Document Number:

S61-54-00

Environmental Compliance Requirements for Musco Products

F67-13-07

REVISION HISTORY

REV	DESCRIPTION	PREP	DATE	CHK	APPV	ECN
A	Create / Release	WRT	5/23/08	GNK	GNK	6888
B	Reformat Document. Update Sec 1; Add definitions to Sec 2; Rev Scope Sec 3; Update Sec 5 RoHS refs; Rem & Add Exemptions Sec 5.3. Insert new Sections 7 & 8; Chg former Sec 7 to 9; Sec 8 to 10; Sec 9 to 11; Sec 10 to 12; and Rev each section accordingly. Rev TOC.	CMP	12/18/12	CMP	CMP	8260
C	Rem Confidentiality Statement from Doc Footer.	KAK	6/18/17	CMP	CMP	10626
D	Update Section 2.1. ; 2.2. ; 2.6. ; 3.1. ; 3.2. ; 3.3. ; 3.5. ; 3.12. ; 5.1. ; 5.3. ; 6.1. ; 6.2. ; 6.3. ; 7.1. ; Insert New Table 2 & Renumber Tables in Sections 10 & 11 *(to Rem 2002/95/EC and 2002/96/EC refs; Update exemptions & China RoHS refs; Enforce EU RoHS phthalate restriction).* Rem document preface "IN SUMMARY" detail.	KAK	6/18/19	CMP	JMM	11999
E	Enforce 2021 TPCH model; Insert POP and TSCA references; Update Battery requirements; Insert Korea requirements as Sec 7; Chg Former Sec 7 to 8, Sec 8 to 9, Sec 9 to 10, Sec 10 to 11, Sec 11 to 12, Sec 12 to 13; Insert New Table 3 & Renumber Tables	CMP	4/16/24	KAK	JMM	14465

Table of Contents

1. Purpose

1.1 Environmental responsibility is an important aspect of Musco's business philosophy; therefore Musco is fully in support of environmental initiatives in our market areas. As such, it is Musco's intention to fully comply with current environmental directives, regulations and customer requirements that regulate and restrict the use of hazardous substances in products. In addition, Musco intends to comply with other legislation and restrictions being developed in Europe, China, and other jurisdictions, which will further restrict the use of certain substances.

1.2 This specification defines product requirements Musco will enforce in order to comply with such environmental initiatives.

2. Definitions

2.1 "RoHS" – Acronym for European Union (EU) Recast Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment 2011/65/EU and its amendments.

2.2 "China RoHS" – Reference for Management Methods for the Restriction of the Use of Hazardous Substances in Electrical and Electronic Products, MII Order 32 of 2016. China RoHS requires manufacturers to disclose the presence of certain hazardous substances contained in products. Although substances are not restricted under the first phase of the Chinese regulation, such restrictions will occur in the second phase.

2.3 "Homogeneous material" – A material which is of uniform composition throughout. A homogeneous material cannot be mechanically separated into constituents by mechanical actions such as unscrewing, cutting, crushing, grinding and abrasive processes. Examples of homogeneous materials are certain types of plastics, ceramics, glass, metals, alloys, paper, board, resins, and coatings. An example of a component which is separable, and therefore not homogeneous, is a wire cable that consists of a metal conductor, plastic insulation, ink marking on the insulation, metal terminals, and plating on the terminals.

Note that paint, ink, plating, anodizing, and other finishes are considered, in principle, to be mechanically separable from the material to which they are applied.

2.4 "REACH" – Acronym for European Union Regulation on the registration, evaluation, authorization and restriction of chemicals 1907/2006/EC and its amendments. REACH increases the responsibilities of industry to manage and report chemical usage that affects human or environmental safety.

2.5 "SVHC" – Acronym used within REACH that stands for Substance of Very High Concern. Examples of SVHCs are carcinogens, mutagens, and substances that are toxic to reproduction. The full list of REACH SVHC is compiled by the European Chemicals Agency (ECHA) under the title "Candidate List of Substances of Very High Concern for Authorization" at: https://echa.europa.eu/candidate-list-table .

2.6 "WEEE" – Acronym for waste electrical and electronic equipment. Used in conjunction with European Union Recast Directive 2012/19/EU and its amendments, although internationally other WEEE and Extended Producer Responsibility (EPR) legislation exists. The EU WEEE Directive deals with the collection, treatment, recovery, and recycling of electrical and electronic waste products. The directive addresses producer responsibility for recycling and disposal of products, imposes certain product labeling requirements, and admonishes that products should be designed for recyclability.

2.7 "Battery Directive" – Reference for EU Directive 2002/66/EC and its amendments on batteries and accumulators and waste batteries and accumulators. This directive restricts the usage of certain hazardous substances in batteries and accumulators, imposes labeling requirements for batteries, addresses producer responsibility for recycling and disposal of waste batteries, and admonishes that products should be designed to facilitate battery recycling. Reference is generally updated to 2023/1542/EU after 18 Feb 2024, whereby additional sustainability and performance requirements are added.

3. Scope

3.1 Musco products will comply with Directive 2011/65/EU of the European Parliament and of the Council of 8 June, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS).

3.2 All Musco products, including control and monitoring equipment, are within scope of EU RoHS.

3.3 Each material, part, product, or assembly comprising Musco products must comply with the EU RoHS Directive. In order to comply with this directive, the material, part, product, or assembly must not contain lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBBs), polybrominated diphenyl ethers (PBDEs), bis (2-ethylhexyl) phthalate (DEHP), butyl benzyl phthalate (BBP), dibutyl phthalate (DBP), or diisobutyl phthalate (DIBP) above certain levels. See Section 5.1 for requirements

3.4 EU RoHS directive provides exemptions which allow the use of these materials in certain applications. See Section 5.3 for specific information on exemptions.

3.5 China RoHS is to be implemented in two phases. 'Phase One' implementation only requires disclosure of the absence or presence of certain hazardous substances. 'Phase Two' would impose substance restrictions

3.6 All Musco products, including control and monitoring equipment, are considered to be within scope of China RoHS. As of this writing, Musco only has products covered by 'Phase One' implementation of the regulation.

3.7 China RoHS requires disclosure of lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBBs) and/or polybrominated diphenyl ethers (PBDEs). These six substances must be disclosed to be above or below certain threshold levels. Musco will perform this disclosure by applying labels to product subassemblies, also by providing tables showing whether the concentration of each substance in each subassembly is above or below the threshold value.

3.8 Each material, part, product or assembly compromising Musco lighting equipment must comply with Korea EL210. In order to comply, the material, part, product, or assembly must not contain lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB), polybrominated diphenyl ether (PBDEs), bis (2-ethylhexyl) phthalate (DEHP), butyl benzyl phthalate (BBP), dibutyl phthalate (DBP), diisobutyl phthalate (DIBP), hexabromocyclododecane (HBCD or HBCDD), or Short-Chain Chlorinated Paraffins (SCCP) where C=10-13 and chlorine concentration is 50% or higher. See Section 7.1 for requirements.

3.9 Musco products will comply with Regulation 1907/2006/EC of the European Parliament and of the Council of 18 December, 2006 on the registration, evaluation, authorization, and restriction of chemicals (REACH), which went into effect 1 June, 2007.

3.10 Under REACH, Musco is required to report the presence of certain substances. Suppliers are to include all chemical substances within the full material disclosure as required in Section 12 of this specification. Particular focus will be placed on substances of very high concern (SVHC).

3.11 All batteries used in Musco products must comply with the EU Directive 2006/66/EC (Battery Directive), which restricts the use of certain substances and imposes labeling requirements. Batteries are outside the scope of EU RoHS.

3.12 Musco prohibits the use of batteries containing intentionally added mercury.

3.13 Musco will apply proper labeling to product subassemblies as required by Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment. In the case of purchased subassemblies that require labeling, Musco will provide specific instruction to supplier of these subassemblies.

3.14 Musco products will comply with current environmental directives and legislation that restrict the use of substances, including applicable EU directives which are outside of RoHS or REACH, applicable United States environmental policies and legislation, among other requirements in our market areas.

4. Responsibilities

4.1 Responsibility to comply with this specification lies with all suppliers who provide materials to Musco. These include raw material manufacturers, component manufacturers, contract manufacturers, wholesalers, distributors, agents, and others who participate in the supply chain. Reference current version of S61-54-00 at www.musco.com/ec .

4.2 Musco has implemented a Product Change Notice (PCN) process to manage product changes. Any proposed product or process change that may affect form, fit, function, or material composition that is initiated by anyone in the supply chain must be submitted to Musco for pre-approval via the PCN procedure. Reference Musco Product Change Notice Procedure at www.musco.com/ec .

4.3 Musco requires suppliers provide only compliant materials and components. In cases where an existing material or component is determined to be noncompliant, supplier is responsible to provide a suitable compliant substitution. All substitutions must be pre-approved by Musco Engineering. Any product change proposed by a supplier must be communicated to Musco by means of a Product Change Notice (PCN). Reference Musco Product Change Notice Procedure at www.musco.com/ec .

4.4 Suppliers are responsible for providing proof of compliance by means of full material disclosure, for review by the Musco compliance team. Full disclosure shall be provided for each element or compound in each homogeneous material found in each component part or assembly. Amount of each compound or substance in each homogeneous material shall be stated in terms of parts-per-million (ppm) and grams (g). Full material disclosure shall be provided to Musco using the current revision of Musco Material Disclosure Form F67-77-00, at www.musco.com/ec . Alternately, IPC-1752-2 or the supplier's standard format will be accepted, providing it documents materials at the homogeneous level. See section 13 Reporting Requirements.

4.5 Suppliers are responsible for implementing effective process controls which ensure effective and sustainable compliance for the long term. Musco reserves the right to view supplier's documentation of this fact. Musco reserves the right to audit compliance related processes at the supplier's facility.

4.6 Musco is responsible for communicating compliance requirements to suppliers and for keeping current as requirements continue to change.

5. Requirements for RoHS in Europe

5.1 Prohibited Substances

European RoHS Directive 2011/65/EU identifies the following substances as hazardous and prohibits their use in electrical and electronic equipment.

1. Lead (Pb) and its compounds.
2. Mercury (Hg) and its compounds
3. Hexavalent chromium (Cr^{+6})
4. Cadmium (Cd) and its compounds
5. Polybrominated biphenyl (PBB) flame retardants
6. Polybrominated diphenyl ether (PBDE) flame retardants, including deca-BDE
7. Bis (2-ethylhexyl) phthalate (DEHP)
8. Butyl benzyl phthalate (BBP)
9. Dibutyl phthalate (DBP)
10. Diisobutyl phthalate (DIBP)

This prohibition applies to the above substances and all compounds containing these substances. These substances and compounds must not be in or on any materials, parts, assemblies, or products, except in allowed concentrations found in Table 1 below or in the case of exemptions listed in Section 5.3.

Table 1 shows the maximum allowable concentration in a homogeneous material.

Table 1

Maximum Concentration Values Under RoHS	
Substance	Maximum Concentration by Weight
1. Lead (Pb)	Less than 0.10% (1000 ppm)
2. Mercury (Hg)	Less than 0.10% (1000 ppm)
3. Hexavalent Chromium (Cr^{+6})	Less than 0.10% (1000 ppm)
4. Cadmium (Cd)	Less than 0.01% (100 ppm)
5. Polybrominated Biphenyls (PBB)	Less than 0.10% (1000 ppm)
6. Polybrominated Diphenyl Ethers (PBDE)	Less than 0.10% (1000 ppm)
7. Bis (2-ethylhexyl) phthalate (DEHP)	Less than 0.10% (1000 ppm)
8. Butyl benzyl phthalate (BBP)	Less than 0.10% (1000 ppm)
9. Dibutyl phthalate (DBP)	Less than 0.10% (1000 ppm)
10. Diisobutyl phthalate (DIBP)	Less than 0.10% (1000 ppm)

5.2 Analysis Method – Each homogeneous material comprising each material, part, product, or assembly will be evaluated separately. If any homogeneous material in a material, part, product, or assembly contains a hazardous substance exceeding the maximum ppm limit, then the entire material, part, product, or assembly is considered to be out of compliance.

5.3 Exemptions – Following are some applications relative to use in Musco Products considered by Annex III of the EU Directive and its amendments to be exempt from RoHS requirements. Exemptions were instituted since no feasible alternatives were available at the time of ratification or review of the directive. The prohibition is in place for all other applications. Exemptions are continuously reviewed by the Technical Adaption Committee (TAC) and are subject to expiration in the future.

5.3.1 Removed

5.3.2 Removed

5.3.3 Removed

5.3.4 Removed

5.3.5 Removed

5.3.6 Removed

5.3.7 Removed

5.3.8 Removed

5.3.9 Removed

5.3.10 Removed

5.3.11 Lead (Pb) in high melting temperature type solders (i.e. Pb-based alloys containing 85% by weight or more Pb). [7a]

5.3.12 Removed

5.3.13 Removed

5.3.14 Mercury (Hg) in High Pressure Sodium (HPS) lamps for general lighting purposes, 155W < P ≤ 405W with CRI > 60, no limitation of use until 31 Dec 2011, 40 mg per burner thereafter. [4b-II]

5.3.15 Mercury (Hg) in High Pressure Sodium (HPS) lamps for general lighting purposes, P > 405W, with CRI > 60, no limitation of use until 31 Dec 2011, 40 mg per burner thereafter. [4b-III]

5.3.16 Mercury (Hg) in High Pressure Sodium (HPS) lamps for general lighting purposes, 155W < P ≤ 405W, no limitation of use until 31 Dec 2011, 30 mg per burner until 30 Sept 2022, 25 mg per burner thereafter. [4c-II]

5.3.17 Mercury (Hg) in High Pressure Sodium (HPS) lamps for general lighting purposes, P > 405W, no limitation of use until 31 Dec 2011, 40 mg per burner until 30 Sept 2022, 25 mg per burner thereafter. [4c-III]

5.3.18 Mercury (Hg) in metal halide (MH) lamps. [4e]

5.3.19 Lead (Pb) as an alloying element in steel for machining purposes and in galvanized steel containing up to 0.35% (3500 ppm) lead (Pb) by weight. [6a] This is valid for Category 9 Monitoring and Control Instruments only. See 5.3.28 for other product categories.

5.3.20 Lead (Pb) as an alloying element in aluminum containing up to 0.4% (4000 ppm) lead (Pb) by weight. [6b] This is valid for Category 9 Monitoring and Control Instruments only. See 5.3.29 and 5.3.30 for other product categories.

5.3.21 Copper alloy containing up to 4% (40,000 ppm) lead (Pb) by weight. [6c]

5.3.22 Electrical and electronic components containing Pb (lead) in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectronic devices, or in a glass or ceramic matrix compound. [7c-I]

5.3.23 Lead (Pb) in dielectric ceramic in capacitors for a rated voltage of 125VAC or 250VDC or higher. [7c-II]

5.3.24 Removed

5.3.25 Lead (Pb) in PZT based dielectric ceramic materials for capacitors being part of integrated circuits or discrete semiconductors. [7c-IV]

5.3.26 Cadmium (Cd) and its compounds in electrical contacts. [8b] This is valid for Category 9 Monitoring and Control Instruments only. See 5.3.31 for other product categories.

5.3.27 Lead (Pb) in cermet-based trimmer potentiometer elements. [34]

5.3.28 Lead (Pb) as an alloying element in steel for machining purposes containing up to 0.35% (3500 ppm) lead (Pb) by weight and in batch hot dip galvanized steel components containing up to 0.2% (2000 ppm) lead (Pb) by weight. [6a-i]

5.3.29 Lead (Pb) as an alloying element in aluminum containing up to 0.4% (4000 ppm) lead (Pb) by weight, provided it stems from lead-bearing aluminum scrap recycling. [6b-i]

5.3.30 Lead (Pb) as an alloying element in aluminum for machining purposes with a lead (Pb) content up to 0.4% (4000 ppm) by weight. [6b-ii]

5.3.31 Cadmium (Cd) and its compounds in electrical contacts used in: circuit breakers; thermal sensing controls; thermal motor protectors (excluding hermetic thermal motor protectors); AC switches rated at 6 A and more at 250 V AC and more or 12 A and more at 125 V AC and more; DC switches rated at 20 A and more at 18 V DC and more; and switches for use at voltage supply frequency ≥ 200 Hz. [8b-i]

5.4 Detail of Prohibitions – Indicated below are applications of these substances that are or have been in common practice. These applications, or any other application of these substances, are not permitted in Musco products except as allowed by the exemptions listed in Section 5.3, or when below the maximum concentration for homogeneous materials as specified in Table 1.

5.4.1 Removed

5.4.2 Lead (Pb) – Lead and its compounds may not be used in solder, electrical components, printed circuit boards, ball or column grid arrays, plating, metal finishing, pigment or stabilizer in plastics, or pigment in paint or ink.

5.4.3 Removed

5.4.4 Mercury (Hg) – Mercury and its compounds may not be used in electrical switches, thermal sensing devices, printed circuit boards, or as a pigment or stabilizer in plastic materials.

5.4.5 Hexavalent Chromium (Cr^{+6}) – Hexavalent chromium and its compounds may not be used as a corrosion inhibitor, in plating or metal finishing, in steel and stainless steel alloys, or as a colorant in paints or inks or dyes or plastic materials. Note that hexavalent chromium is commonly found in the form of chromate compounds.

5.4.6 Cadmium (Cd) – Cadmium and its compounds may not be used for metal plating or coating, as a pigment for paint or plastic or other materials, as a stabilizer for plastic materials, in metal alloys, or in electronic components.

5.4.7 Polybrominated biphenyls (PBB) – PBBs may not be used as a flame retardant in synthetic fibers or plastic materials.

5.4.8 Polybrominated diphenyl ethers (PBDE) – PBDEs may not be used as a flame retardant in synthetic fibers or plastic materials.

5.4.9 Phthalates – DEHP, BBP, DBP, or DIBP may not be used as additive or plasticizer in resins or polymers, e.g. PVC.

6. Requirements for China RoHS

6.1 Substances Requiring Disclosure – China RoHS identifies the following substances as hazardous. In the future, the government may identify additional harmful substances and add them to the restricted substance list.

1. Lead (Pb) and its compounds.
2. Mercury (Hg) and its compounds
3. Hexavalent chromium (Cr^{+6})
4. Cadmium (Cd) and its compounds
5. Polybrominated biphenyl (PBB) flame retardants
6. Polybrominated diphenyl ether (PBDE) flame retardants, including deca-BDE

6.2 Threshold Values Used in Reporting – Table 2 shows the maximum allowable concentration in a homogeneous material.

Table 2

Maximum Concentration Values Under China RoHS	
Substance	Maximum Concentration by Weight
1. Lead (Pb)	Less than 0.10% (1000 ppm)
2. Mercury (Hg)	Less than 0.10% (1000 ppm)
3. Hexavalent Chromium (Cr^{+6})	Less than 0.10% (1000 ppm) *and shall not be used in metal coatings*
4. Cadmium (Cd)	Less than 0.01% (100 ppm)
5. Polybrominated Biphenyls (PBB)	Less than 0.10% (1000 ppm)
6. Polybrominated Diphenyl Ethers (PBDE)	Less than 0.10% (1000 ppm)

6.3 Definition of Homogeneous – Similar to Section 2.3, except in accordance with GB/T 26572 any component smaller in size than $4mm^3$ is considered to be homogeneous.

6.4 Analysis Method – Each homogeneous material comprising each material, part, product, or assembly will be evaluated separately. If any homogeneous material in a material, part, product, or assembly contains a hazardous substance above the ppm threshold, then the entire material, part, product, or assembly is considered to be above the threshold and must be reported as such.

6.5 Exemptions – There are no exemptions under China RoHS. Absence or presence of all six substances must be disclosed for all products within the scope of China RoHS.

7. Requirements for Korea EL210

7.1 Prohibited Substances – The following substances are hazardous. In the future, the government may identify additional harmful substances and add them to the restricted substance list.

1. Lead (Pb) and its compounds
2. Mercury (Hg) and its compounds
3. Hexavalent chromium (Cr^{+6})
4. Cadmium (Cd) and its compounds
5. Polybrominated biphenyl (PBB) flame retardants
6. Polybrominated diphenyl ether (PBDE) flame retardants, including deca-BDE
7. Bis (2-ethylhexyl) phthalate (DEHP)
8. Butyl benzyl phthalate (BBP)
9. Dibutyl phthalate (DBP)
10. Diisobutyl phthalate (DIBP)
11. Hexabromocyclododecane (HBCD or HBCDD)
12. Short-Chain Chlorinated Paraffins (SCCP) where C=10-13 and chlorine concentration is 50% or higher

This prohibition applies to the above substances and all compounds containing these substances. These substances and compounds must not be in or on any materials, parts, assemblies, or products, except in allowed concentrations found in Table 3 or in the case of exemptions listed in Section 7.3.

7.2 Analysis Method – Each homogeneous material comprising each material, part, product, or assembly will be evaluated separately. If any homogeneous material in a material, part, product, or assembly contains a hazardous substance exceeding the maximum ppm limit, then the entire material, part, product, or assembly is considered to be out of compliance.

7.3 Exemptions – Refer to Section 5.3.

Table 3 shows the maximum allowable concentration in a homogeneous material.

Table 3

Maximum Concentration Values Under EL210	
Substance	Maximum Concentration by Weight
1. Lead (Pb)	Less than 0.10% (1000 ppm)
2. Mercury (Hg)	Less than 0.10% (1000 ppm)
3. Hexavalent Chromium (Cr^{+6})	Less than 0.10% (1000 ppm)
4. Cadmium (Cd)	Less than 0.01% (100 ppm)
5. Polybrominated Biphenyls (PBB)	Less than 0.10% (1000 ppm)
6. Polybrominated Diphenyl Ethers (PBDE)	Less than 0.10% (1000 ppm)
7. Bis (2-ethylhexyl) phthalate (DEHP)	Less than 0.10% (1000 ppm)
8. Butyl benzyl phthalate (BBP)	Less than 0.10% (1000 ppm)
9. Dibutyl phthalate (DBP)	Less than 0.10% (1000 ppm)
10. Diisobutyl phthalate (DIBP)	Less than 0.10% (1000 ppm)
11. Hexabromocyclododecane (HBCD or HBCDD)	Shall not be used
12. Short-Chain Chlorinated Paraffins (SCCP) where C=10-13 and chlorine concentration is 50% or higher	Shall not be used

8. Requirements for California Lighting Efficiency and Toxics Reduction Act

8.1 Musco products will comply with the California Lighting Efficiency and Toxics Reduction Act, Bill AB1109 of 2007. This act amends the Health and Safety Code 25210.9-25210.12 and prohibits the sale of general purpose lights that contain levels of hazardous substances that would result in the prohibition of sale in the EU.

8.2 General purpose lights are defined as lamps, bulbs, tubes, or other electric devices that provide functional illumination for indoor residential, indoor commercial, and outdoor use.

8.3 Musco products which fall within scope of this act include lamps and LED board assembly. Note: for LED fixtures which do not have a field replaceable LED board assembly, the entire fixture shall comply with this act.

9. Requirements for REACH

9.1 Full material disclosure is required as defined in Section 13. Suppliers must report SVHCs listed on the Candidate List for Authorization if the presence of a substance is equal to or above 0.1% (1000ppm) by weight of an article. REACH will have regular updates such that the Candidate List will continuously increase over time. Current list of SVHC located at https://echa.europa.eu/candidate-list-table.

9.2 Supplier must provide information to Musco to create safe use information for each SVHC equal to or above 0.1% by weight. Examples include instructions to control hazards, risks, or exposure during life-cycle stages. Such information will be compiled and provided to users as to how to use the article safely.

9.3 Supplier must follow Annex XVII restrictions or prohibitions. A selection of these substances, relevant to industry, are listed in Table 4.

10. Other Substance Restrictions

10.1 Substances in Table 4 have been restricted outside of EU RoHS or China RoHS. An applicable regulatory reference is provided for details.

10.2 Supplier must report all uses of per- and polyfluoroalkyl substances in materials, parts, products, and any process or assembly consumable.

Table 4

Chemical Substance	Example Applications	Regulatory Reference
Asbestos	Pigment, paint, and fillers	1
Lead and Lead Compounds	Applies only to paint	1
Ozone Depleting Substances – Class I (CFC, HBFC, etc.), Class II (HCFC)	Foaming agent, aerosols, and solvents	2
Polychlorinated Biphenyls (PCBs) / Polychlorinated Terphenyls (PCT)	Electrical insulation, solvent, capacitors, and transformers	1, 2
Trisubstituted organostannic (e.g. tributyltin and triphenyltin), dibutyltin, and dioctyltin compounds	Pigment, paint, stabilizer, and fillers	1
Cadmium and Cadmium Compounds	Applies only to pigment or stabilizer in paints or polymers	1
C9-C14 linear and branched perfluorocarboxylic acids (PFCA), its salts, and related compounds	Polymers, elastomers, and coatings	1
Perfluorooctane sulfonic acid and its derivatives including salts (PFOS)	Polymers and coatings	3
Perfluorooctanoic acid (PFOA), its salts, and related compounds	Electrical insulation, polymers, elastomers, and coatings	3
Perfluorohexane sulfonic acid (PFHxS), its salts and PFHxS-related compounds	Polymers, elastomers, adhesives, and coatings	3
Decabromodiphenyl ether (DecaBDE)	Flame retardant in polymers	4
Phenol, isopropylated phosphate (3:1) (PIP 3:1)	Coatings, adhesives, sealants, and polymers	4
Pentachlorothiophenol (PCTP)	Rubber	4
UV-328	UV Stabilizer in polymers	5

Regulatory References:

1. EU Regulation (EC) 1907/2006 – REACH
2. EU Regulation (EC) 1005/2009; United States Clean Air Act Amendment of 1990
3. EU Regulation (EU) 2019/1021 – Persistent Organic Pollutants (POPs)
4. United States Toxic Substances Control Act (TSCA), including 40 CFR 751
5. Stockholm Convention on Persistent Organic Pollutants

11. Packaging Content Restriction

11.1 This section applies to items which Musco will utilize to ship our manufactured products and to supplier packaging of any provided part or material. Substances in Table 5 are restricted for use in packaging materials. Applicable regulatory references are provided for details on the restrictions. Use of these substances above the allowable threshold is prohibited.

Table 5

Packaging Content Substance Restrictions			
Chemical Substance	Threshold	Restricted Application(s)	Regulatory Reference
Lead, Mercury, Cadmium, and Hexavalent Chromium	Substances may not be intentionally added. Combined concentration may not exceed 0.01% (100 ppm) by weight. No substance which replaced a regulated metal may create a hazard as great or greater than the hazard created by the regulated metals	Packaging, packaging components	1
Phthalates	Substances may not be intentionally added. Combined concentration may not exceed 0.01% (100 ppm) by weight. No substance which replaced a regulated chemical may create a hazard as great or greater than the hazard created by the regulated chemical	Packaging, packaging components	1
Perfluoroalkyl and polyfluoroalkyl substances (PFAS)	Substances may not be intentionally added. PFAS shall not be detectable. No substance which replaced a regulated chemical may create a hazard as great or greater than the hazard created by the regulated chemical	Packaging, packaging components	1
Ozone Depleting Substances – Class I (CFC, HBFC, etc.), Class II (HCFC)	May not be used	Foam packaging materials	2

Regulatory References:

1. EU Directives 94/62/EC and 2004/12/EC, CONEG-Toxics in Packaging Model Legislation, Iowa Administrative Code Section 567 Chapter 213

2. EU Regulation (EC) 1005/2009; United States Clean Air Act Amendment of 1990

11.2 Requirements for Korea

11.2.1 Synthetic resin packaging materials shall not use halogen-based synthetic resins.

11.2.2 Paper packaging materials shall contain 50% or more recycled content by mass and shall not be processed in a manner that makes recycling difficult (e.g. resin application, mixed oil ingredients, etc).

11.2.3 Void fill shall be a single material of:

11.2.3.1 Paper or pulp.

11.2.3.2 Synthetic resin with 50% or more recycled content by mass.

11.2.3.3 Foamed synthetic resins [expanded polyethylene (EPE), expanded polypropylene (EPP), and expanded polystyrene (EPS)] manufactured using foaming agents with an Ozone Depleting Potential (ODP) of 0 and Global Warming Potential (GWP) of 100 or less. However, until December 31, 2025, substances with an ODP of 0 and a GWP of 1000 or less are allowed.

12. Battery Requirements

European Directive 2006/66/EC and 2023/1542/EU (Battery Directive) regulates material content, labeling, and recycling of batteries. The US Federal Government per 42 USC 14301-14336 and US states such as Connecticut, Maine and Rhode Island regulate material content of batteries. The following requirements apply to all batteries purchased by Musco and used in Musco products.

12.1 Restricted Substances – Table 6 shows restrictions on substances used in batteries. These substances must not be used in any battery, except in allowed concentrations found in Table 6 below.

Table 6

Battery Substance Restrictions	
Chemical Substance	Maximum Concentration by Weight
Cadmium	Less than 0.002% (20 ppm)
Mercury	May not be intentionally added. Overall content must be less than 0.0005% (5ppm).
Lead	Less than 0.01% (100 ppm) in portable batteries

12.2 Battery Labeling Requirements

12.2.1 All batteries must be marked with the crossed out wheeled symbol shown below. This symbol shall cover at least 0.3% of the area of the largest side of the battery, up to a maximum size of 5 x 5 cm. In the case of cylindrical cells, the symbol shall cover at least 1.5% of the surface area of the battery and shall have a maximum size of 5 x 5 cm. Where the size of the battery is such that the symbol would be smaller than 0.5 X 0.5 cm, the battery need not be marked, but a symbol measuring at least 1 x 1 cm shall be printed on the packaging.

12.2.2 Batteries containing more than 0.004% (40 ppm) lead shall be marked with the chemical symbol Pb. Chemical symbol shall be located beneath the symbol shown in 12.2.1 and shall cover an area of at least one quarter the size of that symbol.

12.2.3 Batteries shall be labeled in accordance with Article 13 of Regulation (EU) 2023/1542.

12.2.4 Brands shall be communicated to Musco for producer registration purposes.

13. Reporting Requirements

13.1 Items Affected - The requirement of Full Material Disclosure applies to all materials, parts, products, and assemblies supplied to Musco for the manufacture and packaging of products.

13.2 Full Material Disclosure - The supplier must fully disclose all compounds and substances comprising each material, part, product, or assembly. In other words, disclosure must be provided for each compound or substance in each homogeneous material in each component part or assembly. The amount of each compound or substance in each homogeneous material shall be stated in parts-per-million (ppm) and grams (g). In addition, the CAS number for each compound or substance must be provided.

13.3 Material Disclosure Format – Suppliers shall use the Musco Material Disclosure Form F67-77-00 to submit disclosure information. Current form located at www.musco.com/ec . It should be submitted electronically as an Excel spreadsheet to ec@musco.com .

13.3.1 Material Disclosure Form is to be completed for each manufacturer of each Musco part number. If the responses to the questionnaire are identical for multiple part numbers from one manufacturer, then one questionnaire may be used to submit data for a list of part numbers for which the data applies.

13.3.2 Alternative Formats

13.3.2.1 IPC-1752 Class 6 is an acceptable alternative. As of this writing, IPC 1752A Class D is not supported.

13.3.2.2 The manufacturer's standard material disclosure format is an acceptable alternative, providing it documents the materials at the homogeneous level, and includes all the information required on Musco Form F67-77-00.

13.4 Sample Material Disclosure

Material Disclosure - For each item or sub item list all homogeneous materials, and for each homogeneous material list all substances in parts per million (ppm) and grams (g). Note that the sum of PPM's for each homogeneous material should equal 1,000,000.

Item/Sub item	Homogeneous Mat'l	Compound or Substance	CAS #	PPM	Mass (g)
Terminal #1	Brass	zinc	7440-66-6	300,000	0.1290
"	"	copper	7440-50-8	700,000	0.3010
"	Plating	tin	7440-31-5	1,000,000	0.0060
Etc.					