



CHLORORGANIC CARRIERS (COC)

Other Names Chlorobenzenes,
Chlorinated Benzenes, chlorotoluenes,
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 carries and leveling agents
- Dyes and auxiliaries
- Textiles (especially polyester and polyester blends)
- Fumigants, biocides, insecticides, herbicides
- Optical brighteners

Chlororganic Carriers (COC) are a group of chemicals consisting of various chlorobenzenes and chlorotoluenes. COC are typically used as intermediates in the synthesis of other chemicals as well as dye carriers and leveling agents. COC may be present as impurities in chemical formulations of dyestuffs and solvents.^{1,2}

Uses in the Supply Chain

Within the apparel and footwear supply chains, COC are found in textile applications. COC may be used as carriers during the dyeing process of synthetic fibers, especially polyester and polyester blends. COC 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. Therefore, COC may be present as impurities as well.

Why COC are Restricted

- Legislation in major markets around the world restricts the presence of COC in finished products.
- Leading apparel and footwear brands have banned the use of both chlorotoluenes and chlorobenzenes in production of their products.^{2,3}
- Some COC can be very toxic to aquatic organisms at certain concentrations and have potential to bioaccumulate and bioconcentrate.¹
- Above certain levels, long-term exposure to some COC may result in the development of particular cancers.
- Above certain exposure levels, some COC are toxic by inhalation or skin contact.
- Chemical hazard information for many chemicals can be found at 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

- Contact your suppliers and explain that you require their manufactured materials to be compliant with the current AFIRM RSL limit.
- Require suppliers to submit a confirmation of material compliance or a test report from a third-party laboratory.
- When receiving materials, consider performing risk-based testing to ensure current AFIRM RSL limits are met.
- Share this information sheet with your material suppliers so they have full visibility and understand your sourcing requirements.
- Pay special attention to polyester and polyester-blended textiles as COC are often used in dyestuffs for these.

Sourcing Compliant Formulations from Your Chemical Suppliers



Chemical Information Document

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- For all formulations, request SDS documentation that meets current GHS requirements.
 - Ensure that no isomers of chlorotoluenes and chlorobenzenes are listed as ingredients.
- Contact your suppliers and explain that you require formulations to be compliant with the current ZDHC MRSL limit whenever applicable.⁴
- Discuss with your chemical supplier whether any safer alternatives are available that are suitable substitutes for your production needs.

Safer Alternatives

In case of the use as carrier, there are environmentally friendly substitutes available.

Some alternatives are based on aromatic esters or fatty alcohol polyglycol ethers. Any chosen alternative must 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
5216-25-1	p-Chlorobenzotrichloride

CAS Number	Substance
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
98-07-7	Benzotrichloride
100-44-7	Benzyl Chloride

References

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

² Zero Discharge of Hazardous Chemicals. (n.d.). Guidance Sheet Chlorinated Benzenes. Retrieved April 2019

³ Zero Discharge of Hazardous Chemicals. (n.d.). Guidance Sheet Chlorinated Toluenes. Retrieved August 7, 2017 (Draft)

⁴ Online ZDHC Manufacturing Restricted Substances List (ZDHC e-MRSL) Version 1.1. (Retrieved April 2019) https://www.roadmaptozero.com/mrsl_online/