



FORMALDEHYDE

Other Names Formalin, Methanal, Oxymethylene, Methylaldehyde, Oxomethane, Methyl aldehyde, Methylene glycol, Methylene oxide, Formol, Carbonyl hydride

CAS Number	Substance
50-00-0	Formaldehyde

- May Be Found In**
- Wrinkle free (permanent press, easy care, non-iron), stiffen [crinkle (3D)], stain resistant
 - Resins or coatings applications using phenolic-, urea-, melamine-formaldehyde and PU resins
 - Tinting and over-dye in spraying and dipping
 - Prints such as flock and discharge; Heat transfer
 - Adhesives and glue applications including patching
 - Odor control

Formaldehyde is a chemical with widespread uses, occurring naturally at low levels in foods and used in a variety of synthetic preparations. At room temperature, formaldehyde is a colorless, flammable gas that has a distinct, pungent smell. Small amounts of formaldehyde are naturally produced by plants, animals, and humans.¹

Uses in the Supply Chain

Formaldehyde may be used in the production of fertilizer, paper, plywood, and urea-formaldehyde resins. It is also used as a preservative in some foods and in many household products, such as antiseptics, medicines, and cosmetics.¹

Formaldehyde can be used as one of the starting materials in auxiliaries imparting textile performance such as wrinkle free, dimensional stability, and stain resistant characteristics to cotton and cotton blend fabrics. Formaldehyde can be found in resins, binders and fixing agents for dyes and pigments (especially those with fluorescent effects). It can also be used as a catalyst in certain printing, adhesive and heat transfer processes.

Why Formaldehyde is Restricted

- Formaldehyde has been regulated in apparel, footwear, and accessories in major markets. These include Austria, China, Egypt, Finland, France, Germany, Indonesia, Japan, Lithuania, Netherlands, New Zealand, Norway, Poland, Russia, South Korea, Taiwan, and Vietnam. Some of the states in US, such as Washington and Vermont, have reporting requirements.
- Formaldehyde is classified as a probable human carcinogen and is an irritant which can affect the eyes, nose, and throat. In high concentrations formaldehyde can cause severe pain, gastrointestinal effects, vomiting, coma or death.

Sourcing Compliant Materials from Your Suppliers

- Contact your suppliers and explain that you require materials with no intentionally added formaldehyde, in the processing or as residues for the following:
 - Heat transfer
 - Prints (such as discharge and flock)



Chemical Information Document

- Adhesives or glue
- Finishing agents
- Check the Safety Data Sheets (SDS) of adhesives and glues to ensure formaldehyde is not listed as an ingredient.
- Share this guidance sheet with your material suppliers and printers. Instruct them to work with their upstream suppliers to source compliant chemical materials or components

Sourcing Compliant Formulations from Your Chemical Suppliers

- Contact your chemical suppliers and explain that you require no use of formaldehyde as a starting material (unless formaldehyde is used as a monomer in condensation process to make resins, binders or re-tanning agents and that those final products comply with MRSL requirements and will also satisfy finished product RSL requirements.
- Ensure chemicals used with final products (resins, dyeing, pigments, coatings, printing) can ensure compliance with AFIRM RSL limits using listed test methods.²
- Check the Safety Data Sheets (SDS) of all chemical formulations to ensure the formaldehyde CAS Number above is not listed as an ingredient.
- Follow the instructions of Technical Data (TDS) (including curing time & temperature, concentration & pH) for the auxiliary chemicals used with process monitoring.
- Perform quick formaldehyde spot tests if feasible in manufacturing facilities.
- Perform risk-based testing on in-process or final products by submitting samples to a third-party laboratory.
- Discuss with your chemical suppliers whether the below safer alternatives are suitable substitutes for your production needs.

Safer Alternatives

- Low or no formaldehyde alternatives are available for resins, adhesives, binders and other auxiliaries.
- As with any chemical substitution, a review of the replacement chemistry must be performed to ensure no regrettable substitutions are performed.
- If alternatives do not exist for an application in certain regions, operational control must be taken to protect workers and manage its concentration on finished and final products. Precautionary measures should be included to avoid any potential cross-contamination.

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>.

When applicable, manufacturers must apply controls to protect workers using formaldehyde containing products and prevent cross-contamination of products within a facility.³

References

¹Agency for Toxic Chemicals and Disease Registry. Toxic Substances Portal – Formaldehyde. <https://www.atsdr.cdc.gov/toxfags/af.asp?id=219&tid=39>, retrieved 12/2017.

²Apparel and Footwear International RSL Management Group (Ed.). (2018, January 31). Restricted Substances List (RSL). Retrieved <http://afirm-group.com/afirm-rsl/>

³ Hohenstein Institute & Textile Exchange, Chemical Snapshots - Formaldehyde. 17-03-2017, Revision 0.2