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ANSI Internat Doc Sect

Ethylene for industrial use — Determination of traces of polar compounds — Preparation of condensate samples by low-temperature scrubbing technique

Éthylène à usage industriel — Dosage des traces de composés polaires — Préparation d'échantillons concentrés par piégeage cryogénique

Reference number
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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 8916 was prepared by Technical Committee ISO/TC 47, *Chemistry*.

Annex A of this International Standard is for information only

Introduction

The exact determination of the polar compounds content in gaseous samples is particularly difficult for the following reason. The polar compounds of interest are liable to exhibit more or less pronounced adsorption phenomena at the solid surfaces of the sampling cylinders and of the tubes of conventional gas analytical devices.

Conventional gas analytical devices show relative errors of several hundred per cent, despite the special precautions taken during sampling.

In this case three methods of operation are generally possible:

- a) The determination, using a continuous analyser with a specific in-line sensor, in a streaming sample gas flow (see ISO 8917). Even though, in this case, the waiting times for a reliable and stable signal indication may be remarkably long. This signal is obtained when the zone of equilibrium between the gaseous polar compound and its adsorption layer in the flow system has reached the exit of the measuring cell. This technique requires a specific detector, which may be an on-line gas chromatograph or a mass spectrometer. In the most severe case, that of the most polar compound (water), a large number of commercially available special sensor devices may be used (see ISO 8917). This is a very special case.
- b) The preconcentration by adsorption of a given compound on an appropriate precolumn, which is degassed by heating in a specially adapted gas chromatograph. This method is well suited for routine application in series and in special cases. It is not universally applicable. The desorption itself shall be checked for every compound to be analysed. Incomplete desorption and even thermal decomposition of certain compounds, have been observed.
- c) The concentration into a liquid at low temperature by a scrubbing technique. In this case also, adsorption on the glass walls of the scrubbing absorbers may occur. However, this is a concentration process into a very small liquid volume and the dimensions of these scrubbing absorbers are very small.

A universally applicable method may be used and this technique is the subject of this International Standard.