Trichloroethylene

Trichloroethene

$Cl_2C{=}CHCl$

$CHCl{:}CCl_2$ **Formula Wt 131.39** **CAS No. 79-01-6**

Note: This material usually contains a stabilizer. If a stabilizer is present, the amount and type should be stated on the label.

GENERAL DESCRIPTION

Typical appearance: clear, colorless liquid
Analytical use: solvent
Change in state (approximate): boiling point, 87 °C
Aqueous solubility: 0.1 g in 100 mL at 25 °C
Density: 1.46

SPECIFICATIONS

Assay ..... ≥99.5% $CHCl{:}CCl_2$

	Maximum Allowable
Color (APHA)	10
Residue after evaporation	0.001%
Titrable acid	0.0001 meq/g
Titrable base	0.0003 meq/g
Water (H_2O)	0.02%
Heavy metals (as Pb)	1 ppm
Free halogens	Passes test

TESTS

Assay. Analyze the sample by gas chromatography using the general parameters cited on page 80. The following specific conditions are also required.

Column: Type I, methyl silicone

Measure the area under all peaks, and calculate the trichloroethylene content in area percent. Correct for water content and added stabilizer.

Color (APHA). (Page 43).

Residue after Evaporation. (Page 25). Evaporate 100.0 g (69 mL) to dryness in a tared, preconditioned dish on a hot plate (≈100 °C) in a well-ventilated hood, and dry the residue at 105 °C for 30 min.

Titrable Acid and Titrable Base. To 25 mL of water and 0.10 mL of phenolphthalein indicator solution in a 250-mL glass-stoppered flask, add 0.01 N sodium hydroxide until a slight pink color appears. Add 36.0 g (25 mL) of sample, and shake for 30 s. If the pink color persists, titrate with 0.01 N hydrochloric acid, shaking repeatedly, until the pink color

just disappears. Not more than 0.90 mL of 0.01 N hydrochloric acid should be required (titrable base). If the pink color is discharged when the sample is added, titrate with 0.01 N sodium hydroxide until the pink color is restored. Not more than 0.50 mL of 0.01 N sodium hydroxide should be required (titrable acid).

Water. (Page 31, Method 2). Use 100 μL (140 mg) of the sample.

Heavy Metals. Evaporate 10.0 g (7 mL) to dryness in a glass evaporating dish on a hot plate (≈100 °C) inside a well-ventilated hood. For the standard, evaporate a solution containing 0.01 mg of lead to dryness. Cool, add 2 mL of hydrochloric acid to each, and slowly evaporate to dryness on a hot plate (≈100 °C). Moisten the residues with 0.05 mL of hydrochloric acid, add 10 mL of hot water, and digest for 2 min. Filter if necessary through a small filter, wash the evaporating dish and the filter with about 10 mL of water, and dilute each with water to 25 mL. Adjust the pH of the standard and sample solutions to between 3 and 4 (using a pH meter) with 1 N acetic acid or 10% ammonium hydroxide reagent solution, dilute with water to 40 mL, and mix. Add 10 mL of freshly prepared hydrogen sulfide water to each, and mix. Any color in the solution of the sample should not exceed that in the standard.

Free Halogens. Shake 10 mL for 2 min with 10 mL of water to which 0.10 mL of 10% potassium iodide reagent solution has been added, and allow to separate. The lower layer should not show a violet tint.