

# INTERNATIONAL STANDARD



# 3899

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## Rubber — Nitrile latex — Determination of residual acrylonitrile content

*Caoutchouc — Latex de nitrile — Détermination de la teneur en acrylonitrile résiduaire*

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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.

International Standard ISO 3899 was drawn up by Technical Committee ISO/TC 45, *Rubber and rubber products*, and was circulated to the Member Bodies in July 1975.

It has been approved by the Member Bodies of the following countries :

|                |             |                |
|----------------|-------------|----------------|
| Australia      | India       | Sweden         |
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No Member Body expressed disapproval of the document.

# Rubber — Nitrile latex — Determination of residual acrylonitrile content

## 1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a method for the determination of the residual acrylonitrile content of nitrile rubber latices which have a residual acrylonitrile content of less than 0,2 % (m/m).

## 2 REFERENCE

ISO 123, *Rubber latex — Sampling*.

## 3 PRINCIPLE

Distillation of the latex and collection of the distillate in methanol. Addition of *n*-dodecyl mercaptan to the distillate and titration of the excess with a standard iodine solution.

## 4 REAGENTS

During the analysis, use only reagents of recognized analytical grade and only distilled water or water of equivalent purity.

**4.1 Silicone antifoaming agent** which does not affect the result of the determination.

**4.2 Methanol.**

**4.3 Propan-2-ol.**

**4.4 Mercaptan solution**, 1,25 % (m/m) *n*-dodecyl mercaptan in propan-2-ol.

**4.5 Potassium hydroxide**, 6 % (m/m) solution in 95 % (V/V) ethanol. The ethanol shall be free from aldehydes.

**4.6 Acetic acid**, glacial.

**4.7 Iodine**, 0,012 5 M, freshly standardized with a standard volumetric sodium thiosulphate solution.

## 5 APPARATUS

Ordinary laboratory apparatus and.

**5.1 Distillation apparatus**, consisting of distillation flask of capacity 500 cm<sup>3</sup>\*, stillhead, vertical water-cooled condenser and receiver of capacity 100 cm<sup>3</sup> with glass stopper through which pass a glass tube connected to the condenser and a shorter exit glass tube leading into a beaker of capacity 50 cm<sup>3</sup>.

**5.2 Volumetric flask**, of capacity 100 cm<sup>3</sup>.

**5.3 Conical flask**, of capacity at least 250 cm<sup>3</sup>.

## 6 SAMPLING

Sampling shall be carried out in accordance with one of the methods specified in ISO 123.

## 7 PROCEDURE

Weigh  $25,0 \pm 0,2$  g of latex into the distillation flask (5.1) and add 100 cm<sup>3</sup> of water and 1 cm<sup>3</sup> of the silicone antifoaming agent (4.1). Place 25 cm<sup>3</sup> of the methanol (4.2) in the receiver and assemble the distillation apparatus so that the end of the tube connected to the condenser is immersed in the methanol. Put sufficient methanol (for example 10 cm<sup>3</sup>) in the beaker to cover the end of the exit tube. Immerse the receiver and beaker in ice.

NOTE — The purpose of the methanol in the beaker is to collect any acrylonitrile which is not dissolved by the liquid in the receiver.

Distil the mixture, adjusting the rate of boiling to control frothing, and collect 50 cm<sup>3</sup> of distillate in the receiver.

Empty the contents of the receiver and beaker into the volumetric flask (5.2). Rinse through the condenser into the receiver twice with small (for example 5 cm<sup>3</sup>) portions of methanol and add the washings to the volumetric flask. Dilute to the mark with methanol.

\* The term millilitre (ml) is commonly used for the cubic centimetre (cm<sup>3</sup>), particularly to denote the capacity of laboratory glassware. Apparatus with either type of marking is satisfactory for use with this International Standard.