International Standard 5787

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Methyl chloride and ethyl chloride for industrial use — Methods of test

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Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

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It has been approved by the member bodies of the following countries :

Australia	Germany, F. R.	Poland
Austria	Hungary	Romania
Belgium	India	South Africa, Rep. of
Brazil	Israel	Switzerland
Bulgaria	Italy	Turkey
Chile	Kenya	United Kingdom
Czechoslovakia	Mexico	USSR
Egypt, Arab Rep. of	Netherlands	
France	Philippines	

No member body expressed disapproval of the document.

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Methyl chloride and ethyl chloride for industrial use — Methods of test

WARNING — Methyl chloride and ethyl chloride are flammable and form explosive mixtures with air. In the presence of aluminium, they may react vigorously to produce methyl- or ethyl-aluminium compounds. Their vapours have toxic and narcotic properties and care should be taken to avoid inhaling them. The liquids can generate very low temperatures by rapid evaporation, thereby causing severe burns if spilled on the skin. These products should be handled in a well ventilated area, away from naked flames and using a protective mask and gloves. Fires should be tackled with carbon dioxide, chemical powders, foam or commercially available extinguishing agents using suitable halogenated hydrocarbon derivatives. In no event should water be used.

1 Scope and field of application

This International Standard specifies the following methods of test for methyl chloride (chloromethane) and ethyl chloride (chloroethane) for industrial use :

a) determination of acidity;

b) determination of residue on evaporation;

c) determination of water content by the Karl Fischer method.

2 References

ISO 760, *Determination of water — Karl Fischer method (General method).*

ISO 2210, *Liquid halogenated hydrocarbons — Determination of residue on evaporation.*

ISO 3427, *Gaseous halogenated hydrocarbons (liquefied gases) — Taking of a sample.*

3 Determination of acidity

3.1 Field of application

The method is applicable to products having acidities, expressed as hydrochloric acid, between 1 and 50 mg/kg.

3.2 Principle

Evaporation of a test portion and absorption of its acidity in water. Titration of this acidity using standard volumetric sodium hydroxide solution in the presence of bromocresol green as indicator.

3.3 Reagents

During the analysis, use only reagents of recognized analytical grade.

3.3.1 Distilled water, neutral to bromocresol green.

Add to distilled water, in a flask fitted with a ground glass stopper, 1 % (*V*/*V*) of the bromocresol green solution (3.3.3) and neutralize with the standard volumetric sodium hydroxide solution (3.3.2) until the colour turns to light blue.

3.3.2 Sodium hydroxide, standard volumetric solution , of concentration $c(NaOH) \approx 0{,}01$ mol/l[1], freshly prepared.

3.3.3 Bromocresol green, 1 g/l solution in 95 % (*V*/*V*) ethanol.

3.4 Apparatus

Ordinary laboratory apparatus and the apparatus shown in figure 1, comprising :

3.4.1 Conical flask (F), 500 ml capacity, with ground glass neck.

3.4.2 Ground glass stopper, fitting the conical flask (3.4.1) and having two side tubes including a dip-tube.

3.4.3 Gas washing bottles (L), 350 ml capacity, with sintered borosilicate glass discs, each containing 100 ml of the water (3.3.1).

3.4.4 Three way stopcock (R).

3.5 Procedure

3.5.1 Test portion

Weigh, to the nearest 1 g, a type (a) or (b) sample cylinder (see ISO 3427) containing the test sample (see figure 1). Connect to the apparatus, slowly introduce at least 100 g of the liquefied product into the conical flask (3.4.1), which shall be clean and dry, and reweigh the cylinder to the nearest 1 g.

1) Hitherto expressed as approximately 0,01 N standard volumetric solution.