REQUIREMENTS FOR LABELING ZINC-CONTAINING PRODUCTS UNDER CA PROP 65

REVIEW FINDS THAT PROP 65 LABELING FOR CADMIUM AND LEAD IS NOT REQUIRED FOR PRODUCTS MADE FROM ZINC DIE CASTING AND SHG ALLOYS MEETING ASTM SPECIFICATIONS

INTRODUCTION

California's Safe Drinking Water and Toxic Enforcement Act of 1986, or Proposition 65 (Prop 65) requires producers and/or packagers of products sold in California to provide a clear and reasonable warning when their products and/or packaging contain a Prop 65 chemical, unless they can demonstrate that the Prop 65 chemical is present at a level that does not exceed a risk-based exposure threshold. Zinc naturally contains small quantities of impurities, including the Prop 65 chemicals lead and cadmium. Given the wide variety of applications for zinc alloys and galvanized steel, the International Zinc Association (IZA) engaged Integral Consulting Inc. to carry out a desktop exposure assessment on common metallic zinc applications to determine the need to label products containing zinc under Prop 65.

PROP 65 CHEMICALS IN ZINC ALLOYS AND GALVANIZED MATERIALS

Impurity levels in zinc alloys and galvanized coatings are specified under ASTM B86-18 and ASTM B6-18. For zinc alloys, the current evaluation used Zamak 3 as a surrogate, given it represents the majority of zinc alloy production; impurity levels among all alloys are consistent and results can be applied for all applications. For galvanizing, impurity levels can fluctuate with the Grade of zinc used in the galvanization process. Although Prime Western Grade was historically used, is has been phased out over the past several years in North America and Europe. As such, High Grade was considered as the conservatively represented form of zinc used in galvanizing. The maximum lead and cadmium content in these materials are shown in Table opposite.

Lead and Cadmium in Zinc Alloys and Materials

	Chemical Requirements %	
Alloy	Lead (max)	Cadmium (max)
ZAMAK 2	0.005	0.004
ZAMAK 3	0.005	0.004
ZAMAK 5	0.005	0.004
ZAMAK 7	0.003	0.002
ZA-8	0.006	0.006
ZA-12	0.006	0.006
ZA-27	0.006	0.006
ACuZinc5	0.005	0.004
EZAC	0.005	0.004
LME Grade	0.003	0.003
Special High Grade	0.003	0.003
High Grade	0.03	0.01
Intermediate Grade	0.45	0.01
Prime Western Grade	0.5-1.4a	0.2
Source: ASTM B86-18, ASTM B6-18		
a Range provided by ASTM B6-18		

EXPOSURE SCENARIOS

Three upper-end exposure scenarios were selected for quantitative evaluation. The intent of these selections were to estimate exposures for scenarios that would be higher than for other exposure scenarios, and therefore the conclusions for the three selected scenarios would provide a basis for making conclusions for other scenarios and articles. Factors that were collectively considered in the selection of articles and exposure scenarios included:

- Articles and exposure scenarios that are believed to represent high-end exposures
- Common use of the specific alloy or material in consumer articles.
- The presence of higher concentrations of lead and/or cadmium in the specific alloy or material that is used to make the article.
- The desire to select exposure scenarios representing the range of receptors and types of exposures (i.e., routes of exposure) likely for articles containing zinc alloys/metal.

The scenarios and exposure pathways for evaluation are summarized below:

Exposure Scenario	Exposure Pathways
Consumer use of ball pens with an outside casing composed from Zamak 3	· Oral mouthing · Hand-to-mouth transfer · Dermal absorption
Consumer use of toy cars with an outside casing composed from Zamak 3	· Oral mouthing · Hand-to-mouth transfer · Dermal absorption
Worker use of galvanized nails (galvanized with a High-Grade zinc metal)	· Oral mouthing · Hand-to-mouth transfer · Dermal absorption

CONCLUSIONS

The conclusions reached for each exposure scenario are shown below:

- Consumer use of ball pens with an outside casing composed from Zamak 3 - Prop 65 labeling for cadmium and lead is not necessary.
- Consumer use of toy cars with an outside casing composed from Zamak 3 - Prop 65 labeling for cadmium and lead is not necessary.
- Worker use of galvanized nails (galvanized with a High Grade material) - Prop 65 labeling for cadmium and lead is not necessary. Labeling of nails galvanized with Prime Western Grade material may be necessary.

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