Practical example – material declaration

When the ZVEI published its guideline on “Material Declarations Within the Supply Chain”, the association’s working groups quickly realized that examples would be very helpful and make it easier to understand.

The communication focus group responded to this. The practical examples are deliberately not referred to as best practice, because this depends on underlying sector, company, and supplier-specific conditions, i.e. the existing or usual data structure, and the extent to which consumers or major customers require information.

In the following examples, a component is described using the various types of declaration referred to in the guideline. Another interesting thing is the way the different information content is presented. Regardless of this, all the various documents meet the legal requirements.

Download the ZVEI guideline here:

http://www.zvei.org/en/association/publications/Pages/Material-Declarations-Within-the-Supply-Chain.aspx

Practical example – material declaration

A plug-in connector is used to show the different levels of detail and the relevant depth of information for the various declaration methods:

- Supplier declaration
- Material declaration (MD)
- Full material declaration (FMD)

For the example, the following substances were included in the declaration for a plug-in connector.

1. Lead (RoHS, ELV, etc.)
   In the connector pins' tinning material (1.50 x 56.44 pin)

2. Beryllium (REACH – RMOA substance evaluation process, etc.)
   In the connector pins' tinning material (1.50 x 23.80 pin)

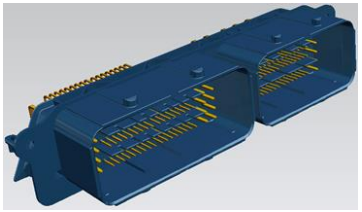
3. Alpha-hexabromocyclododecane (HBCDD) (REACH Annex XIV, etc.)
   In the alignment plate 2 material

Practical example – material declaration

Explanation of terminology used below

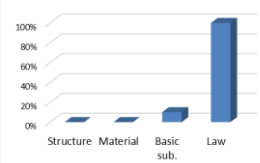
- **Structural elements in material database**
  - "Part"
    Housing, connector pin, etc.
  - "Material"
    PA66-GF50, etc.
  - "Basic substance"
    Lead, tin, copper, etc.
- **Bar chart**
  - Law: Shows to what extent the document meets the legal requirements to which it relates.
- **Details**
  - Evaluation system
    - X ➔ Full description with all details
    - O ➔ Reduced description, e.g. the connector pin is listed as a part but there is no distinction between model types (pin cross-sections, lengths)
    - \- ➔ No information
  - Structure
    Depiction of the individual parts and materials listed in the product parts lists based on the structural elements of the material database used
- **Type (sub-component)**
  List of sub-components such as pin form, housing, etc. and the quantity shown in the relevant declaration stage. In the example used, for instance, there are 12 different pin forms based on their geometrical dimensions (cross-section, length)
- **Database**
  - Number of structural elements shown (part, material, basic substance) in the database for the relevant declaration method
  - MD elements: All structural elements

RoHS supplier declaration



- RoHS supplier declaration
- Only includes information about substances in the legislation referred to
- 2 and 3 are not regulated under RoHS.

		Material declaration based on a substance list
Details	Type (sub-component)	-
	Quantity	-
	Structure	-
	Material	-
	Basic substance	o
Type (sub-component)	Pin forms	-
	Housing	-
	Applicator	-
	Sealing	-
Database	MD elements	-
	Parts	-
	Material	-
	Basic substance	1



RoHS declaration (2011/65/EU *)

Partnumber *	234 xyz
Partname	ZVEI-Muster
Revision number of the product	00
Total weight (g)	139,3
Release of Report *	06.04.2016
RoHS evaluation *	Does not fulfill the substance requirements

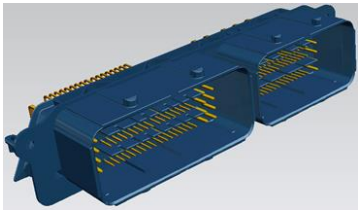
* Necessary information

1 →

Contained regulated substances	CAS number	Concentration	Unit	Homogeneous Material	Exemption *
Lead/Lead Compounds		10	%	SnPb10	-

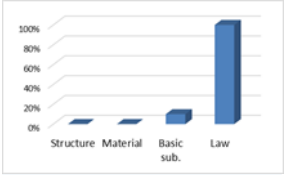
RoHS Exemptions
-

ELV supplier declaration



- ELV supplier declaration
- Only includes information about substances in the legislation referred to
- 2 and 3 are not regulated under ELV.

		Material declaration based on a substance list
Details	Type (sub-component)	-
	Quantity	-
	Structure	-
	Material	-
	Basic substance	o
Type (sub-component)	Pin forms	-
	Housing	-
	Applicator	-
	Sealing	-
Database	MD elements	-
	Parts	-
	Material	-
	Basic substance	1



ELV declaration (2000/53/EU *)

Partnumber *	234 xyz
Partname	ZVEI-Muster
Revision number of the product	00
Total weight (g)	139,3
Release of Report *	06.04.2016
ELV evaluation *	Fulfill the substance requirements using the ELV-exemption 8a

* Necessary information

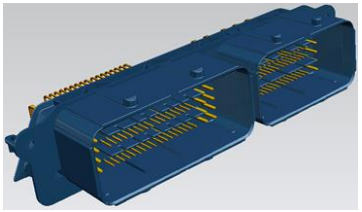
Contained regulated substances	CAS number	Concentration	Unit	Homogeneous Material	Exemption *
Lead/Lead Compounds		10	%	SnPb10	8a

1 →

This product fulfill the substance requirements of the ELV with reference to the following exemptions:

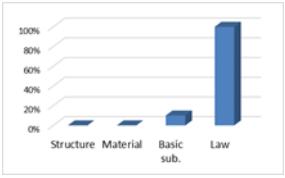
ELV Exemption
8a: Lead in solders to attach electrical and electronic components to electronic circuit boards and lead in finishes on terminations of components other than electrolyte aluminum capacitors, on component pins and on electronic circuit boards

REACH supplier declaration



- REACH supplier declaration
- Only includes information about substances in the legislation referred to
- 1 and 2 are not regulated under REACH.

		Material declaration based on a substance list
Details	Type (sub-component)	-
	Quantity	-
	Structure	-
	Material	-
	Basic substance	o
Type (sub-component)	Pin forms	-
	Housing	-
	Applicator	-
	Sealing	-
Database	MD elements	-
	Parts	-
	Material	-
	Basic substance	1



REACH declaration (Regulation (EU) No. 1907/2006 *)

Partnumber *	234 xyz
Partname	ZVEI-Muster
Revision number of the product	00
Total weight (g)	139,3
Date of Report *	06.04.2016

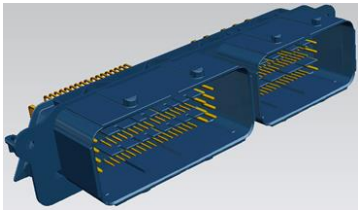
* Mandatory information

SVHC-Information according to REACH Article 33 (Substances of very high concern)
http://echa.europa.eu/de/candidate-list-table

Substance name *	**CAS / EC number**	**Information on safe use, if applicable ***
Cyclododecane, 1,2,5,6,9,10-hexabromo-, (1R,2S,5R,6R,9R,10S)-rel-	134237-51-7	

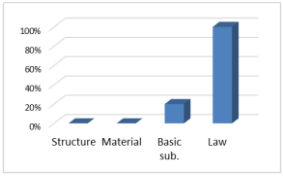
3 →

Material declaration (MD) based on substance list



- **Material declaration based on a substance list taking into account the relevant thresholds**
  - IEC 62474
  - e.g. Global Automotive Declarable Substance List (GADSL)
- **Only includes information about substances in the relevant substance list**

		Material declaration based on a substance list
Details	Type (sub-component)	-
	Quantity	-
	Structure	-
	Material	-
	Basic substance	o
Type (sub-component)	Pin forms	-
	Housing	-
	Applicator	-
	Sealing	-
Database	MD elements	-
	Parts	-
	Material	-
	Basic substance	7 / 3



A) Basic substances classified based on IEC 62474

2 is not part of the substance list

Info on legal exceptions?

Description	CAS No.	GADSL SVHC	Threshold	Level
Nickel	7440-02-0	D	Intentionally added	Product
Alpha-hexabromocyclododecane	134237-51-7	DP / SVHC	Intentionally added or 0.1 mass% of article	Article
Lead	7439-92-1	DP	0.1 mass% of total Pb in homogeneous material	Material

3 → Nickel

1 → Lead

B) Basic substances classified based on GADSL/REACH

Info on legal exceptions?

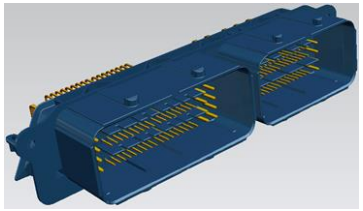
Description	CAS No.	GADSL SVHC	Threshold	Level
Nickel	7440-02-0	D	Intentionally added	Product
Alpha-hexabromocyclododecane	134237-51-7	DP / SVHC	Intentionally added or 0.1 mass% of article	Article
Lead	7439-92-1	DP	0.1 mass% of total Pb in homogeneous material	Material
Beryllium	7440-41-7	D		
Copper	7440-50-8	D		
Silver	7440-22-4	D		
Cobalt	7440-48-4	D		

3 → Nickel

1 → Lead

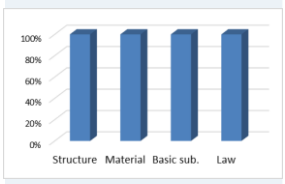
2 → Beryllium, Copper, Silver, Cobalt

FMD – full material declaration

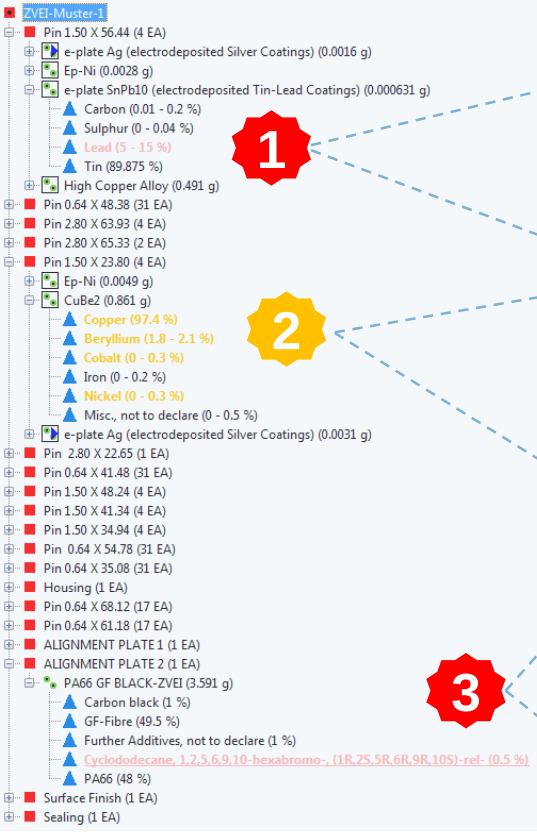


- **Inclusion of all sub-components according to parts list**
- **Details of material and composition**
- **Evaluation and labeling of legally relevant substances in line with the database and parts list used, e.g. automotive sector or consumer**

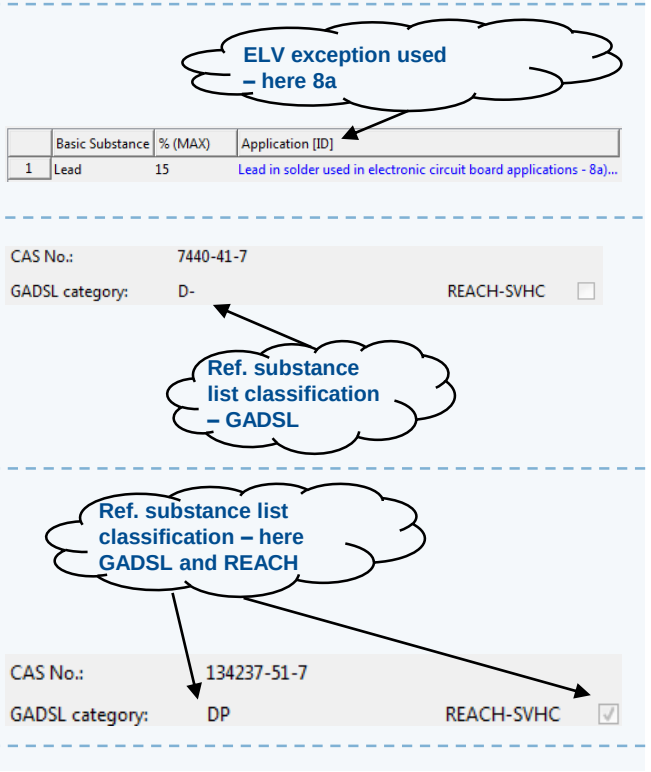
		FMD Full Material Declaration
Details	Type (sub-component)	x
	Quantity	x
	Structure	x
	Material	x
	Basic substance	x
Type (sub-component)	Pin forms	12
	Housing	1
	Applicator	2
	Sealing	1
Databases	MD elements	291
	Parts	20
	Material	59
	Basic substance	212



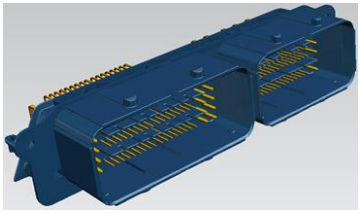
Material data



Detailed info on substance evaluation
(e.g. ELV, REACH, GADSL)

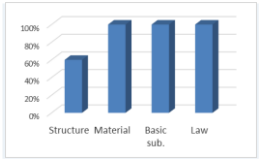


FMD – full material declaration
Grouping of identical sub-components



- Comparable <u>sub-components</u> according to the parts list are grouped together, e.g. identical pin cross-section. Some of the information about the material assignment to the sub-component is lost here.
- Details of material and composition
- Evaluation and labeling of legally relevant substances in line with the database and parts list used, e.g. automotive sector or consumer

		FMD Grouping of identical sub-components
Details	Type (sub-component)	o
	Quantity	o
	Structure	o
	Material	x
	Basic substance	x
Type (sub-component)	Pin forms	3
	Housing	1
	Applicator	1
	Sealing	1
Databases	MD elements	102
	Parts	8
	Material	19
	Basic substance	75



Material data

- ZVEI-Muster-2
  - Housing (1 EA)
    - PA66 GF BLACK (73.085 g)
  - Surface Finish (1 EA)
  - Sealing (1 EA)
  - Flatbill - Pin 1,5 (1 EA) !!
    - CuBe2 (3.444 g) — 2
      - Copper (97.4 %)
      - Beryllium (1.8 - 2.1 %)
      - Cobalt (0 - 0.3 %)
      - Iron (0 - 0.2 %)
      - Nickel (0 - 0.3 %)
      - Misc., not to declare (0 - 0.5 %)
    - e-plate Sn (electrodeposited Tin Coatings, bright and matt) (0.006964 g)
    - e-plate Ag (electrodeposited Silver Coatings) (0.0364 g)
    - Ep-Ni (0.054 g)
    - e-plate SnPb10 (electrodeposited Tin-Lead Coatings) (0.002524 g) — 1
      - Carbon (0.01 - 0.2 %)
      - Sulphur (0 - 0.04 %)
      - Lead (5 - 15 %)
      - Tin (89.875 %)
    - High Copper Alloy (6.356 g)
  - Flatbill - Pin 0,64 (1 EA)
  - Flatbill - Pin 2,8 (1 EA)
  - Flatbill - Alignment Plate (1 EA) !!
    - PA66 GF BLACK (4.698 g)
    - PA66 GF BLACK-ZVEI (3.591 g) — 3
      - Carbon black (1 %)
      - GF-Fibre (49.5 %)
      - Further Additives, not to declare (1 %)
      - Cyclododecane, 1,2,5,6,9,10-hexabromo-, (1R,2S,5R,6R,9R,10S)-rel- (0.5 %)
      - PA66 (48 %)

Detailed info on substance evaluation
(e.g. ELV, REACH, GADSL)

Ref. substance list classification – GADSL

CAS No.:	7440-41-7	
GADSL category:	D-	REACH-SVHC ☐

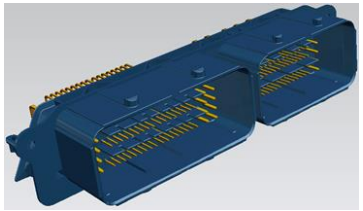
ELV exception used here 8a

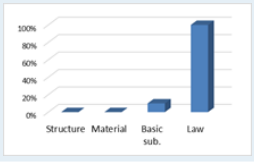
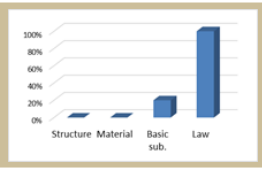
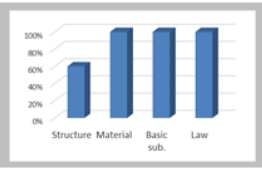
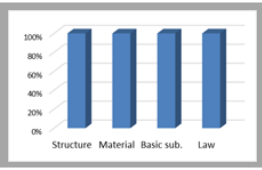
	Basic Substance	% (MAX)	Application [ID]
1	Lead	15	Lead in solder used in electronic circuit board applications - 8a)...

Ref. substance list classification – here GADSL and REACH

CAS No.:	134237-51-7	
GADSL category:	DP	REACH-SVHC ☑

Material declaration – overview



		Supplier declaration	Material declaration based on a substance list	FMD Grouping of identical sub-components	FMD Every item in parts list recorded
Details	Type (sub-component)	-	-	o	x
	Quantity	-	-	o	x
	Structure	-	-	o	x
	Material	-	-	x	x
	Basic substance	o	o	x	x
Type (sub-component)	Pin form	-	-	3	12
	Housing	-	-	1	1
	Applicator	-	-	1	2
	Sealing	-	-	1	1
Database	MD elements	-	-	102	291
	Parts	-	-	8	20
	Substances	-	-	19	59
	Basic substances	2 / 1	7 / 3	75	212
					

Glossary

RoHS	**R**estriction **o**f **H**azardous **S**ubstances	EU Directive on restricting the use of certain hazardous substances in electrical and electronic equipment (consumer sector)
ELV	**E**nd of **L**ife **V**ehicles (Directive / 2000/53/EC)	EU Directive on recycling end-of-life vehicles and definition of banned substances (Pb, Hg, Cr6+, Cd)
REACH	**R**egistration **E**valuation **A**uthorization of **C**hemicals	EU regulation on the registration, evaluation, authorization, and restriction of chemicals
SVHC	**S**ubstance of **V**ery **H**igh **C**oncern	Designation for environmentally relevant substances as defined in REACH Annex XIV. Being classified as an SVHC can make the availability of preparations or materials based on such substances more difficult or interrupt it ➔ supply chain (supplier halts e.g. production of substance)
GADSL	**G**lobal **A**utomotive **D**eclarable **S**ubstance **L**ist	GADSL is a list of substances that may be used in the automotive industry Possible classifications: • D Declaration required • P Banned taking into account additional criteria • D / P Declaration required / banned with use of exceptions, e.g. ELV 8a
IEC 62474	Material declaration for products from and for the electrical engineering industry	Specifies the process, content, and form when preparing material declarations for products of companies that operate in or supply the electrical engineering and electronics industry.
	Declaration obligation	Legally regulated substance, e.g. ELV, RoHS, etc.
	Declaration interest	The substance is, for example, currently being examined with a view to changing the legal classification
RMOA	Risk Management Option Analysis	REACH method for evaluating substances