GUIDANCE SHEET

CHLOROPHENOLS

Class or Substance Name

Chlorophenols (Chlorinated Phenols)

Substance List by CAS Number

Chlorophenols are a group of substances with 1 to 5 chlorines covalently bonded to phenols, including all isomers of mono-, di-, tri-, tetra- and penta-chlorophenol:

87-86-5	Pentachlorophenol (PCP)	**25167-83-3**	TeCP Mixed Isomers[1]
576-24-9	2,3-dichlorophenol (2,3-DCP)	**4901-51-3**	2,3,4,5-tetrachlorophenol (2,3,4,5-TeCP)
120-83-2	2,4-dichlorophenol (2,4-DCP)	**58-90-2**	2,3,4,6-tetrachlorophenol (2,3,4,6-TeCP)
583-78-8	2,5-dichlorophenol (2,5-DCP)	**935-95-5**	2,3,5,6-tetrachlorophenol (2,3,5,6-TeCP)
87-65-0	2,6-dichlorophenol (2,6-DCP)	**15950-66-0**	2,3,4-trichlorophenol (2,3,4-TCP)
95-77-2	3,4-dichlorophenol (3,4-DCP)	**933-78-8**	2,3,5-trichlorophenol (2,3,5-TCP)
591-35-5	3,5-dichlorophenol (3,5-DCP)	**933-75-5**	2,3,6-trichlorophenol (2,3,6-TCP)
95-57-8	2-chlorophenol (2-MCP)	**95-95-4**	2,4,5-trichlorophenol (2,4,5-TCP)
108-43-0	3-chlorophenol (3-MCP)	**88-06-2**	2,4,6-trichlorophenol (2,4,6-TCP)
106-48-9	4-chlorophenol (4-MCP)	**609-19-8**	3,4,5-trichlorophenol (3,4,5-TCP)

Description of Use in Apparel and Footwear

Chlorophenols are commonly used as pesticides and textile preservatives. They may also be present as impurities from the raw materials used in the production of dyes. PCP and TeCP can also be used as preservatives in print pastes.

Legislation around the world restricts the use of some chlorophenols in apparel, footwear and accessories. Leading apparel and footwear brands have banned the use of chlorophenols in production of their products.

CHLOROPHENOLS MAY BE FOUND IN:

- Textile and leather materials
- Leather pesticides and preservatives
- Dyes
- Print pastes

Why are Chlorophenols Restricted?[2]

- Some chlorophenols can be very toxic to aquatic organisms and above certain exposure levels may cause long-term adverse effects in the aquatic environment.
- Above certain levels, long-term exposure to some chlorophenols may result in the development of particular cancers.
- Above certain exposure levels, some chlorophenols are highly toxic by inhalation or skin contact.

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

- Contact your suppliers and explain that you require materials with no intentionally added chlorophenols. Textile and leather materials should contain <0.05 ppm (0.000005%) of each TeCP and PCP and <0.5 ppm (0.00005%) of each TCP (<0.05 ppm for baby products). The limit is <1 ppm (.0001%) of all other chlorophenols.[3]
  - Pay special attention to natural textile and leather materials, since chlorophenols may be used as a preservative or pesticide.

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[1] This is the generic CAS Number for mixtures of the three listed tetrachlorophenol isomers.

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

[3] Limits taken from AFIRM Restricted Substances Guidance (http://www.afirm-group.com/rsl-guidance/). These are the lowest agreed upon limits on chlorophenols in products among AFIRM brands. Check with brands for their individual limits.

- Share this information sheet with your material suppliers and instruct them to work with their chemical suppliers to source chlorophenol-compliant chemical formulations using the guidance in the next section.
- Have your suppliers confirm that their manufactured materials meet the chlorophenol limits with a certification or, if necessary, by providing a test report from a third-party laboratory.
- Perform risk-based checks of your suppliers' materials by submitting samples to a third-party laboratory for testing to ensure the chlorophenol limits are not exceeded.

Guidance: Sourcing Chlorophenol-Compliant Chemical Formulations from Your Chemical Suppliers

- Contact your chemical suppliers and explain that you require chemical formulations with no intentionally added chlorophenols. The total sum of PCP and all TeCPs in chemical formulations should be <20 ppm (0.002%). The total sum of all mono-, di-, and tri-chlorophenols in chemical formulations should be <50 ppm (0.005%).[4]
- Pay special attention to suppliers of chemicals used for preserving natural textiles and natural leather[5].
- Check the Material Safety Data Sheets (MSDS) of all chemical formulations to ensure that none of the chlorophenol CAS Numbers above is listed as an ingredient.
- Have your chemical suppliers confirm that their chemical formulations meet the chlorophenol limits with a certification or, if necessary[6], by providing a test report from a third-party testing laboratory.
- Perform risk-based checks of your chemical suppliers' formulations by submitting samples to a third-party laboratory for testing to ensure the chlorophenol limits are not exceeded.
- Discuss with your chemical supplier whether the below safer alternatives are suitable substitutes for your production needs.

Safer Chlorophenol Alternatives

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

- Biocide, preservative and mold control products that do not contain chlorophenols, for example:
  - Zinc-2-pyridinthiol-N-oxide
  - 2,2'-dihydroxy-5,5'-dichlorodiphenylmethane-ester
- Proper management to prevent conditions that allow mold to grow can minimise the need for preservative chemicals.

Additional information about these alternatives is available at the following links:

http://www.ospar.org/documents/dbase/publications/p00138/p00138_bd%20on%20pentachlorophenol.pdf

http://www.unece.org/fileadmin/DAM/env/lrtap/TaskForce/popsxg/2010/Exploration%20of%20management%20options%20for%20PCP,%20draft%20document%20..pdf

[4] Limits taken from ZDHC Manufacturing Restricted Substances List (MRSL) (http://www.roadmaptozero.com/df.php?file=pdf/MRSL.pdf) and are the limits on unintended chlorophenols in chemical formulations accepted by ZDHC member brands.

[5] The ZDHC MRSL does not apply to chemical formulations intended for leather processing at this time.

[6] At a later date, ZDHC will publish guidance on when testing of chemical formulations is appropriate.

For additional information, contact a ZDHC brand member.