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# C&K Environmental Requirements

**APPROVALS:**

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## 1 REVISIONS

Revision	Date of modification	Comments
-	January 26 <sup>th</sup> 2015	Creation
A	December 8 <sup>th</sup> 2021	Update

## 2 SCOPE

### 2.1 Objectives

This C&K Engineering Specification (PS-GREEN-001) defines baseline environmental requirements for all C&K products and for all deliverables supplied to C&K. It specifies prohibitions and restrictions on certain substances and materials used in products and manufacturing processes in order to fulfil the following targets:

- To comply with legal and regulatory requirements
- To prevent the banned substances from being used and supplied to C&K
- To minimize the environmental impacts of our products and processes

The document will be updated as necessary to reflect new and/or additional environmental regulatory requirements regarding content restrictions

### 2.2 Supplier applicability

The supplier shall ensure that all deliverables supplied to C&K fully comply with the requirements of this document, it is the responsibility of all suppliers to assure compliance with the reporting requirements of PS-GREEN-001 for their own operations, for their subcontracted operations and for materials they procure for the manufacture of deliverables to C&K.

In the event of conflicting threshold limits amongst between PS-GREEN-001 and official regulations, the lowest limit value shall be used.



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Any deviation from the requirements of PS-GREEN-001 must have prior written approval from C&K components' procurement representative.

In addition to PS-GREEN compliance the Supplier shall upon request provide information on the material composition. The information provided shall include details regarding the substance name, CAS number and amount of substance present, by weight and percent weight in each homogeneous material.

Any change in material content of an approved part has to be reported in written form to C&K Components, indicating new limit level of material concerned, the reason for change and the date of change.

### **2.3 Main regulations**

**RoHS** (EU Directive 2002/95/EC & EU Directive 2011/65/EU-ROHS recast) – The Restriction on Hazardous Substances (“RoHS”) Directive restricts the use of certain substances (Cd, CrVI, Pb, Hg, PBB, PBDE) in electrical and electronic equipment. From 1 July 2006 a Producer (as defined in the Regulations) may not place on the market new electronic equipment which contains any regulated material substance under RoHS in amounts exceeding the established maximum concentration value. On June 4 2015, Directive 2011/65/EU (RoHS 2) was amended by Directive (EU) 2015/863 (RoHS 3) to add 4 new phthalates increasing the total number of restricted substances to 10.

#### **China RoHS**

Substances and limit values affected by the China RoHS which came into force on 1 March 2007 are identical with those in the EU RoHS2. But in contrast to the EU RoHS2, there is no exception to the rules. China RoHS 2 applied on July 1st 2016.

**Regulation on substances that deplete the ozone layer** (Directive 2002/95/EC) – This Regulation lays down rules on the production, import, export, placing on the market, use, recovery, recycling, reclamation and destruction of substances that deplete the ozone layer, on the reporting of information related to those substances and on the import, export, placing on the market and use of products and equipment containing or relying on those substances.

**REACH** (Regulation (EC) No 1907/2006 amending Directive 1999/45/EC) -- This Directive concerns the Registration, Evaluation, Authorization and Restriction of Chemicals (“REACH”). The purpose of REACH is to ensure a high level of protection of human health and the environment, including alternative methods for assessment of the hazards of substances. The list of SVHC's is updated on a regular basis under Article 33(1) of the REACH Regulation (EC) N0 1907/2006.

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Manufacturers and importers of articles (products) may be subject to reporting and / or registration requirements if any SVHCs exceeding 0.1% by weight are present in their products.

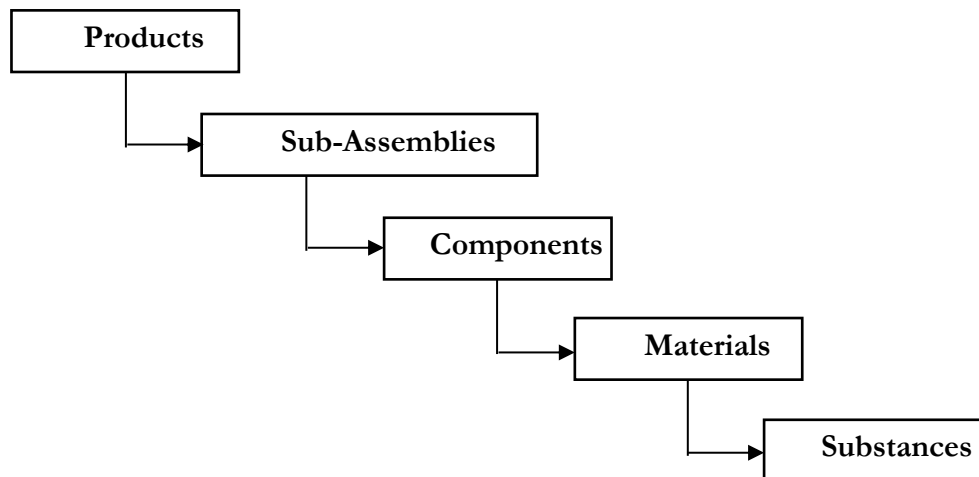
Annexe XIV: List of substances subject to authorisation

Article 67 - Annexe XVII: Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles. The substance restrictions are detailed in Annex XVII of the REACH Regulation.

### 3 DEFINITIONS

**Deliverable(s)** is any tangible item(s) delivered by or for a Supplier to C&K in accordance with a purchase contract or other agreement with C&K. Deliverables include, but are not limited to, components, materials, parts and products.

**Product contents:**



- ❖ **Products** are standing alone, final assemblies. Sub-assemblies and components may be products themselves, or they may be used in higher-level assemblies that are products.
- ❖ **Sub-assemblies** are assembled units that are combined with other components or sub-assemblies to create finished products.
- ❖ **Components** are parts of a sub-assembly or product that are fabricated from material(s) or purchased from suppliers that fabricate them from materials. Components may also result from the combination of other components, materials, substances and/or compounds. (Ex: Plated, lubricated terminals).



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❖ **Materials** are the items of which something is composed or can be made. Components may actually consist of several materials. A material may also be a coating that is applied during the construction of the product.

For example, in terminals plated with both a nickel and a tin layer, the base metal (copper alloy) and each plating layer is considered as homogeneous material and therefore shall be considered separately.

A material is made up of one or more substances (e.g., copper alloy is a material, which in turn is made up of a number of defined substances, copper, nickel, silver, etc.).

❖ **Substances** are chemical elements and their compounds as they occur in the natural state or as produced by industry.

Registry Numbers (RN) of the Chemical Abstracts System of the American Chemical Society ("CAS" numbers) and/or European Chemical ("EC" numbers) are attributed to all chemical elements and most of their compounds and should be used for their identification.

A collection of Substances that are chemically similar is a Substance group, for example lead compounds.

**Banned Substances** are **prohibited substances** where the maximum concentration value is 0 weight percent or 0 ppm. No detectable level of a banned substance is permitted in a homogeneous material.

**CAS** registry numbers are unique numerical identifiers for substances. Chemical Abstracts Service (CAS), a division of the American Chemical Society, assigns these identifiers to every chemical that has been described in the literature. The intention is to make database searches more convenient, as chemicals often have many names. Almost all molecule databases today allow searching by CAS number.

**Declarable substances:** For Substances that are not currently prohibited substances, there may still be a legal, industry, or customer requirement to report the weight percent or PPM level when it is above a threshold. These substances are classified as declarable substances, and are either included in legal requirements (for example, the REACH legislation), or may be included in future restrictions as prohibited substances.

**Full Material Disclosure (FMD)** contains the specific chemical substances that are intentionally used in the composition of the product or component. The FMD details the list of substances at the level of each homogeneous material.

**Homogeneous Materials** are materials that are of uniform composition throughout and that cannot be mechanically disjointed into different materials.

Examples of homogeneous materials are individual types of plastics, ceramics, glass, metals, alloys, resins and coatings. Mechanically disjointed means that the materials can, in principle, be separated by mechanical actions such as unscrewing, cutting, crushing, grinding, and abrasive processes.



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**Impurities or trace substances** are substances that exist in natural materials or substances generated in the process of producing a material.

**Intentionally-added substances** are substances that are deliberately used in the formulation or fabrication of a product, sub-assembly, component, or material to provide specific characteristics, appearance, or quality.

**Lead (Pb)-Free** is a good that does not contain lead (Pb) above the material limit specified by ROHS.

**Material Safety Data Sheet (MSDS)** is a form containing data regarding the properties of a particular substance and its safety information. The MSDS should enable users to take the necessary measures relating to protection of human health and safety at the workplace, and protection of the environment. MSDS have been made an integral part of the system of Regulation (EC) No 1907/2006 (REACH).

The MSDS provides a mechanism for transmitting appropriate safety information on substances and mixtures where:

- a substance or a mixture meets the criteria for classification as hazardous according to CLP regulation (Regulation (EC) No 1272/2008 on the classification, labelling and packaging of substances and mixtures) or
- a substance is persistent, bio-accumulative and toxic (PBT) or very persistent and very bio-accumulative (vPvB), according to the criteria given in Annex XIII of REACH; or
- a substance is included in the candidate list for eventual authorization according to Article 59 (1) of REACH for any other reasons

An important component of product stewardship and workplace safety, the MSDS is intended to provide workers and emergency personnel with procedures for handling or working with that substance in a safe manner and includes information such as physical data (melting point, boiling point, flash point, etc.), toxicity, health effects, first aid, reactivity, storage, disposal, protective equipment, and spill handling procedures.

**Material Declaration Sheet** may also be called Material Composition Declaration.

A material declaration sheet (**MDS**) is a detailed list of materials, including all homogeneous substances used in the product.

Here are the main rules:

1. Each material is declared with weight information
2. Substances are declared as a percent of the material
3. A maximum of 10% of the substances per material are allowed to be declared as “confidential”.
4. None of the substances that must be declared (according to REACH, SVHC, GADSL, RoHS and JIG) are allowed to be declared as confidential.



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The scope of the MDS is to identify whether the substances used for components and materials in C&K products meet the requirements defined herein as well as making risk assessments in case of further added regulated substances.

**PPM** means parts per million, unit of measurement for weight percentage. 1 PPM = 1 mg/kg = 0.0001 % by weight. The parts per million thresholds listed in this specification refer to the weight of the homogeneous material in a specific part, not the weight of the material in an entire system.

**Threshold level** is the concentration level, which defines the limit at or above which the presence of a substance in homogeneous materials in a product or subpart is not allowed.

## 4 SUPPLIER ENVIRONMENTAL MANAGEMENT SYSTEM

In order to produce environmentally friendly products, it is fundamental to control the whole process, from raw materials to product shipment.

The environmental management system shall include:

- Environmental policy
- Management Commitment
- Environmental Responsibilities & Authorities / Organization
- Measurement Analysis & Improvement Process: Non-conformity management
- Environmental Trainings
- Supplier Management

### 4.1 Management System Development

The supplier shall carry out the environmental management system planning in order to meet the requirements, as well as the environmental objectives.

### 4.2 Non-conformity Procedure

C&K requires that the suppliers have procedures in place for controlling products that do not comply with the product environmental quality requirements. In case of a non-conformity, the supplier shall inform immediately C&K, stating how to prevent a recurrence.

### 4.3 Training

The supplier shall ensure that their staff is fully aware of and is working in compliance with the appropriate environmental legislation. This shall be implemented by means of suitable training and, where appropriate, the use of documented procedures giving details of actions required for compliance with appropriate legislation and customer requirements.





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#### **4.4 Suppliers Management**

It is the duty of the supplier to manage their sub-suppliers and hence collect all necessary information through the whole supply chain in order to meet C&K environmental requirements.

## **5 ENVIRONMENTAL REQUIREMENTS**

### **5.1 Substances of Very High Concern (SVHC) in articles**

REACH Article 33 requires all suppliers to inform their customers if the article they supply contains any of the substances in the Candidate List at or above 0.1% weight by weight (w/w) concentration and report the name and CAS number of the SVHC candidate and the quantity on the Product Content Declaration for the deliverable.

The European Chemicals Agency will increase the number of substances on the Candidate List every six months. C&K Components requires its suppliers to stay abreast of all changes to the EU REACH Regulation and adapt their compliance systems accordingly.

The current candidate list of REACH SVHC as published by the European Chemicals Agency is located at: [Candidate List of substances of very high concern for Authorisation - ECHA \(europa.eu\)](https://echa.europa.eu/candidate-list-table)

### **5.2 SCIP**

SCIP is the database for information on Substances of Concern In articles as such or in complex objects (Products) established under the Waste Framework Directive (WFD).

Companies supplying articles containing substances of very high concern (SVHCs) on the Candidate List in a concentration above 0.1% weight by weight (w/w) on the EU market have to submit information on these articles to ECHA, as from 5 January 2021. The SCIP database ensures that the information on articles containing Candidate List substances is available throughout the whole lifecycle of products and materials, including at the waste stage. The information in the database is then made available to waste operators and consumers.

All requirements and responsibilities are explained in the [Requirements for SCIP notifications published by ECHA](#).

### **5.3 Restrictions of Certain Hazardous Substances (ROHS)**

The ROHS substance restrictions apply to every individual homogenous material in the part.

## Environmental Specification



If the Supplier determines that substances in below table are present above their respective specified thresholds, then the absolute weight in grams of the substance present in the deliverable shall be reported to C&K.

<b>Restrictions on RoHS Substances (Directive 2011/65/EU &amp; 2015/863)</b>	
<b>Chemical / Substance Category</b>	<b>Details of Restriction</b>
<b>Cadmium (Cd) / Cadmium Compounds</b>	Prohibited in concentration above 100ppm or 0.01% by weight in homogeneous materials. All cadmium use in plating or in a surface coating containing cadmium is prohibited.
<b>Hexavalent Chromium (Cr<sup>6+</sup>) / Hexavalent Chromium Compounds</b>	Prohibited in concentration above 1000ppm or 0,1% by weight in homogeneous materials.
<b>Lead (Pb) / Lead Compounds</b>	
<b>Mercury (Hg) / Mercury compounds</b>	
<b>Polybrominated Biphenyls (PBBs)</b>	
<b>Polybrominated Diphenyl ethers (PBDEs); also known as Polybrominated Biphenyl ethers (PBBEs)</b>	
<b>Bis(2-ethylhexyl)phthalate (DEHP)</b>	
<b>Butyl benzyl phthalate (BBP)</b>	
<b>Dibutyl phthalate (DBP)</b>	
<b>Diisobutyl phthalate (DIBP)</b>	

RoHS regulation exempts certain applications from the substance restrictions. The exemptions are temporary and reviewed at least every four years. The current list of exemptions is contained in Annex III to Directive 2011/65/EU. The European Commission has amended Annex III several times.

### 5.4 Banned substances in Product Packaging

The EU Directive on Packaging and Packaging Waste (94/62/EC) restricts the presence of certain heavy metals in packaging (Mercury, (Hg), Lead, (Pb), Chromium (Cr6+) and Cadmium (Cd). The supplier shall provide information and data to show the total of these metals does not exceed 100 ppm for the whole package.

REACH Article 33 requires all suppliers to inform their customers if the article they supply contains any of the substances in the Candidate List in concentrations > 0.1% w/w of the article.

Moreover C&K Components requires suppliers to declare the following restricted substances (REACH art 67) which can be present in packaging articles.



<b>Banned Substances in Product Packaging</b>		
<b>Substance</b>	<b>Details of Restriction</b>	<b>Reference</b>
<b>Cadmium, Mercury, Lead, Chromium VI</b>	For packaging, the sum of the concentrations of the listed substances on component level may not exceed 100 ppm.	94/62/EEC
<b>Arsenic compounds</b>	No content permitted	REACH article 67
<b>Formaldehyde</b>	No content permitted	REACH article 67
<b>Dimethyl Fumarate</b>	No content permitted	REACH article 67
<b>Polyvinyl chloride (PVC) and PVC copolymers</b>	No content permitted	Other legislation
<b>Substances of very high concern (SVHC substances of the “candidate list”)</b>	All SVHC substances with a weight-by –weight (w/w) concentration exceeding 0.1 must be avoided as far as possible and C&K must be informed accordingly	REACH regulation 1907/2006/EC

### **5.5 Conflict Minerals (Au, Ta, W & Sn)**

An area of current industry focus is mining of minerals in areas identified as conflict regions of the world that directly or indirectly finance or benefit armed groups. These conflict regions include the Democratic Republic of Congo (DRC) and Central Africa.

Metals that have been identified of interest from these regions include gold (Au) 7440-57-5, tantalum (Ta) 7440-25-7, tungsten (W) 7440-33-7 and tin (Sn) 7440-31-5. These metals that are mined in conflict areas are termed “Conflict Metals”.

As required by the Conflict Minerals provisions of the Dodd-Frank Wall Street Reform and Consumer Protection Act, HR 4173, Section 1502 (« Conflict Minerals Act ») signed into law on July 21st 2010, Suppliers must take all necessary and appropriate actions to ensure that they products do not contain “Conflict Metals”.

### **5.6 Extended minerals (Cobalt & Mica)**

The OECD defines conflict-affected and high-risk areas as areas that are identified by the presence of armed conflict, widespread violence, or other risks of harm to people.

In addition to the conflict minerals, the OECD add Cobalt and Mica in the ‘Due Diligence guidance for responsible mineral Supply Chains’. The Cobalt refiner and Mica processor must be recognized by the RMI (Responsible Minerals Initiative).

As required by the OECD, suppliers must take all necessary and appropriate actions to ensure that they products contain only Cobalt or Mica from refiner or processor recognized by RMI.



### 5.7 Halogen Free requirements

In certain markets the use of bromine (Br) and chlorine (Cl) must be limited.

All homogeneous materials within a component or product must meet the criteria in below Table in order to be classified as halogen-free.

C&K requires suppliers to declare if any substances listed in below table are present in an article at or above the threshold limit.

Halogen Free requirements	
Chemical / Substance Category	Details of Restriction
Bromine (Br)	Prohibited in concentration equal to or greater than 900 ppm by weight in substances and preparations.
Chlorine (Cl)	Prohibited in concentration equal to or greater than 900 ppm by weight in substances and preparations.
Bromine (Br) + Chlorine (Cl)	Addition of concentration of both substances must not exceed 1500 ppm.

### 5.8 PFOS/PFOA

Perfluorooctanoic acid (PFOA), its salts and PFOA-related substances have some specific properties and are used in a wide variety of application. High levels of exposure can cause reproductive problems.

On 20 June 2013, PFOA was included in the Candidate List of Substances of Very High Concern ('SVHC').

On 13 June 2017 Regulation (EU) 2017/1000, amending Annex XVII to Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the REACH as regards perfluorooctanoic acid (PFOA), its salts and PFOA-related substances, establish that PFOA (CAS No 335-67-1) and its salts shall not, from 4 July 2020, be used in the production of, or placed on the market in an article in a concentration equal to or above 25 ppb of PFOA including its salts or 1 000 ppb of one or a combination of PFOA-related substances.

This shall not apply to articles placed on the market before 4 July 2020.

Perfluorooctane sulfonic acid and its derivatives (PFOS) are regulated by Annex I of the Regulation (EU) 2019/1021. The manufacturing, placing on the market and use of PFOS listed in Annex I shall be prohibited if:

- in substances or in mixtures, the concentrations of PFOS is above 0,001 % by weight where it is present;
- in semi-finished products or articles, the concentration of PFOS is above than 0,1 % by weight calculated with reference to the mass of structurally or micro-structurally distinct parts that contain PFOS.



### 5.9 California Proposition 65

Proposition 65 (formally titled The Safe Drinking Water and Toxic Enforcement Act of 1986) is a California law that requires businesses to provide warnings to Californians about significant exposures to chemicals that cause cancer, birth defects or other reproductive harm. The aim is to protect drinking water sources from those chemicals by requiring exposure warnings in advance.

The Office of Environmental Health Hazard Assessment (OEHHA) administers the Proposition 65 program.

Proposition 65 requires California to publish a list of chemicals and update it at least once per year. Businesses are required to provide a "clear and reasonable" warning before knowingly and intentionally exposing anyone to a listed chemical, unless the business can show that the anticipated exposure level will not pose a significant risk of cancer or is significantly below levels observed to cause birth defects or other reproductive harm.

This warning can be given in several ways, such as by labeling a consumer product, and the requirement to provide warnings takes effect one year after a chemical is added to the list. To guide businesses in determining whether a warning is necessary, OEHHA has developed safe harbor levels. A business has "safe harbor" from Proposition 65 warning requirements or discharge prohibitions if exposure to a chemical occurs at or below these levels.

### 5.10 Other Reportable Substances

Substances in below Table are included in standardized product content declarations for electronic products. These substances should be avoided wherever possible or at least reduced.

If the supplier determines that substances in below table are present in any part above their respective specified thresholds, then the absolute weight in grams of the substance present in each part supplied to C&K shall be reported to C&K.

Other Reportable Substances		
Reportable Substance	CAS #	Details of Restriction
Antimony / Antimony Compounds	(Annex 1-T)	1000 ppm (0.1% w/w)
Beryllium / Beryllium Compounds	(Annex 1-V)	1000 ppm (0.1% w/w)
Bismuth / Bismuth Compounds (also alloys)	(Annex 1-W)	1000 ppm (0.1% w/w)
Polyvinyl chloride (PVC) and PVC copolymers	(Annex 1-AA)	1000 ppm (0.1% w/w) Banned in packaging material
Selenium / Selenium compounds	(Annex 1-DD)	1000 ppm (0.1% w/w)



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## 6 Environmental compliance documents

Supplier must certify that parts comply with the requirements of this specification and shall upon request provide the following documents:

### 6.1 Certificates of Compliance

A standard Certificate Of Compliance format is available in Annex.

### 6.2 Material Declaration Sheet

The Material Declaration shall provide the complete material composition for each part and shall include details regarding the substance names, CAS numbers and amount of substances present, by weight and percent weight in each homogeneous material.

It shall be submitted into our IMDS site.

We can accept this information in other format, including an IPC 1752-2 Class 5 or 6.

### 6.3 SGS reports

SGS is a multinational company which provides accredited laboratory analyses (for example: ROHS and/or HF analyses) to provide the necessary evidence for environmental regulatory compliance.

### 6.4 CMRT / EMRT / CRT Template

The Conflict Minerals Reporting Template (created by the RMI) can be found at [www.responsiblemineralsinitiative.org/reporting-templates/cmrt/](http://www.responsiblemineralsinitiative.org/reporting-templates/cmrt/)

It shall be used to determine the sources of Tin and Gold in the raw materials or piece parts supplied to C&K Components.

The Extended Minerals reporting Template or Cobalt Reporting template (created by the RMI) can be found at [www.responsiblemineralsinitiative.org/reporting-templates/emrt/](http://www.responsiblemineralsinitiative.org/reporting-templates/emrt/) or [www.responsiblemineralsinitiative.org/reporting-templates/cobalt-reporting-template/](http://www.responsiblemineralsinitiative.org/reporting-templates/cobalt-reporting-template/)

It shall be used to determine the sources of Cobalt in the raw materials or piece parts supplied to C&K Components.

Supplier need to:

1. Send the CMRT and/or EMRT or CRT to their sub suppliers and down to the supply chain until information about the smelter is available
2. Collect all CMRT and/or EMRT or CRT received from sub-suppliers
3. Fill in the CMRT and/or EMRT or CRT for products and send it over to C&K Components.