

Occupational Safety and Health Administration

METHYL CHLOROFORM (1,1,1-TRICHLOROETHANE)†

Chemical Identification

CAS #	71-55-6
Formula	C ₂ H ₃ Cl ₃
Synonyms	chloroethene; 1,1,1-trichloroethane; 1,1,1-trichloroethane (stabilized)

Physical Properties

Physical description	Colorless liquid with a sweet, chloroform-like odor.		
Boiling point	165°F	Molecular weight	133.4
Freezing point/melting point	-26.5°F	Vapor pressure	100 mmHg
Flash point	>200°F	Vapor density	4.6
Specific gravity	1.31	Ionization potential	11.00 eV
Lower explosive limit (LEL)	7.5%	Upper explosive limit (UEL)	12.5%
NFPA health rating	2	NFPA fire rating	1
NFPA reactivity rating	0	NFPA special instruction	
Vapor hazard ratio (VHR)			
Historical exceedance percentage			
Target organs			

Monitoring Methods Used by OSHA

Analyte code (IMIS no.)	1720
Sampling group	
Sampler/Sampling media	CSC tube (100/50 mg) [SKC 226-01]
Sampling time*	
Sampling volume (TWA)*	3 L
Sampling flow rate (TWA)*	0.2 L/min

Sampling volume (STEL/Peak/C)*	
Sampling flow rate (STEL/Peak/C)*	
Analytical method instruments	GC-FID
Method reference	<u>OSHA 14 (fully validated)</u> .
Notes	
Special requirements	

* All sampling instructions above are recommended guidelines for OSHA Compliance Safety and Health Officers (CSHOs), please see the corresponding OSHA method reference for complete details.

Bulk/Wipe Method

Wipe Sampler/Sampling media	
Bulk Method	

On-Site Screening Techniques

Device	
Model/Type	
Sampling information (see manufacturer instructions)	



Exposure Limits

OSHA PEL 8-hour TWA (ST) STEL (C) Ceiling Peak		NIOSH REL Up to 10-hour TWA (ST) STEL (C) Ceiling		ACGIH TLV® 8-hour TWA (ST) STEL (C) Ceiling		CAL/OSHA PEL 8-hour TWA (ST) STEL (C) Ceiling Peak	
PEL-TWA	350 ppm (1900 mg/m³)	REL-TWA		TLV-TWA	350 ppm [1992]	PEL-TWA	350 ppm (1900 mg/m³)
PEL-STEL		REL-STEL		TLV-STEL	450 ppm [1992]	PEL-STEL	450 ppm (2450 mg/m³)
PEL-C		REL-C	350 ppm (1900 mg/m³) [15 minutes]	TLV-C		PEL-C	800 ppm

Skin notation	N	Skin notation	N	Skin notation	N	Skin notation	N
Notes: See <u>29 CFR 1910.1000 Table Z-1</u> .		Notes:		Notes: BEI®		Notes:	
Health factors: See NIH-NLM <u>PubChem</u> .		IDLH	700 ppm				
Carcinogenic classifications: IARC-3, TLV-A4, EPA-II		Notes:					
AIHA emergency response planning guidelines - ERPG-1/ERPG-2/ERPG-3: 350 ppm/700 ppm/3500 ppm							

Additional Resources and Literature References

NOAA: CAMEO Chemicals - [1,1,1-Trichloroethane](#)

NIOSH: Pocket Guide to Chemical Hazards - [Methyl chloroform](#)

Literature References

- ACGIH: *Documentation of the Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs)* - Methyl chloroform. See annual publication for most recent information.
- EPA Air Toxics Website: [Methyl chloroform \(1,1,1-Trichloroethane\)](#). U.S. Environmental Protection Agency Technology Transfer Network.
- Cohen, C. and Frank, A.L.: Liver disease following occupational exposure to 1,1,1-trichloroethane: A case study. *Am. J. Ind. Med.* **26**(2):237-241, 1994.
- House, R.A., Liss, G.M., Wills, M.C. and Holness, D.L.: Paresthesias and sensory neuropathy due to 1,1,1-trichloroethane. *J. Occup. Environ. Med.* **38**(2): 123-124, 1996.
- Pohanish, R.P. (editor): 1,1,1-Trichloroethane. In, *Sittig's Handbook of Toxic and Hazardous Chemicals and Carcinogens, Fourth Ed.*, Vol. 2. Norwich, NY: Noyes Publications, William Andrew Publishing, 2002, pp. 2245-2248.
- Tay, P., Pinnagoda, J., Sam, C.T., Ho, S.F., Tan, K.T. and Ong, C.N.: Environmental and biological monitoring of occupational exposure to 1,1,1-trichloroethane. *Occup. Med. (Lond.)* **45**(3): 147-150, 1995.

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