



# List of hazardous substances for the environment

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<b>Keywords</b>	Environment, Hazardous, Banned, Declared, Substances
<b>Subject</b>	Environment and design
<b>Objective</b>	Identify and restrict the use of substances, which may produce a negative impact on the environment or on human health during product conception, manufacturing, use or end of life.
<b>Scope</b>	New products development: R&D, purchasing
<b>Related documents</b>	ETDAIN05: Environmental legislation and other environmental requirements concerning MGE products ETDAGU01: MGE Green Guide
<b>People concerned</b>	Technical and industrial project manager, Purchasing, safety

H	Jan 07	Integration of Schneider list of substances	C Garnier		S Cuman	
G	Sept 06	Only 2 categories: banned or restricted. Beryllium, azo -> Cat A	C Garnier		S Cuman	
F	Feb 05	Rewriting. No changes on substances	C Garnier		G. BESSET	
E	24/12/02	Intégration des évolutions réglementaires 2002	L. LESCUYER		G. BESSET	
D	21/08/02	Evolution de la liste vers une classification des substances interdites, en cours d'interdiction ou à éviter.	L. LESCUYER		G. BESSET	
C	05.01.00	Modification de codification	L. LESCUYER		G. BESSET	
B	21.09.99	Mise à jour	L. LESCUYER			
A	30.03.99	Version 1	L. LESCUYER			
<b>Rev</b>	<b>Date</b>	<b>Modification</b>	<b>Name</b>	<b>Visa</b>	<b>Name</b>	<b>Visa</b>
			<b>Prepared by</b>		<b>Approved by</b>	



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## **1. OBJECTIVE**

The purpose of this list is to identify to help reduce the use of substances in products and process, that have a negative impact on the environment or on human health.

## **2. SCOPE**

All new products designed by MGE or at MGE's request must comply with this list.

## **3. EXPLANATION OF THE MGE LIST OF HAZARDOUS SUBSTANCES**

This list must be applied in compliance with enforced regulation, suppliers must respect laws of country where they manufacture and market their products

### **3.1 Banned substances**

**These substances must not be in MGE product in quantity above legal thresholds**

These substances are banned from products or process of MGE and MGEs suppliers for all applications to comply with legal regulations.

When exemptions apply, the substance can be used. For instance, lead and cadmium in batteries.

### **3.2 Substances to be declared**

**Suppliers must inform MGE of their presence in products or process and their use must be avoided.**

Substances to be declared are critical substance that are not prohibited from being introduced in products of the electrical or electronics industry, but whose use may be restricted based on customer requirements or their environmental hazard characteristics. These substances are most of the time prohibited by eco-labels. The use of these substances must be identified in the "Product Environmental Profile" of the product.



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## 4. LIST OF ENVIRONMENTAL HAZARDOUS SUBSTANCES

### Prohibited substances - substances that must not be used

Substances or group of substances	Potential applications	Regulations	Main risk
<b>Asbestos</b>	Insulation material in plastics	76/769/EEC, 83/478/EEC, 85/610/EEC, 87/217/EEC, 91/659/EEC, 99/77/EEC	Carcinogenic by inhalation
<b>Benzene</b>	Solvents in paint & varnish, Applications in process	76/769/EEC, 82/808/EEC, 89/677/EEC	Carcinogenic
<b>Cadmium and compounds</b>	Pigments in plastics and in paints (cadmium oxide)	76/769/EEC 91/338/EEC <b>RoHS</b>	Carcinogenic, Mutagenic and Reprotoxic
	PVC stabilizer		
	Brazing, Electric contact material		
	Cadmium plating		
	Cadmium accumulators	91/157/EEC, 98/1001/EEC, 2006/66/EC	
Pigment in ink	94/62/EEC (packaging and packaging waste)		
<b>Chromium VI and compounds</b>	Pigments in plastics and paints	94/62/EEC, 99/177/EC, <b>RoHS</b>	Allergenic, Carcinogenic, Persistent and Toxic for the environment
	Passivation		
	Pigment in ink	94/62/EEC (packaging and packaging waste)	
<b>CFC, HCFC, HBFC, Halons</b>	Solvents	Reg. EC 3093/94/EC and 2037/2000/EC Reg. EC n° 92/31	Ozone depleting substances Greenhouse gases
	As foaming agent in polymers		
	Cryogenic liquids and Pressurised gas		
<b>Halogenated benzyltoluenes</b> (DBBT, Ugilec 121 and Ugilec 141)	Dielectric liquids in capacitors	91/339/EEC	
<b>Halogenated solvents &amp; aliphatic CHC (Chlorohydrocarbons):</b> Tetrachloromethane (carbonyl tetrachloride) 1,1,1-Trichloroethane Methyl bromide (bromomethane) Bromochloromethane Trichloromethane (chloroform) 1,1,2,2-tetrachloroethane 1,1,1,2-tetrachloroethane Pentachloroethane 1,1-Dichloroethylene 1,1,2-Trichloroethane 1,2,4-Trichlorobenzene Trichloroethylene	Solvents, Cleaning agents Bleaching of packaging cardboard	Reg. EC n° 2037/2000 76/769/EEC 96/55/EC 2003/36/EC 2005/59/EC	Carcinogenic Ozone depleting substances
<b>Lead and compounds</b>	Pigments in plastics and paints	<b>RoHS (except batteries)</b> 89/677 EEC (paints)	Neurotoxic, Carcinogenic and Reprotoxic Bio accumulative and Toxic for the environment
	PVC stabilizer		
	Welding/brazing Surface finish of electronic components		
	Tin-lead alloys and coating, solders	94/62/EEC (packaging and packaging waste)	
	Pigment in ink		
Pigments in plastics and in paints	<b>RoHS</b> 89/677 EEC (paints)		



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<b>Mercury and compounds</b>	Pigment in ink	94/62/EEC (packaging and packaging waste)	Neurotoxic, Bioaccumulative and Toxic for the environment
	Mercury relay and semiconductor	<b>RoHS</b>	
	Additive in steel	91/157/EEC, 98/1001/EEC, 2006/66/EC	
	Thermostats, switches, UV lamps		
	Batteries		
Flame retardants in printed circuit card and in plastics	<b>RoHS</b>		
<b>PBB (Polybromobiphenyl) and PBDE (Polybromodiphenylether)</b>	Flame retardants in plastics	76/769/EEC, 82/828/EEC, 85/467/EEC, 89/677/EEC, 91/339/EEC, 96/59/EC (Dir. "PCB")	Endocrine disrupters Bioaccumulative and persistent in the environment
<b>PCB (Polychlorobiphenyl) and PCT (Polychloroterphenyl)</b>	Plasticizer/ additive in rubber and paints	Banned in Japan Stockholm Protocol (annex I and III) Stockholm Convention (annex A and C)	Endocrine disrupters Bioaccumulative and persistent in the environment
	Dielectric liquids		
	Heat transfer fluids		
	Wire and cable coating		
	Flame retardants		
<b>PCN (Polychlorinated Naphtalens )</b>	Impregnation of textile and leather Treatment of wood Stabilicizer for latex	91/173/EEC, 1999/51/EC Prohibition of all applications in 2008	Endocrine disrupters Bioaccumulative and persistent in the environment
<b>PCP (Pentachlorophenol)</b>	PVC stabilizer, Plasticizer, flame retardant or adhesive agent in rubber and paints	76/769 modified by 2002/45/EC Stockholm Protocol (annex II) Stockholm Convention (annex B)	Endocrine disrupter
<b>SCCP (Short Chain Chlorinated Paraffins)</b>	Metalworking		Bioaccumulative



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## Substances to be declared

Substances or group of substances	Potential applications	Regulations	Main risk
<b>Antimony and compounds</b>	In combination with a flame retardant in plastics or printed card boards (antimony trioxide) Additive for laser marking in plastics		Antimony trioxide is possibly carcinogenic to humans
<b>Aromatic Hydrocarbons</b> <b>Toluene</b> <b>Xylene</b> <b>Styrene</b>	Solvents in paints and varnish, cleaning agents Constituent of plastics materials (styrene)	Adhesives and paints 2005/59/EC	Neurotoxic and limited evidence of a reprotoxic effect Toxic for the environment Styrene is possibly carcinogenic to humans
<b>Arsenic and compounds</b>	Pigments in plastics and paints	<i>Wood preservation</i> 89/677/EEC, 2003/2/EC <i>Air: 2004/107/EC</i> <i>Treatment of industrial waters</i> 89/677/EC	Neurotoxic carcinogenic Toxic for the environment
	LED		
	Additive in alloys		
<b>Azo Colorants with carcinogenic amino compounds</b>	Colorants in plastics and paints	<i>Textiles and leather</i> 76/769/EEC, <b>2002/61/EC</b> , 2003/03/EC, 2004/21/EC	May release carcinogenic and mutagenic aromatic amines
	In LCD		
<b>Beryllium and compounds</b>	Additive in stainless steel and alloy with copper. Application in switches, springs, electronic circuits.	76/769/EEC 97/56/EEC	Carcinogenic
<b>Bismuth and compounds</b>	SnBi, CuBi and CuBiSe alloy		Negative impact on end-of-life treatment
<b>Brominated flame retardants other than PBB and PBDE (including TBBP-A and HBCDD)</b>	Flame retardants in printed circuit board and in plastics		Endocrine disrupters Persistent and bioaccumulative in the environment
<b>Chlorinated flame retardants other than PCB, PCT, PCN, SCCP</b>	Flame retardants in plastics Plasticizer/ additive in rubber and paints		Endocrine disrupters Persistent and bioaccumulative in the environment
<b>Cyanides and compounds</b>	Manufacture of plastics Electrodeposition (e.g. silver)		Endocrine disrupter, acutely toxic Toxic for the environment
<b>Formaldehyde</b>	Adhesive processing and other application in process	Toxic (CEPA)	Allergenic, Carcinogenic
	In adhesives, paint, lacquer. In urea and melamine resins		
<b>Glycol Ether</b>	Intermediate in polymer production and chemical reaction	76/769/EEC 94/60/EC, 2003/36/CE and 2003/34/CE	Neurotoxic, Limited evidence of reprotoxic effect
	Solvent or plasticizer for plastic, lacquer, paint & varnish		
<b>Halogenated solvents &amp; aliphatic CHC (Chlorohydrocarbons) not already prohibited</b>	Solvents, Cleaning agents	76/769/EC modified by 94/60/EC	Ozone depleting substances VOC
	Bleaching of cardboard		
<b>HFC (Hydrofluorocarbons), PFC (Perfluorocarbons)</b>	Solvents and cleaning agents	Regulation (EC) No 842/2006	Greenhouse gases
	Foaming agents (HFC)		
	Cryogenic liquids, pressurised gas		
<b>Isocyanates</b>	Constituent of polyurethanes foams, rubber, epoxy		Allergenic, affection of the respiratory system (occupational asthma)
	Hardener, catalyst, activator in paints		



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<b>Lead and compounds in batteries</b>	In batteries	RoHS Exemption	Neurotoxic, Carcinogenic and Reprotoxic Bio accumulative and Toxic for the environment
<b>Man Made Mineral fibres</b> (glass and refractory ceramic fibres)	Filling material in some insulating compounds		May have carcinogenic effect by inhalation, depending on their shape and size
<b>Nickel and compounds</b>	Pigments and catalyst in plastics and paints	<i>Piercing, jewellery... 94/27/EEC, 2004/96/EC</i>	Allergenic and skin sensitizer if prolonged dermal contact
	Alloys composition, Surface coating		
<b>Nonylphenol and nonylphenol ethoxylate</b>	Pigment carriers in plastics	76/769/EC modified by 2003/53/EC	Environmentally hazardous, bioaccumulative
<b>Organic tin compounds</b> (including TBT, TBTO, TPT)	Pigments in plastics and paints PVC stabilizer	<i>TBT (used as biocide): 1999/51/EC Reg. EC n° 782/2003</i>	Endocrine disrupter Toxic for the environment
<b>Organic phosphorous flame retardants</b> (TRIS, TEPA, TPP)	Flame retardants in plastics		May be allergenic and environmentally hazardous
<b>Phthalates</b>	PVC plasticizer	<i>2003/34/EC Toys: prohibition of 6 phthalates 2005/84/EC</i>	Reprotoxic
<b>Polycyclic Aromatic Hydrocarbons</b> (benzo(a)pyrene)	Extender oils in elastomer	<i>Tyres: 76/769/EE modified by 2005/69/EC</i>	Carcinogen, mutagen and toxic for reproduction persistent organic pollutant
	Lubricant (grease)		
<b>PVC (Poly Vinyl chloride)</b>	Chlorinated polymer		Negative impact on end-of-life treatment
<b>PTFE (PolyTetraFluoroEthylene)</b>	Fluorinated polymer (Teflon®)		Negative impact on end-of-life treatment
<b>Radioactive substances</b>	Sensors (americium)		Mutagenic
<b>Selenium and compounds</b>	Pigments in plastics and paints		Toxic for the environment
	Additive in alloys (steel, copper...)		
<b>SF6</b>	Gaseous dielectric for high-voltage circuit breakers, switchgear...	Regulation (EC) No 842/2006	Greenhouse gases
<b>Silicone</b> under specific conditions	Mould release agents (liquid silicone releasing volatile particles)		Problems for the automotive industry
<b>Tellurium and compounds</b>	Additive in alloys, brazing		Toxic
<b>Titanium</b>	White pigments in plastics (titane dioxide)		Possibly carcinogenic