

TOLUENE

Class or Substance Name

Toluene: Methylbenzene

Substance List by CAS Number

Toluene is a single substance with CAS Number 108-88-3

Description of Use in Apparel and Footwear

Toluene is a widely used solvent in the footwear and apparel industry, often as a substitute to benzene. It is commonly used in adhesives and may be found in fabric or leather coatings, fabric inks, synthetic leather and as an impurity in polystyrene-based resins used for button production.

Why is Toluene Restricted?¹

- Toluene can cause damage to health by prolonged inhalation above certain exposure levels.
- Toluene may cause cancer and reproductive toxicity above certain exposure levels.
- Toluene in ambient air contributes significantly to the formation of smog, which has adverse effects on human health and can damage forests and crops.

Guidance: Sourcing Toluene-Compliant Materials from Your Material Suppliers (Textiles, Components and Trim Parts)

- Contact your suppliers and explain that you require materials with no intentionally added toluene.²
 - Pay special attention to buttons made from polystyrene-based resins. Monomeric styrene always contains toluene, and sometimes benzene, as a production impurity.
 - Many adhesives contain toluene. With sufficient drying/curing, toluene in materials may be removed by evaporation. The best course of action is to avoid its use altogether to prevent workplace safety and environmental issues.
- Share this information sheet with your material suppliers and instruct them to work with their chemical suppliers to source toluene-compliant chemical formulations using the guidance in the next section.

Guidance: Sourcing Toluene-Compliant Formulations from Your Chemical Suppliers

- Contact your chemical suppliers and explain that you require chemical formulations with no intentionally added toluene.³ Pay special attention to adhesives and polyurethane coatings, which make wide use of toluene.
 - Toluene may also be present in fabric-printing inks.
- Share this information sheet with your chemical suppliers and direct them to the following list of safer alternatives. Discuss whether these are suitable substitutes for your production needs.
- Check the Material Safety Data Sheets (MSDS) of all chemical formulations, adhesives in particular, to ensure the toluene CAS Number 108-88-3 is not listed as an ingredient.

TOLUENE MAY BE FOUND IN:

- Adhesives
- Fabric-printing inks
- Solvents used in leather finishing
- Durability or waterproof coatings on natural/synthetic fabric or leather
- Polystyrene-based resin buttons
- Synthetic leather
- Rubber

¹ Classification and risk phrases according to European Union Council Directive 67/548/EEC or Directive 1999/45/EC.

² Check with brands for their individual limits.

³ There is currently no limit on unintentional concentrations of toluene in chemical formulations.

Safer Toluene Alternatives

The following substances have been identified as examples of safer alternatives for toluene. They may be suitable for your production needs. Any chosen alternative must be ZDHC MRSL compliant.

- A blend of cyclohexane and acetone has been used as a replacement solvent for toluene.
- Methylcyclohexane-based adhesives may be used as substitutes.
- Water-based adhesives require upfront costs to achieve higher drying temperatures, but they use far fewer hazardous chemical ingredients.