



## Chlorobenzenes and Chlorotoluenes (COCs)

Other Names: Chlororganic carriers Chlorinated benzenes Chlorinated toluenes

CAS Number	Substance
95-49-8	2-Chlorotoluene
108-41-8	3-Chlorotoluene
106-43-4	4-Chlorotoluene

List continued in "Additional Information"

### May Be Found In:

- Dye carriers and levelling agents
- Dyes and auxiliaries
- Textiles (especially polyester and polyester blends)
- Fumigants, biocides, insecticides, herbicides
- Optical brighteners
- Degreaser for metal, leather and wool

Chlororganic Carriers (COCs) are a group of chemicals consisting of various Chlorobenzenes and Chlorotoluenes, which are typically used as intermediates in the synthesis of other chemicals. They are also used as dye carriers, especially in dyeing polyester with disperse dyes as auxiliaries and levelling agents. Both may be present as impurities in chemical formulations of dyestuffs and solvents.\*\*1\*\*

### Uses in the Supply Chain

Chlorobenzenes and chlorotoluenes have diversified applications in several industries. Within the apparel and footwear supply chains, they are found in textile applications. Chlorobenzenes and chlorotoluenes may be used as carriers during the dyeing process of synthetic fibres, especially for polyester and polyester blends. Chlorobenzenes and chlorotoluenes are also used as intermediates in the synthesis of other chemicals, as well as solvents for dyestuffs and other chemical formulations with high melting points. Certain chlorobenzenes may be used to make deodorisers or degreasers for metal, leather and wool, where <sup>1,2</sup> dichlorobenzene is used. Therefore, chlorobenzenes and chlorotoluenes can also be present as impurities.

### Why Chlorobenzenes and Chlorotoluenes (COCs) are Restricted

- Legislation in major markets around the world restricts the presence of chlorobenzenes and chlorotoluenes in finished products. Although no EU legal requirements exist to ban these substances in textiles, it has become a market-accepted requirement for textile brands.
- Leading apparel and footwear brands have banned the use of chlorobenzenes and chlorotoluenes in the production and manufacturing of their products.<sup>2</sup>
- Penta- and hexachlorobenzene are categorised as persistent organic pollutants. According to the Stockholm Convention, they have been banned globally.
- Some chlorobenzenes and chlorotoluenes can be very toxic to aquatic organisms at certain concentrations. They also have the potential to bioaccumulate and bioconcentrate.<sup>1</sup>
- Above certain concentration levels, long-term exposure to some chlorobenzenes and chlorotoluenes may result in the development of particular cancers.
- Above certain concentration levels, some chlorobenzenes and chlorotoluenes are toxic by inhalation or skin contact.
- Chemical hazard information for many chemicals can be found in the following external databases:
  - GESTIS Substance Database: [http://gestis-en.itrust.de/nxt/gateway.dll/gestis\\_en/000000.xml?f=templates\\$fn=default.htm\\$vid=gestiseng;sdbeng\\$3.0](http://gestis-en.itrust.de/nxt/gateway.dll/gestis_en/000000.xml?f=templates$fn=default.htm$vid=gestiseng;sdbeng$3.0)
  - US National Library of Medicine: <https://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB>
  - USA EPA Occupational Chemical Database: <https://www.osha.gov/chemicaldata/index.html>

## Sourcing Compliant Materials from Your Suppliers

- Explain that you require materials to be compliant with current AFIRM RSL limits.<sup>2</sup>
- Pay special attention to polyester and polyester-blended textiles. Chlororganic carriers are often used in the dyeing process of these materials.
- Request suppliers to submit a confirmation of material compliance and/or a test report from a third-party laboratory. When materials are received, consider performing random, risk-based testing to ensure current AFIRM RSL limits are met.
- Share this guidance sheet with your material suppliers. Using the guidance in the next section, instruct them to work with their chemical suppliers to source chemical formulations that comply with these requirements. If needed, highlight the existence of harmful substances in materials via chemical management trainings from the ZDHC Academy, existing guidelines, and laws.
- Make sure all your suppliers have a solid chemical management system in place.

## Sourcing Compliant Formulations from Your Chemical Formulators

- Explain to chemicals suppliers that you require chemical formulations to comply with current ZDHC MRSL limits.
  - Search for formulations on the ZDHC Gateway Chemical Module. If your preferred formulations are not listed, encourage providers to register their formulations.
  - Ask for a ZDHC ChemCheck report.
- For all formulations, request SDS documentation to ensure none of the CAS Numbers above are listed as ingredients.
- Discuss with your chemical supplier if any safer alternatives are available as suitable substitutes for your production process.

## Safer Alternatives

For use as a carrier, environmentally friendly substitutes are available. Some are based on aromatic esters or fatty alcohol polyglycol ethers. Any alternatives should be ZDHC MRSL compliant and meet specific brand requirements.

## Additional Information

Continued list of CAS Numbers and substance names from first page:

CAS Number	Substance
32768-54-0	2,3-Dichlorotoluene
95-73-8	2,4-Dichlorotoluene
19398-61-9	2,5-Dichlorotoluene
118-69-4	2,6-Dichlorotoluene
95-75-0	3,4-Dichlorotoluene
2077-46-5	2,3,6-Trichlorotoluene
6639-30-1	2,4,5-Trichlorotoluene
76057-12-0	2,3,4,5-Tetrachlorotoluene
875-40-1	2,3,5,6-Tetrachlorotoluene
877-11-2	Pentachlorotoluene
541-73-1	1,3-Dichlorobenzene
106-46-7	1,4-Dichlorobenzene
87-61-6	1,2,3-Trichlorobenzene
120-82-1	1,2,4-Trichlorobenzene
108-70-3	1,3,5-Trichlorobenzene
634-66-2	1,2,3,4-Tetrachlorobenzene
634-90-2	1,2,3,5-Tetrachlorobenzene
95-94-3	1,2,4,5-Tetrachlorobenzene
608-93-5	Pentachlorobenzene
118-74-1	Hexachlorobenzene
95-50-1	1,2-Dichlorobenzene

## References

1 Hohenstein Institute & Textile Exchange. (2017). Chemical Snapshots – Chlorobenzenes. Revision 0.2. Retrieved March 17, 2017.

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

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