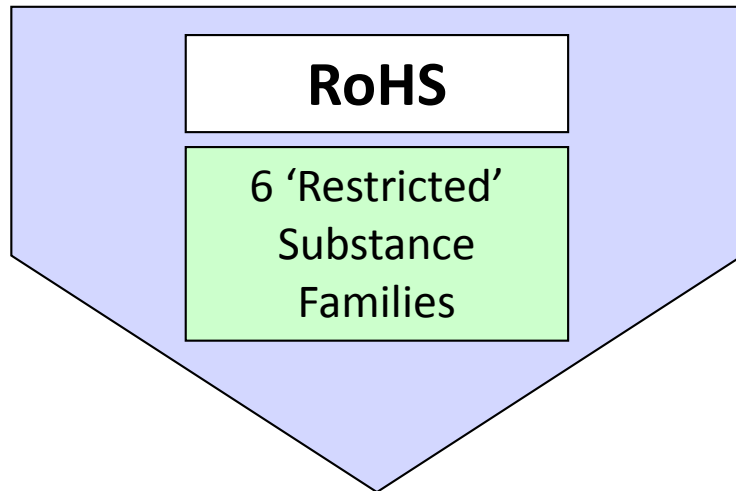
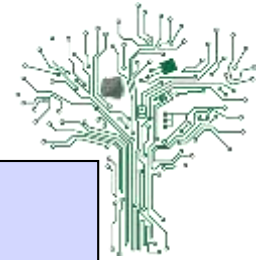
Training materials may be found on the web page:

<http://rohsready.org/training.html>

Roster of 100 Training

- **Regulation Summary Information ('100 Series')**
- #100 - Best of Material Regulation Training Slide Decks - Summaries of RoHS, REACH, Canada DSL, Proposition 65, Conflict Minerals
- #101 - Regulation Details and Comparisons - Clarifies points contained in #100 - Best of
Regulations and differences between the regulation implementation

RoHS & REACH Comparison



**RoHS Substance
Concentration =**

$$\frac{\text{weight of substance}}{\text{weight of homogeneous material}}$$

**REACH Substance
Concentration =**

$$\frac{\text{weight of substance}}{\text{weight of total part}}$$

Basis of concentration is different!

*Where 'part' = top level part or assembly provided to customer (aka 'Article')

RoHS and REACH Definition 'Visual' Comparison

RoHS Example

$$\text{Concentration} = \frac{\text{Weight of Substance}}{\text{Weight of Homogeneous Material}}$$

Reference - BoM branch w/ levels of part

Supplier Part

Sub-Assembly 1

Part 1

Piece 1

Homogeneous Material 1

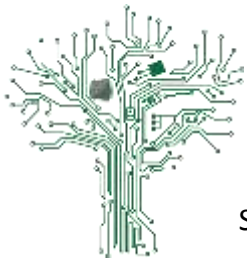
Substance 1
Substance 2
Substance 3

Homogeneous Material 2

Substance 4
Substance 5
Substance 6
Substance 7

REACH Example

$$\text{Concentration} = \frac{\text{Weight of Substance}}{\text{Weight of Part}}$$



See #213 for units conversion guide for concentrations



RoHS Substance Thresholds

6 RoHS Substance families

Limit Thresholds*

Cadmium (Cd) / Cadmium Compounds**

0.01% (100 ppm)

Lead (Pb) / Lead compounds**

0.1% (1000 ppm)

Mercury (Hg) / Mercury Compounds**

0.1% (1000 ppm)

Hexavalent Chromium (Cr-VI)**

0.1% (1000 ppm)

Polybrominated biphenyls (PBB)

0.1% (1000 ppm)

Polybrominated diphenyl ether (PBDE)

0.1% (1000 ppm)

* Limit is based on amount of RoHS Substance(s) in any homogeneous material

** All forms of Cd/Pb/Hg/Cr-VI (elemental and compounds) present in the material must be considered in calculating total substance concentration

RoHS Exemptions



For current RoHS Exemption list, please see:

[IPC-1752A Appendix B](#)

- Current list per RoHS regulation
- Please note expiration dates where they exist
- Please note exemption application conditions*

*Exemptions that are use related are NOT able to be utilized by the supplier without specific knowledge that all parts will be able to use the exemption. For example per RoHS 2011/65/EU Annex IV Item 1, 'Lead, cadmium and mercury in detectors for ionizing radiation'

Proper use of this exemption may require assessment by the system design owner / Customer to confirm the application of the part / materials permitted in the Exemption. In many cases the proper action is to not use the exemption and allow the customer to apply it as is appropriate for it's actual use.

Material Declarations - Applicability



A **Material Declaration (MD)** for RoHS, REACH and others is required for any part that has physical material. Please see #212 for further details.

Conditions where an MD not applicable:

- 1) Part number is **purely a software download or license**, with no physical media or documentation delivered to the customer.
- 2) Part number is **purely a provided service**, with no material added or installed in the product or left at end user location.
- 3) Part is **no longer provided** to customer, **obsolete**, or **replaced** by an alternate / updated part
- 4) Part is now **only a product service part** and the customers' product was placed on market before July 2014 (not currently in development)– RoHS compliance not required by law, but REACH MD still required.

If any of these conditions applies to part(s) in the customers' request, we recommend you e-mail the customer stating the applicable condition for review and closure.



Appendix – Glossary

1. **FMD – Full Material Declaration & FSD – Full Substance Disclosure** - Both are MDs, giving all details of all of substances, in a part.
2. **Homogeneous material** - A material of uniform composition throughout that can not be mechanically disjointed into different materials, meaning that the materials can not, in principle, be separated by mechanical actions such as unscrewing, cutting, crushing, grinding and abrasive processes. E.g. individual plastics, ceramics, glass, metals, alloys, paper, board, resins and coatings.
3. **IPC 1752 A** – Standard form for Material Declaration reporting that facilitates computer to computer exchange. Excel formatted user interfaces enable humans to manually generate documents in this format.
4. **MD – Material Declaration** - Supplier report of material and substances for a part, including those from sub-tier supply chain.
5. **SDoC – Supplier Declaration of Conformance** - Simple MD without substance detail.
6. **Substance** - A chemical element and its compounds in the natural state or obtained by any manufacturing process, including any additive necessary to preserve its stability and any impurity deriving from the process used, but excluding any solvent which may be separated without affecting the stability of the substance or changing its composition. E.g. Silicon, Silver, Lead, Iron, polymers, Trivalent Chromium
7. **WEEE – Waste Electrical and Electronic Equipment Directive** - Regulation concerning collection, recycling and recovery for all types of electrical goods