



ACETOPHENONE & 2-PHENYL-2-PROPANOL

Other Names

Acetophenone: Methyl phenyl ketone, Acetylbenzene

2-phenyl-2-propanol: 1-Hydroxycumene, Dimethylphenyl-methanol

CAS Number	Substance
98-86-2	Acetophenone
617-94-7	2-Phenyl-2-Propanol

May Be Found In

- Ethylene-vinyl-acetate (EVA) foams produced with dicumyl peroxide as a crosslinking initiator
- Fragrances, solvents, and cleaners

Acetophenone and 2-Phenyl-2-Propanol are potential byproducts that may be found in Ethylene-vinyl-acetate (EVA) foams when specific peroxide initiators are in use.

Uses in the Supply Chain

There are few direct uses of acetophenone or 2-phenyl-2-propanol in the supply chain. These two chemicals are byproducts when a peroxide initiator called dicumyl peroxide (DCP) is used in ethylene-vinyl-acetate (EVA) foam production. DCP initiates a crosslinking reaction in EVA foam by creating peroxide radicals, and both acetophenone and 2-phenyl-2-propanol are potential endpoints for the radicals once they have been deactivated.

Why Acetophenone & 2-Phenyl-2-Propanol are Restricted

- Neither of these chemicals are legally regulated in finished products at this time, but multiple brand RSLs and the AFIRM RSL restrict these chemicals.
- The German Federal Institute for Risk Assessment (BfR) has written a comment about Acetophenone and 2-Phenylpropanol: 2-Phenylpropanol can potentially cause allergic reactions. There are complaints by German authority labs when these substances are found in high concentrations in shoes.
- Acetophenone has a sweet pungent odor of orange blossom or jasmine, with an odor threshold of about 0.83 milligrams per cubic meter (mg/m³).¹
- AFIRM has voluntarily restricted acetophenone and 2-phenyl-2 propanol due to this odor which has prompted concerns from some enforcement agencies.²
- Acetophenone is classified as: Acute Tox 4 - H302 and Eye Irrit. 2 - H319
- 2-Phenyl-2-propanol is classified as: No classification at this time.

Sourcing Compliant Materials from Your Suppliers

- Contact your suppliers and explain that you require their manufactured materials to be compliant with the current AFIRM RSL limits.²
- Require suppliers to submit a confirmation of material compliance or a test report from a third-party laboratory.
- When materials are received, consider performing risk-based testing to ensure the current AFIRM RSL limits are met.



Chemical Information Sheet

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- Pay special attention to EVA polymers created using DCP as a crosslinker, as these may contain some level of acetophenone and 2-phenyl-2-propanol. Engaging in a conversation with your material supplier to discuss this issue is the best way to procure materials with the lowest levels of Acetophenone and 2-phenyl-2-propanol possible.

Sourcing Compliant Formulations from Your Chemical Suppliers

- In this special case, there is no “compliant formulation” that can be sourced. Rather, to avoid the creation of acetophenone and 2-phenyl-2-propanol, a different manufacturing approach that utilizes a crosslinking agent other than DCP would need to be utilized. Caution should be used if an alternative to DCP is used, as some available alternatives are suspected of creating even more hazardous byproducts.
- While it may be possible to reduce the amount of the byproducts with stringent processing controls, it is unlikely that a complete absence of these two chemistries will be achieved when DCP is used.
- For all formulations, request SDS documentation that meets current GHS requirements.
- Prior to procuring any formulation, the chemical properties must be reviewed to ensure that proper protective equipment, chemical storage facilities, facility engineering controls, and associated treatment/disposal facilities are appropriate for the chemical(s).

Safer Alternatives

There are alternative recipes for creating EVA polymers that do not require DCP for use as a crosslinker, but each has the potential to create other additional (possibly more hazardous) byproducts and should be carefully reviewed.

Additional Information

Visit ECHA’s Candidate List of substances of very high concern to view dossiers for many restricted substances

<https://echa.europa.eu/candidate-list-table>.

References

¹ United States Environmental Protection Agency. (January 2000). *Acetophenone*. <https://www.epa.gov/sites/production/files/2016-09/documents/acetophenone.pdf>

² Apparel and Footwear International RSL Management Group Restricted Substances List (AFIRM RSL) <http://afirm-group.com/afirm-rsl/>