

INTERNATIONAL  
STANDARD

**ISO**  
**9455-9**

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**Soft soldering fluxes — Test methods —**  
**Part 9:**  
Determination of ammonia content

*Flux de brasage tendre — Méthodes d'essai —*  
*Partie 9: Dosage de l'ammoniac*



Reference number  
ISO 9455-9:1993(E)

## 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 voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 9455-9 was prepared by Technical Committee ISO/TC 44, *Welding and allied processes*, Sub-Committee SC 12, *Soldering and brazing materials*.

ISO 9455 consists of the following parts, under the general title *Soft soldering fluxes — Test methods*:

- Part 1: *Determination of non-volatile matter, gravimetric method*
- Part 2: *Determination of non-volatile matter, ebulliometric method*
- Part 3: *Determination of acid value, potentiometric and visual titration methods*
- Part 5: *Copper mirror test*
- Part 6: *Determination of halide content*
- Part 8: *Determination of zinc content*
- Part 9: *Determination of ammonia content*
- Part 10: *Flux efficacy tests, solder spread method*
- Part 11: *Solubility of flux residues*

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- *Part 12: Steel tube corrosion test*
- *Part 13: Determination of flux spattering*
- *Part 14: Assessment of tackiness of flux residues*
- *Part 15: Copper corrosion test*
- *Part 16: Flux efficacy tests, wetting balance method*  
[Technical Report]
- *Part 17: Determination of surface insulation resistance of flux residues (Comb test)*
- *Part 18: Electrochemical migration test for flux residues*

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# Soft soldering fluxes — Test methods —

## Part 9: Determination of ammonia content

### 1 Scope

This part of ISO 9455 specifies a distillation method for the determination of the ammonia content of solid, paste or liquid fluxes. The method is applicable to fluxes of class 3.1.1 only, as defined in ISO 9454-1.

### 2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this part of ISO 9455. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this part of ISO 9455 are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 9454-1:1990, *Soft soldering fluxes — Classification and requirements — Part 1: Classification, labelling and packaging.*

### 3 Principle

The prepared flux solution is distilled with sodium hydroxide to expel the ammonia present in the flux. The resulting distillate is passed into a standard sulfuric acid solution. The excess acid is then titrated with sodium hydroxide solution and the ammonia content of the flux is calculated.

### 4 Reagents

#### 4.1 General

Use only reagents of recognized analytical quality and only distilled, or deionized, water.

**4.2 Sodium hydroxide solution**, 1,0 mol/l standard solution, commercially available.

Alternatively, use an approximately 1,0 mol/l solution of sodium hydroxide, prepared by the following method. Dissolve 40 g of sodium hydroxide in water and cool. Transfer the solution to a 1 litre volumetric flask, dilute to the mark and mix well. Standardize this solution with 0,5 mol/l sulfuric acid solution (4.3).

**4.3 Sulfuric acid**, 0,5 mol/l, standard solution, commercially available.

Alternatively, use an approximately 0,5 mol/l solution of sulfuric acid prepared by the following method. Cautiously add 30 ml of sulfuric acid ( $\rho = 1,84$  g/ml) to 400 ml of water and mix. Cool and transfer to a 1 litre volumetric flask, dilute to the mark and mix well. Standardize this solution with a standard solution prepared from anhydrous sodium carbonate.

NOTE 1 1 ml of 0,5 mol/l sulfuric acid is equivalent to 0,053 5 g of ammonium chloride.

**4.4 Sulfuric acid**, 50 % (V/V) solution.

Adopting appropriate safety precautions, carefully add 500 ml of sulfuric acid ( $\rho = 1,84$  g/ml) to 500 ml of water. Mix well.

**WARNING — This is a potentially dangerous procedure and should be carried out by a trained person.**

**4.5 Sodium hydroxide solution**, 10 mol/l.

Dissolve 400 g of sodium hydroxide in water. Dilute to 1 litre and mix well. This solution should be prepared in a water-cooled polyethylene beaker and stored in a polyethylene bottle.