

<b>Vestas Prohibited and Restricted Substance Management</b>			Document ID: 0126-0215 INS HSE-CHM-CRP
Owner(s): Global HSE	Author(s): TEEDW	Valid from: 2022-02-01	Version: 02

## Version history

Version No.	Date	Description of Changes
02	2022-09-14	Obsolescence of Document ID 0005-4934 and replaced with New DMS ID 0126-0215  SUS-CHM-CRP changed to HSE-CHM-CRP as per revised conventions
01	2022-07-04	<ul style="list-style-type: none"> <li>Inclusion of Restrictions according to Annex XVII to REACH</li> <li>Guidance supported by Regulation (EC) 2019/1021</li> <li>Associated CAS Numbers</li> </ul>

## Table of Contents

<b>1. Purpose</b> .....	1
<b>2. Scope</b> .....	1
<b>3. Document requirement for compliance</b> .....	2
<b>4. Interested Parties</b> .....	2
<b>5. Restricted Substances and Classification</b> .....	3
<b>6. Prohibited Substance list</b> .....	4
<b>7. Contacts</b> .....	14
<b>8. Reference</b> .....	14
<b>9. Definitions</b> .....	17
<b>10. Reference legislation</b> .....	20
<b>11. Version history</b> .....	20

## 1. Purpose

The purpose of the Vestas Prohibited and Restricted Substances (VPRS) document is to provide guidance to manage the substances and mixtures which are considered Prohibited or Restricted in Vestas.

## 2. Scope

Section 5 of this document covers Restricted Product lists and Restricted Products by classification, these are not considered as a Prohibited but should be substituted/phased out at the earliest opportunity.

The substances listed in section 6 of this document are Prohibited or Prohibited in certain applications with threshold limits. It is mandatory to exclude the Prohibited substances listed in section 6 of this document from all Vestas materials supplied/distributed or manufactured.

### 3. Document requirement for compliance

Upon Vestas request suppliers of products shall provide full clarification on Substances involved, irrespective of whether a SDS is required or not.

If the supplier is not able to deliver a full material declaration, the supplier must sign a statement of fulfilment to the Vestas Prohibited and Restricted Substance document.

**Conflict Materials:** Suppliers commits to avoid sourcing tin, tantalum, tungsten and gold or other conflict minerals emanating from mining operations in conflict affected and high-risk areas, hereunder the Democratic Republic of the Congo (DRC) and adjoining countries. Referral to Supplier Purchase agreements for required due diligence measures is required by all manufacturers.

**Dispensations:** If a product is identified as restricted, specified in section 5 (Table 1 & 2) and is business critical, then a Dispensation is required as per guideline DMS#0053-6243 and the template DMS#0036-1873 which must be completed before the product is purchased. The Supplier must provide a SDS and information needed for Vestas to assess the HSE risks associated with the Product(s).

### 4. Interested Parties

#### All Stakeholders

Within Vestas chemicals are used across the spectrum in different activities and quantities. It is important that all entities are aware of the requirements in assuring products used are safe to people and to the environment. This VPRS document is applicable in all stages of chemical usage from the initial acquisition to physical usage and should be fundamental across the full Vestas Value chain. The VPRS has been created taking all regional governance into consideration ensuring top level compliance globally.

#### Substitute It Now (SIN List)

The SIN List is a list of hazardous chemicals that are used in a wide variety of articles, products, and manufacturing processes around the globe. The SIN abbreviation – Substitute It Now – implies that these chemicals should be removed as soon as possible as they pose a threat to human health and the environment.

The SIN List is one of the most progressive chemical standards in the world providing Vestas with an achievable sustainable and non-toxic chemical management system to work with. All stakeholders in the progression of determining safe products are to have acknowledgement in what the SIN List is trying to achieve and endorse its principles. Although the SIN List is not mandatory in evaluation of acceptance within the approval process consideration will be given and rejection will be a possible outcome based on the SIN List criteria.

#### Chemical Forum Governance

Progression of products moving from possible restriction to ultimate prohibition will be monitored as part of the Chemical Forum mandate. Business impacts will be determined through the progression identifying key implications which may disrupt normal workings within phase out/substitution management.

## 5. Restricted Substances and Classification

Section 5 contains two tables.

Table 1: Contains substances of very high concern to governing bodies and are subject to prohibition or restriction. Such substances are restricted in Vestas.

Table 2: Contains specific overall hazards classifications which makes a product restricted in Vestas.

**Table 1: Restricted Substances list**

Substance group	Substance	Threshold
EU REACH Candidate list <a href="https://echa.europa.eu/candidate-list-table">https://echa.europa.eu/candidate-list-table</a>	All Items	Refer to <b>6b</b> of this document
Restrictions according to Annex XVII to REACH: <a href="https://echa.europa.eu/da/substances-restricted-under-reach">https://echa.europa.eu/da/substances-restricted-under-reach</a>	All Items	
Composites:  Styrene Monomers in Polyester Resins	Styrene Liquid Form	Restriction does not apply to materials used for maintenance and repair of Vestas manufactured products, cured applications are considered inert and are not subject to restriction

**Table 2: Restricted Hazard Classification (GHS/CLP) list**

Hazard category	H-code	Hazard statement
<b>Health Hazard</b>		
Toxic	H300	Fatal if swallowed
	H301	Toxic if swallowed
	H310	Fatal in contact with skin
	H311	Toxic in contact with skin
	H330	Fatal if inhaled
	H331	Toxic if inhaled
	H370	Causes damage to organs
	H372	Causes damage to organs through prolonged or repeated exposure
Sensitizing	H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled
Mutagenic	H340	May cause genetic defects
	H341	Suspected of causing genetic defects
	H350	May cause cancer

Carcinogenic	H351	Suspected of causing cancer	(ACGIH A1 and A2), IARC (Group 1, 2A and 2B)
Reproductive toxic	H360	May damage fertility or the unborn child	
	H361	Suspected of damaging fertility or the unborn child	
	H362	May cause harm to breast-fed children	
<b>Physical Hazard</b>			
Explosives	Several		
<b>Environmental Hazard</b>			
Aquatic	H400	Very toxic to aquatic life	
	H410	Very toxic to aquatic life with long-lasting effects	
Ozone depleting	EUH059	Hazardous to the ozone layer, superseded by GHS Class 5.1 in the second adaptation to technical progress of CLP.	

## 6. Prohibited Substance list

a). This list identifies substances and its related applications that are currently prohibited as well as some that will become prohibited at a specified future date according to specific legislation. This means that the specific legislation does not allow the use of these Substances in specific applications. Once the specific future date expires, the prohibition is effective immediately.

b). The threshold limit of a substance in an article is calculated % w/w at an article level. For complex object, the definition provided by Court of Justice of the European Union on September 10<sup>th</sup>, 2015, is applicable. For all the EU RoHS listed substances the threshold limit is calculated at the homogenous material level.

Sl. no	Substance category	Affected product and application	Threshold (percentage)	Effective date
0.1	List of Persistent Organic Pollutants (POPs) according to Stockholm Convention and Regulation (EC) 2019/1021	(Ref01)	0%	Immediate
0.2	List of Banned or Restricted Chemicals according to the Rotterdam Convention (Ref02)	(Ref02)	(Ref02)	(Ref02)
0.3	List of Substances included in Annex XIV of REACH (Authorisation List) <a href="https://echa.europa.eu/authorisation-list">https://echa.europa.eu/authorisation-list</a>	All products	0.1% (Ref07)	Immediate

1	Aromatic amines or their salts			
	a) Benzidine, its derivatives and salts.	All products	0% (Ref03)	Immediate
	b) 2-Naphthylamine and its salt			
	c) 4-Nitrobiphenyl and its salt d) 4-Aminobiphenyl xenylamine and its salt	For (b,c,d): All Products	0.1% (Ref07)	Immediate
2	Arsenic and its compounds <b>CAS: 7440-38-2</b> <a href="https://www.ncbi.nlm.nih.gov/books/NBK304380/table/a006.T001.001/?report=objectonly">https://www.ncbi.nlm.nih.gov/books/NBK304380/table/a006.T001.001/?report=objectonly</a>	All Products	0.1% (Ref07)	Immediate
3	a) Asbestos forms-fibres	a) All Products: stated in Annex XVII of REACH	0% (Ref04)	Immediate
	b) Asbestos forms – Minerals  (Ref04)	b) All Products with potential to form Asbestos Fibres (e.g. including Dry Friction Materials, etc.)	0% (Ref04)	Immediate
4	a) Benzene - Non-Fuel products other than after-market cleaning and textile products <b>CAS: 71-43-2</b>	a) All non-fuel products except when present in textiles with skin contact or when present in aftermarket consumer cleaning products.	a) 0.1% (Ref07)	Immediate
	b) Benzene – Fuel products	b) All fuels (Ref05)	b) Various (Ref05)	Immediate
5	Cadmium and its compounds <b>CAS: 7440-43-9</b>  Cadmium (expressed as Cd metal)	a) plastic materials (such as PVC, PUR, PE, PET, PBT, PP), brazing fillers, metal beads.	0.01%	Immediate
		b) In Paints	0.01%	Immediate
			0%	Immediate

		c) cadmium plating metallic articles or components of the articles.		
6	<p>Chlorinated Alkanes/Alkenes</p> <p>(a) Short-Chain Chlorinated Alkanes/Alkenes (SCCA) <b>CAS: 85535-84-8</b></p> <p>(b) Mid-Chain Chlorinated Alkanes (MCCA: C14-C17) and Long-Chain Chlorinated Alkanes (LCCA: C18-C20). <b>CAS: 85535-85-9</b></p> <p>(c) Very Long-Chain Chlorinated Alkanes (vLCCA: C&gt;20) <b>CAS: 85535-85-9</b></p> <p>(d) Chlorinated Alkanes of an Unspecified Chain Length</p> <p>(e) Substances related to chlorinated alkanes that might contain Short Chain Chlorinated Alkanes/Alkenes (SCCAs)</p>	All products	0.1% (Ref07)	Immediate
7	Chlorinated Hydrocarbons (Chemical compounds of chlorine, hydrogen, and carbon atoms only)	<p>a) All products including Cleaning Products (Ref08)</p> <p>b) Paint strippers</p>	<p>0.1%</p> <p>0.1%</p>	<p>Immediate</p> <p>Immediate</p>
8	Chlorinated Naphthalene <b>CAS: 70776-03-3</b>	All products	0.1% (Ref07)	Immediate
9	Chlorinated or brominated Dioxins or Furans	All products	0.1% (Ref07)	Immediate
10	<p>Chloroform and its related substances</p> <p><b>CAS: 67-66-3</b></p> <p>1,1,2-Trichloroethane</p> <p>1,1,2,2-Tetrachloroethane</p>	All Products	0.1% (Ref07)	Immediate

	1,1,1,2-Tetrachloroethane Penta chloroethane 1,1-Dichloroethene			
11	Chromium (VI) <b>CAS:7440-47-3</b> (Cr+6; Hexavalent) and its compounds (Ref09)	All Products except cement additives and leather articles	0% (Ref09)	Immediate
12	Dichloro-diphenyl-trichloroethane (DDT) <b>CAS:50-29-3</b>	All products	0%	Immediate
13	Dichloromethane <b>CAS: 75-09-2</b>	In Paint Strippers	0.1% (Ref07)	Immediate
14	1,4-Dichlorobenzene <b>CAS: 106-46-7</b>	In air freshener or deodorizer in toilets, offices or other indoor public areas	0.1% (Ref07)	Immediate
15	Dimethyl Fumarate (DMF) <b>CAS: 624-49-7</b>	All Products	0.1 (mg/kg)	Immediate
16	Dibutyltin hydrogen borate C <sub>8</sub> H <sub>19</sub> BO <sub>3</sub> Sn (DBB) <b>CAS: 683-18-1</b>	All products	0.1 %	Immediate
17	Diphenylether, octabromo derivative C <sub>12</sub> H <sub>2</sub> Br <sub>8</sub> O <b>CAS: 32536-52-0</b>	All Products	0.1%	Immediate
18	Fluorinated Green House Gases (Ref10)	All products For exemption (Ref11)	0.1% (Ref07)	Immediate
19	a) Formaldehyde <b>CAS: 50-00-0</b>  b) Formaldehyde reaction products	a) Textiles under normal or reasonably foreseeable conditions of use, that meet human skin to an extent like clothing.  b) Any preservative or biocidal applications	0.0075%  0%	Immediate  Immediate

		Oligomeric reaction products with Aniline  Reaction products with Phenol Heptyl Derivs and 1,3,4-Thiadiazolidine-2,5-Dithione  Reaction products with branched and linear Heptylphenol, Carbon Disulfide and Hydrazine	0.1% (Ref07)	Immediate
20	Glycol and Glycol Ethers  a) Bis(2-methoxyethyl) ether  b) 2-Methoxyethanol (2ME)	a) All Products  b) All Products except semiconductors. In semiconductors 0.5% is allowed.	0.1%  0%	Immediate  Immediate
21	Halon-1202 (CBr2F2)	All products	0%	Immediate
22	Halogenated polyphenyls, diphenyl ethers and phosphates.  a) Hexabromo-cyclododecane (HBCDD). <b>CAS: 953194-55-6</b>  b) Polybrominated biphenyls (PBB) <b>CAS: 59536-65-1</b>  c) Polybrominated diphenyl ethers (PBDE)  d) Bis(pentabromophenyl) ether decabromodiphenyl ether; decaBDE)  e) Polychlorinated biphenyls (PCB)  f) Polychlorinated terphenyls (PCT)  g) Tris(2,3-dibromopropyl) phosphate [TRIS]	All products  All products  All Products  All Products  All Products  All Products  All Products	0%  0%  0%  0%  0.005%  0%  0%	Immediate  Immediate  Immediate  Immediate  Immediate  Immediate



	<b>CAS : 126-72-7</b> h) Tris(2-chloroethyl) phosphate <b>CAS: 115-96-8</b>			
23	Hexachloroethane <b>CAS : 9967-72-1</b>	Manufacturing & Processing of non-ferrous metals	0%	Immediate
24	Tris(aziridiny) Phosphin oxide <b>CAS: 545-55-1</b>	All products	0%	Immediate
25	Lead and its compounds <b>CAS: 7439-92-1</b>	a) All products (Ref12) (Ref6)  b) Paints and products intended for use in paint	0%  0.1% (Ref07)	Immediate  Immediate
26	Mercury and its compounds <b>CAS: 7439-97-6</b>	All products (Ref12)	0.0%	Immediate
27	Methylcyclopentadienyl manganese tricarbonyl (MMT) <b>CAS: 12108-13-3</b>	Fuel in EU  According to EU's fuel quality law-2014	0.002% Mn/L	Immediate
28	Monomethyl-dichloro-diphenyl methane (Ugilec 121)	All products	0%	Immediate
29	Monomethyl-dibromo-diphenyl methane bromobenzylbromotoluenemixture of isomers (DBBT) <b>CAS: 99688-47-8</b>	All products	0%	Immediate
30	Monomethyl – tetrachlorodiphenyl methane (Ugilec 141) <b>CAS: 76253-60-6</b>	All products	0%	Immediate
31	Methylenediphenyl diisocyanate (MDI) and its specific isomers. <a href="https://echa.europa.eu/substance-information/-/substanceinfo/100.239.193">https://echa.europa.eu/substance-information/-/substanceinfo/100.239.193</a>	Refer REACH Annex XVII entry 56.	Refer REACH Annex XVII entry 56.	Immediate
32	N,N-dimethylacetamide (DMAC) <b>CAS: 127-19-5</b>	Textiles (including PPE) that meet human Skin	0.3%	Immediate
33	Nickel and its compounds <b>CAS: 7440-02-0</b>	Articles coming into direct and prolonged contact with the	0.5 ug/cm2/	Immediate



		acting as biocide in free association paint or when used to treat industrial waters.		
	a) Tri-substituted organostannic compounds such as tributyltin (TBT) compounds and triphenyltin (TPT) compounds.	a) All Products	0.1% (Ref16)	Immediate
	b) Dibutyltin (DBT) compounds	b) All Products	0.1% (Ref16)	Immediate
	c) Dioctyltin (DOT) compound	c) Textile articles intended to meet the skin. [Gloves, footwear, wall and floor covering, two-component room temperature vulcanization molding kits]	0.1% (Ref16)	Immediate
	d) Other triorganotin compounds (not tributyltins)	d) All products	0% (Ref16)	Immediate
38	Ozone Depleting Substance  Ozone Depleting Substances (Class I), Montreal Protocol: Annex A: All, Annex B: All, Annex C: Groups II and III, Annex E: All  Ozone Depleting Substances (Class II): Montreal Protocol Annex C Group I (HCFCs). (Ref17)	All Products - except those used to service existing equipment where legally permitted	0.1% (Ref07)	Immediate
39	Pentachlorophenol (PCP) its salts and esters	All Products	0.1% (Ref07)	Immediate
40	Pentachlorobenzene <b>CAS: 87-86-5</b>	All Products	0%	Immediate
41	Perfluoroalkyl compounds (Includes: Perfluoroalkyl sulfonates e.g., PFAS, fluorotelomers, and telomere-based polymeric substances)	All products	0.1% (Ref07)	Immediate

	<p>a) Perfluoro-octanoic acids (PFOA), its salts, precursors and higher homologues (Ref18)</p> <p>b) Perfluorooctane sulfonic acid (PFOS) and its derivatives C8F17SO2X (X = OH, Metal salt (O-M+), halide, amide, and other derivatives including polymers)</p> <p>c) Long-chain (C8-C21) PFCAs, their salts, and their precursors (Ref19)</p>	<p>i. All non-dimensional products</p> <p>ii. All products (subject to future prohibition, see effective date)</p> <p>b) All products</p> <p>All Non-Dimensional Products</p>	<p>0.1% (Ref07)</p> <p>0.001% (Ref07)</p> <p>0% (Ref07)</p>	<p>Immediate</p> <p>Immediate</p> <p>Immediate</p> <p>Immediate</p>
42	<p>Phthalates:</p> <p>Bis(2-ethylhexyl) phthalate (DEHP) <b>CAS: 117-81-7</b></p> <p>Dibutyl phthalate (DBP) <b>CAS: 84-74-2</b></p> <p>Benzyl butyl phthalate (BBP) <b>CAS: 85-68-7</b></p> <p>Diisobutyl phthalate (DIBP) <b>CAS: 9984-69-5</b></p> <p>Di-<i>is</i>ononyl' phthalate (DINP) <b>CAS: 28553-12-0</b></p> <p>Di-<i>is</i>odecyl' phthalate (DIDP) <b>CAS: 26761-40-0</b></p> <p>Di-n-octyl phthalate (DNOP) <b>CAS: 117-84-0</b></p> <p>(Ref20)</p>	All Products	0.1% (Ref07)	Immediate
43	<p>Polycyclic aromatic hydrocarbons (PAH; PCAH)</p> <p>(Ref21)</p>	<p>a) Paints and varnishes.</p> <p>b) Accessible Plastic or rubber parts for industrial uses and supply to the aftermarket (Ref22-i, ii)</p> <p>c) Accessible parts with direct access to the human body</p> <p>(Ref22-i, ii)</p>	<p>0.01% total listed PAHs</p> <p>0.0001% BaP and 0.001% total listed PAHs</p> <p>0.0001% BaP and 0.001% total listed PAHs</p>	<p>Immediate</p> <p>Immediate</p> <p>Immediate</p>

		d) Deadner pads supplied to the APAC region (Ref22-ii)	00.002% BaP and 0.02% the sum of other listed PAH (Ref22-iii)	Immediate
		e) All Products (Upcoming REACH Authorization)	0.1% (Ref07)	Immediate
		f) Extender oil	0.0001% BaP and 0.001% total listed PAH	Immediate
44	Products of Endangered Species. (Endangered species) (Ref23)	All Products	0.1% (Ref07)	Immediate
45	n-propyl bromide <b>CAS: 106-94-5</b>	All Products (upcoming REACH authorization)	0.1% (Ref07)	Immediate
46	2-Pyrrolidinone, 1-methyl- (NMP) <b>CAS: 872-50-4</b>	a) All non-dimensional products in the EU except for use as a solvent or reactant in the process of coating wires.  b) Textiles (PPE) under normal or reasonably foreseeable conditions of use, that meet human skin to an extent like clothing in the EU only  c) Solvents or reactants used in the EU for the process of coating wires  d) Paint strippers used in the EU for the removal of PAH containing coatings.	0.3%  0.3%  0.3%  0%	Immediate  Immediate  9-May-2024  Immediate
47	Radioactive isotopes and substances, all members	All Products, including scrap metal contaminants. Excludes substances and devices used in the manufacturing process.	(Ref24)	Immediate
48	Silica, Crystalline – Quartz <b>CAS: 7631-86-9</b> (Ref 25)	Materials used in abrasive blasting (Ref 25)	1%	Immediate

49	5-tert-butyl-2,4,6-trinitro-m-xylene (Musk xylene) <b>CAS: 81-15-2</b>	All products	0.1% (Ref07)	Immediate
50	Trichlorobenzene <b>CAS: 120-82-1</b>	All Products except the usage in intermediate synthesis/process.	0.1% (Ref07)	Immediate
51	Vinyl chloride (Chloroethene) <b>CAS: 75-01-4</b>	a) Aerosol b) All products-Thailand and Australia only c) Vinyl chloride monomer content in the polyvinyl chloride layer of artificial leather	0.1% (Ref07)  0.0005% (5ppm as monomer)	Immediate Immediate Immediate

## 7. Contacts

Please contact [chemicalforum@vestas.com](mailto:chemicalforum@vestas.com) for any questions related to this document.

## 8. Reference

Ref 01	<p>Currently there are over 30 chemicals on the List of Persistent Organic Pollutants (POPs) in the Stockholm Convention (up to Jul 2019).</p> <p>Annex A (Elimination): The production and use of chemicals on annex A must be eliminated unless there are specific exemptions; Annex B (Restriction): The production and use of chemicals on annex B must be restricted; Annex C (Unintentional Production): Measures must be taken to reduce the unintentional releases of chemicals on Annex C. Once a hazardous substance is added to Annex A, it will face a global ban.</p> <p><a href="http://chm.pops.int/TheConvention/ThePOPs/ListingofPOPs/tabid/2509/Default.aspx">http://chm.pops.int/TheConvention/ThePOPs/ListingofPOPs/tabid/2509/Default.aspx</a></p>
Ref 02	<p>There are total of 52 chemicals listed in Annex III, 35 pesticides (including 3 severely hazardous pesticide formulations), 16 industrial chemicals, and 1 chemical in both the pesticide and the industrial chemical categories.</p> <p><a href="http://www.pic.int/TheConvention/Chemicals/AnnexIIIChecklist/tabid/1132/language/en-US/Default.aspx">http://www.pic.int/TheConvention/Chemicals/AnnexIIIChecklist/tabid/1132/language/en-US/Default.aspx</a></p>
Ref 03	<p>Benzidine and Benzidine Dihydrochloride are prohibited at any concentration if intentionally added at any concentration for the Canadian market. Benzidine or its salts are prohibited above 0.002% for all other markets.</p> <p>Note: "Intentionally added" means all substances directly added to the formulation.</p>
Ref 04	<p>The following are the common industry standards for determining presence of asbestos fibers within materials: EPA 600/R-93/116 (as amended) is the industry standard in the US (and most countries with asbestos regulation) or NIOSH 9002. Appropriate quantitative analysis of asbestos by the EPA/NIOSH methods can include point counting, Transmission Electron Microscopy (TEM) or Scanning Electron Microscopy (SEM).</p>

Ref 05	Allowable benzene levels in fuel are subject to regional regulations such as EU-D 98/70/EC. So please follow your local legislation guideline.
Ref 06	Business critical items that contain integral lead components that are considered inert and not directly exposed can be used ensuring that the full life cycle has been evaluated within the consideration
Ref 07	If intentionally added at any concentration. "Intentionally added" means all substances directly added to the formulation. "Incidental presence" means a residual, a trace contaminant or impurity that was not intentionally added to the formulation.
Ref 08	See SR 814.81 Chemical Risk Reduction Ordinance ( <a href="https://www.admin.ch/opc/en/classified-compilation/20021520/index.html">https://www.admin.ch/opc/en/classified-compilation/20021520/index.html</a> ) for products defined as cleaning products in article 3- Annex 2.2.
Ref 09	A maximum value of 0.1% by weight, of Hexavalent Chromium, per homogenous material will be tolerated, (this percentage is based on the weight of the coating containing the Hexavalent Chromium, not the part weight). <a href="https://www.ncbi.nlm.nih.gov/books/NBK304377/table/a009.T001.001/?report=objectonly">https://www.ncbi.nlm.nih.gov/books/NBK304377/table/a009.T001.001/?report=objectonly</a>
Ref 10	It includes the hydrofluorocarbons, perfluorocarbons, Sulphur hexafluoride and other greenhouse gases that contain fluorine. For detailed list refer Annex I,II of EU No 517/2014 (F-Gas regulation).
Ref 11	For exemption, refer the ANNEX III of EU No 517/2014 (F-Gas regulation)
Ref 12	For exemption refer ANNEX III of ROHS DIRECTIVE 2011/65/EU Once the exemption date expires the prohibition is effective immediately regardless of Product type.
Ref 13	Nickel Substances are not prohibited but are subject to a Nickel release rate threshold of 0.5 ug/cm <sup>2</sup> /week.
Ref 14	The nickel release rate shall be determined by test method BS EN 1811:2011 +A1:2015. The method can be obtained at <a href="http://shop.bsigroup.com/ProductDetail/?pid=000000000030316120">http://shop.bsigroup.com/ProductDetail/?pid=000000000030316120</a>
Ref 15	See regulations TRGS 611: Restrictions on the use of water-miscible or water-mixed cooling lubricants whose use can result in the formation of N-nitrosamines ( <a href="http://www.baua.de/de/Themen-von-A-Z/Gefahrstoffe/TRGS/TRGS-615.html">http://www.baua.de/de/Themen-von-A-Z/Gefahrstoffe/TRGS/TRGS-615.html</a> ) and TRGS 615: Restrictions on the use of anticorrosion agents whose use can lead to the formation of N-nitrosamines for classes of nitrosating agents ( <a href="http://www.baua.de/en/Topics-from-A-to-Z/Hazardous-Substances/TRGS/TRGS-611.html">http://www.baua.de/en/Topics-from-A-to-Z/Hazardous-Substances/TRGS/TRGS-611.html</a> ).
Ref 16	EU REACH Amendment 276/2010 Annex XVII specifies that content at or above 0.1% by weight of tin is prohibited. The calculation of the tin content in the substance is done using the molecular weight of both tin and the substance.

Ref 17	Ozone Depleting Substances (ODS) - are defined as chemicals that have been linked to the depletion of the stratospheric ozone layer, and restricted under the 1987 Montreal Protocol, listed by U.S. Environmental Protection Agency regulations under 40 Code of Federal Regulations, Part 82, Appendix F to Subpart A, and addressed by the European Union Directive-1005/2009/EC, chemicals are collectively identified as ozone depleting substances (ODSs) and include CFCs (chlorofluorocarbons), HCFCs (hydrochlorofluorocarbons) and several brominated-carbons including Halons
Ref 18	Includes all substance meeting the following definitions specified in PCTSR Schedule 2.1 - Perfluorooctanoic acid, which has the molecular formula $C_7F_{15}CO_2H$ , and its salts; and - Compounds that consist of a per-fluorinated alkyl group that has the molecular formula $C_nF_{2n+1}$ in which $n = 7$ or $8$ and that is directly bonded to any chemical moiety other than a fluorine, chlorine or bromine atom. <a href="https://laws-lois.justice.gc.ca/eng/regulations/SOR-2012-285/page-5.html#h-788662">https://laws-lois.justice.gc.ca/eng/regulations/SOR-2012-285/page-5.html#h-788662</a>
Ref 19	Includes all perfluoro carboxylic acids that have the molecular formula $C_nF_{2n+1}CO_2H$ in which $8 \leq n \leq 20$ and their salts as specified in PCTSR Schedule 2.1. <a href="https://laws-lois.justice.gc.ca/eng/regulations/SOR-2012-285/page-5.html#h-788662">https://laws-lois.justice.gc.ca/eng/regulations/SOR-2012-285/page-5.html#h-788662</a>
Ref 20	The overall threshold for these listed phthalates and other substances as defined in the REACH regulation Annex XVII, entry 51,52 is 1000 mg/kg. This threshold applies to each listed substance individually or in combination with other phthalates listed in that entry or in other entries of Annex XVII that are classified in Part 3 of Annex VI to Regulation (EC) No 1272/2008 in any of the hazard classes carcinogenicity, germ cell mutagenicity or reproductive toxicity, category 1A or 1B.
Ref 21	Regulations prohibiting the use of PAH include EU-R 1907/2006 and its amendments and Directive 2005/69/EC: <a href="http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2005:323:0051:0054:EN:PDF">http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2005:323:0051:0054:EN:PDF</a>
Ref 22	<ul style="list-style-type: none"> <li>i. Applies to Parts or articles with predictable direct and prolonged or short-term repetitive contact with the human skin or the oral cavity under normal or reasonably foreseeable conditions of use to meet the threshold listed in REACH Annex XVII.</li> <li>ii. PAHs should not be used for deadener pads in APAC countries above threshold noted.</li> <li>iii. Protection tools are recommended for operators who may have long-term skin contact, during the manufacturing process, with products potentially containing PAHs.</li> </ul>
Ref 23	Includes any substance or material that originates from an endangered species. Lists of endangered species include: 1. Latest "International Union for Conservation of Nature and Natural Resources (IUCN) Red List of Threatened Species: <a href="http://www.redlist.org">http://www.redlist.org</a>



	<p>2. European Union (EU) Regulation 338/97 on the protection of species of wild fauna and flora by regulating trade therein, and in its amendments.</p> <p>3. United States Endangered Species Act.</p> <p>4. UNEP-WCMC Species Database</p> <p><a href="http://sea.unep-wcmc.org/species/dbases/about.cfm">http://sea.unep-wcmc.org/species/dbases/about.cfm</a>.</p>
Ref 24	<p>All products, including scrap metal contaminants: Radioactivity should meet "Unconditional Use Clearance Level" requirements consistent with International Atomic Energy Agency (IAEA) and the Commission of European Communities (CEC) standards for individual radionuclides IAEA-TECDOC-855 (1996) &amp; Safety Series RS-G-1.7 (2004).</p> <p>Radioactive sources used in manufacturing processes are exempted if they meet exemption levels. Exempted sources typically include small sources of radiation such as tracers used in research, calibration sources and some consumer products containing small sources or low levels of activity per unit mass. The corresponding levels of activity or activity concentration are called exemption levels.</p>
Ref 25	<p><a href="https://www.cdc.gov/niosh/topics/silica/infographic.html">https://www.cdc.gov/niosh/topics/silica/infographic.html</a></p> <p><a href="https://www.cdc.gov/niosh/docs/75-122/default.html">https://www.cdc.gov/niosh/docs/75-122/default.html</a></p>

## 9. Definitions

ACGIH	American Conference of Governmental Industrial Hygienists
Aquatic	It is effects of a chemical substance to aquatic species which is usually determined on organisms representing the three trophic levels, i.e. vertebrates (fish), invertebrates (crustaceans as Daphnia) and plants (algae)
Article	<p>An object to which, during the manufacturing process, is given a shape, surface or design which is more determining for its function than its chemical composition " Article3(3).</p> <p><a href="https://echa.europa.eu/documents/10162/23036412/articles_en.pdf/cc2e3f93-8391-4944-88e4-efed5fb5112c">https://echa.europa.eu/documents/10162/23036412/articles_en.pdf/cc2e3f93-8391-4944-88e4-efed5fb5112c</a></p>
BIOCIDES	Additives intended to prevent or restrict microbiological growth
Carcinogenic	<p>Carcinogens are substances, mixtures and materials that have the potential of causing cancer by exposure through any route and/or those classified as carcinogens by any applicable regulation.</p> <ul style="list-style-type: none"> <li>Any member of Group 1, 2A, or 2B in the latest edition of Monographs of the International Agency for Research on Cancer (IARC).</li> <li>Any substance/mixture listed as carcinogen in EU – CLP Regulation No. 1272/2008 Annex VI.</li> <li>Any "A1", "A2" or "A3" carcinogen listed by the American Conference of Governmental Industrial Hygienists (ACGIH) in the latest edition of Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices.</li> </ul>

Complex Object	<p>Complex Object is an object made up of more than one article. In complex objects, several article can be joined or assembled together in various manners. The CJEU's decision sides with the "once an article, always an article" approach is applicable.</p> <p><a href="http://curia.europa.eu/juris/document/document.jsf;jsessionid=9ea7d0f130d5234cdde93ebf4656b055b5270aa9d53c.e34KaxiLc3eQc40LaxqMbN4ObNiTe0?text=&amp;docid=167286&amp;pageIndex=0&amp;doclang=en&amp;mode=req&amp;dir=&amp;occ=first&amp;part=1&amp;cid=144587">http://curia.europa.eu/juris/document/document.jsf;jsessionid=9ea7d0f130d5234cdde93ebf4656b055b5270aa9d53c.e34KaxiLc3eQc40LaxqMbN4ObNiTe0?text=&amp;docid=167286&amp;pageIndex=0&amp;doclang=en&amp;mode=req&amp;dir=&amp;occ=first&amp;part=1&amp;cid=144587</a></p>
Dispensation	Vestas's internal process for chemical products that are restricted as described in section 5. Users can contact <a href="mailto:chemicalforum@vestas.com">chemicalforum@vestas.com</a> for clarification.
Explosives	An explosive substance is a solid or liquid substance (or mixture of substances) which is capable by chemical reaction of producing gas at such a temperature and pressure and at such a speed as to cause damage to the surroundings.
Hazardous	Hazardous substances/mixture/materials are those that have the capacity of producing human injury or illness by exposure through any route, by creating an adverse effect upon the environment, and/or those defined and listed by any applicable (i.e. Health and Safety, Environmental, and Transportation) regulation
Homogenous Material	<p>The physical definition of homogeneity is: the quality of having all properties independent of the position. The compositional homogeneity of any material means: the chemical composition is the same for all substances forming or being an ingredient of the material (e.g. impurities) at any spot of measurement.</p> <p>The opposite: an inhomogeneous material is composed in a way that the amount of the chemical ingredients is dependent on the spot of measurement.</p>
IARC	International Agency for Research on Cancer
Material	A material is a substance or mixture of substances that constitutes an object.
Mixture	A mixture is composed of two or more substances
Mutagenic	Any chemical that can produce a genetic mutation, i.e., an induction of DNA damage, or changes in chromosome structure or number, including: substances/mixtures classified as Category 1, 2 or 3 mutagens under the provisions of the EC CLP Regulation 1272/2008 (Classification, Packaging and Labeling of Substances and Mixtures).
Non-Dimensional Material	Non-dimensional materials are those that have no intrinsic shape without containing structure. Examples of these materials are fluids, gases, powders and semi-solids (pastes) like adhesives, greases, paints, bulk chemicals, and separately packaged chemicals in post-production service kits.
Ozone depleting	Ozone Depleting Substances (ODS) - are defined as chemicals that have been linked to the depletion of the stratospheric ozone layer.

Product	<p>The entity that is supplied to Vestas Wind Systems A/S, which can be an assembly, part (component), sub-component, material, or substance / mixture.</p> <p>This could include the restricted substance itself (e.g. lead sulfide), a material containing the restricted substance (e.g. a friction material containing lead sulfide), or a component or assembly containing the restricted substance (e.g., a brake assembly with a lead-containing friction material).</p>
Prohibited	<p>Substances designated, as "Prohibited" shall not be supplied in any products, subject to the stated directions on content threshold and affected applications. A maximum concentration value of 0.1% by weight of per homogeneous material shall be tolerated for these substances or subject to specific threshold limits specified in the prohibited substance list document under section 5.</p>
REACH	<p>REACH is a regulation of the European Union, adopted to improve the protection of human health and the environment from the risks that can be posed by chemicals, while enhancing the competitiveness of the EU chemicals industry.</p> <p>(Registration, Evaluation, Authorization and Restriction of Chemicals; EU Regulation 1907/2006/EC)</p>
REACH Candidate list	<p>Substances fulfilling one or more of the criteria defined in Article 57 of the EU REACH Regulation can be identified as "substances of very high concern" (SVHC) and put on the "candidate List for authorization" which is also called "REACH SVHC list".</p>
Reproductive toxic	<p>Substances /mixtures or other agents which may affect male or female fertility, cause damage to the unborn or newborn child, or provoke miscarriage, including:</p> <ul style="list-style-type: none"> <li>Substances/mixtures classified as Category 1, 2 or 3 due to adverse effects on fertility, or their developmental toxicity under the provisions of the EC CLP Regulation 1272/2008</li> </ul> <p><a href="https://echa.europa.eu/information-on-chemicals/cl-inventory-database">https://echa.europa.eu/information-on-chemicals/cl-inventory-database</a></p>
Restricted	<p>If a chemical product contains REACH SVHC substance above 0.1 %w/w and / or its hazard classification is matching the table 2 in section 5, then the chemical product considered as restricted. Dispensation is applicable.</p>
SDS	<p>SDS is a document that contains information on the potential hazards (health, fire, reactivity and environmental), storage, handling and emergency procedures all related to the hazards of the material and how to work safely with the chemical product.</p>
Sensitizing	<p>Substances which have been identified as confirmed or potential sensitizers by animal experimentation or human experience include but are not limited to chemicals which;</p> <ul style="list-style-type: none"> <li>Are classified as inhalation or contact sensitizers under the provisions of the EC CLP Regulation 1272/2008 (<a href="http://ec.europa.eu/enterprise/sectors/chemicals/documents/classification/index_en.htm">http://ec.europa.eu/enterprise/sectors/chemicals/documents/classification/index_en.htm</a>)</li> </ul>

	Are classified as such according to the World Health Organization "criteria for classification of skin and airway sensitizing substances in the work and general environments" (1996)
Substance	Substance means a chemical element and its compound e.g., lead or lead sulfide, Substances usually have CAS number.
Toxic	The adverse effects of a substance that result either from a single exposure or from multiple exposures in a short period of time (usually less than 24 hours)

## 10. Reference legislation

1	US Toxic Substances Control Act (TSCA)-UN List of Identified Endocrine Disrupting Chemicals. <a href="https://www.unenvironment.org/explore-topics/chemicals-waste/what-we-do/emerging-issues/scientific-knowledge-endocrine-disrupting">https://www.unenvironment.org/explore-topics/chemicals-waste/what-we-do/emerging-issues/scientific-knowledge-endocrine-disrupting</a>
2	EU RoHS 3 (Directive 2011/65/EU): EU RoHS 2 refers to Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE).
3	EU REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 December 2006 concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC.
4	REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006
5	STOCKHOLM CONVENTION ON PERSISTENT ORGANIC POLLUTANTS (POPs,), signed in 2001 and effective from May 2004. (its 9 <sup>th</sup> meeting held in Geneva from 29 April to 10 May 2019). <a href="http://www.pops.int/">http://www.pops.int/</a>  ROTTERDAM CONVENTION, Signed in 1998 and effective from 2004. (its 9 <sup>th</sup> meeting held in Geneva from 29 April to 10 May 2019). <a href="http://www.pic.int/">http://www.pic.int/</a>
6	The Montreal Protocol on Substances that Deplete the Ozone Layer, was signed in 1987 and entered into force in 1989. <a href="https://ozone.unep.org/treaties/montreal-protocol/montreal-protocol-substances-deplete-ozone-layer">https://ozone.unep.org/treaties/montreal-protocol/montreal-protocol-substances-deplete-ozone-layer</a> .

## 11. Version history

Version No.	Year	Description of Changes
08	2021	Renamed the document. The contents of the document rephrased. Prohibited substance list table has been updated and the affected product, threshold limit,

		effective date columns introduced. Restricted material list DMS#0064-0319 has been merged with this document. Contact has been introduced.
07	2017	Divided of the previous blacklist into a procedure, a new Vestas Chemical and Material blacklist with prohibited materials and a creation of a restricted Material list. The Chinese Ozone depleting substances legislation has been added to the list of references.
06	2015	Version 06 was introduced with new format
03,04 & 05	2012	Version 03,04,05 was made in 2012 and it was valid from 1st April 2012 <ul style="list-style-type: none"> <li>• Major update is</li> <li>• Accountability &amp; Responsibility</li> <li>• Supplier's obligation</li> <li>• Prohibited, Restricted table.</li> </ul>
01 & 02	2008	First Document introduced and then updated to version 2 and it was valid from August-2008