



Eastern Alloys’ statement of Restricted Hazardous Materials – IMDS, RoHS, GADSL, REACH, PFAS

Zinc Alloys produced by Eastern Alloys (see list that follows) do not contain any declarable or prohibited substances above the threshold or reporting limits as defined by EU Directive or legislation, and as listed in RoHS, GADSL (IMDS) and REACH lists (see definitions and possible substances below).

Alloys:

EaZall #2, #3, #5, #7, ZA8, ZA12, ZA27, ZA73, ZA5 (slush alloy), ACuZinc, high purity brighteners (96/4, 95/5, 90/10), Galfan, Galvalume, Zinc/Aluminum Master Alloys (V12, 8%, 6500), EZAC, HF (High Fluidity Alloy)

Discussion:

- RoHS (Restriction of Hazardous Substances):** RoHS is an EU directive (currently Directive 2011/65/EU) originated in the European Union in 2002 and restricts the use of six hazardous materials found in electrical and electronic products. All applicable products in the EU market since July 1, 2006, must pass RoHS compliance. Currently, RoHS specifies maximum levels for the following 10 restricted substances. The first six applied to the original RoHS while the last four were added under the commission delegated directive (EU) 2015/863 (amendment) otherwise known as **RoHS 3** (which succeeded RoHS 2):
 - Lead (Pb): < 1000 ppm (0.1%)
 - Mercury (Hg): < 1000 ppm (0.1%)
 - Cadmium (Cd): < 100 ppm (0.01%)
 - Hexavalent Chromium: (Cr VI) < 1000 ppm (0.1%)
 - Polybrominated Biphenyls (PBB): < 1000 ppm (0.1%)
 - Polybrominated Diphenyl Ethers (PBDE): < 1000 ppm (0.1%)
 - Bis(2-Ethylhexyl) phthalate (DEHP): < 1000 ppm (0.1%)
 - Benzyl butyl phthalate (BBP): < 1000 ppm (0.1%)
 - Dibutyl phthalate (DBP): < 1000 ppm (0.1%)
 - Diisobutyl phthalate (DIBP): < 1000 ppm (0.1%)

NOTE: All the Zinc alloys manufactured by Eastern Alloys (see above list) are RoHS compliant, having no restricted substances above the required threshold. Values are in ppm (parts per million) as well as weight percentage.

- GADSL (Global Automotive Declarable Substance List):** GADSL is a definitive list of substances used by the automotive industry (including IMDS database), requiring declaration with the target to minimize individual requirements and ensure cost-effective management of declaration practice along the complex supply chain. The scope is to cover declarable substances in the flow of information relevant to parts and materials supplied throughout the automotive value chain, from production to the end-of-life phase.

Substances are either prohibited (P) or must be declared (D) at levels above the reporting limit (0.1% unless otherwise listed). Table 1 shows three substances found in this GADSL list associated with the alloys manufactured by Eastern Alloys:

Table 1: Possible substances and restrictions in the GADSL list:

Substance	CAS	Class	Threshold	Weight % in Alloy
Cadmium	7440-43-9	D/P	0.01% (any intentionally introduced content must be reported)	Various with alloy, but in all cases lower than 0.01% and not intentionally added.
Lead	7440-92-1	D/P	0.1% (any intentionally introduced content must be reported)	Varies with alloy, but in all cases lower than 0.1% and not intentionally added.
Nickel	7440-02-0	D	0.1%	Nickel is added to some products but is below the threshold and not considered “Declarable”.

"P" - Prohibited in all applications; "D" - Substance must be reported if the threshold limits are exceeded; "D/P" - Prohibited in some applications and declarable in all other cases.

NOTE: The “Prohibited” substances found in the zinc alloys manufactured by Eastern Alloys are below the threshold and are not intentionally added. The declarable substance Nickel is below the 0.1% threshold. Therefore, no reporting is required of these substances for IMDS.



- **REACH - SVHC (Substances of Very High Concern):** In EU's REACH legislation, as of June 27, 2024, there are 241 declared substances on its SVHC candidate list. "Preparations" manufactured by Eastern Alloys (see Alloy list above) do not contain REACH SVHC materials in excess of 0.1% by weight, are not intentionally added, and do not intentionally release chemical substances.

NOTE: North American die casting companies are not required to register or notify EU agencies when exporting zinc die castings ("articles") to EU states when they do not contain SVHC materials in excess of 0.1% by weight, are intentionally added, and do not intentionally release chemical substances.

- **REACH – PFAS (Per - and polyfluoroalkyl substances):**
 - **Zinc Alloys are metallic and do not contain any PFAS.**

- **Other Restricted Substances:**

Metals and Metal ions:

- Mercury - is not a normal constituent of Zinc Casting and Coating alloys
- Hexavalent Chromium – **Zinc alloys are metallic and do not contain ionized species, i.e. Cr ⁺⁶**

Organic Substances

- Polybrominated Biphenyls (PBB), and Polybrominated Diphenyl Ethers (PBDE) **Zinc Alloys are metallic and do not contain Organic substances.**

NOTE: The information provided refers to supplied zinc alloy ingot only. Instances where the alloy is used to produce castings or as coatings that are combined with other substances must be individually investigated to determine if any prohibited or restricted substances are contained in the combined or coating materials.

Radioactivity:

Material produced by Eastern Alloys, Inc. and Eastern Alloys of Kentucky, LLC does not contain any radioactive materials.

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