



**SLOVENSKI STANDARD**  
**SIST EN 1421:1999**

**01-april-1999**

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**Kemikalije, ki se uporabljajo za pripravo pitne vode – Amonijev klorid**

Chemicals used for treatment of water intended for human consumption - Ammonium chloride

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Ammoniumchlorid

Produits chimiques pour le traitement de l'eau destinée à la consommation humaine - Chlorure d'ammonium

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**ICS:**

13.060.20	Pitna voda	Drinking water
71.100.80	Kemikalije za čiščenje vode	Chemicals for purification of water

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**en**

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EUROPEAN STANDARD

EN 1421

NORME EUROPÉENNE

EUROPÄISCHE NORM

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Descriptors: potable water, water treatment, chemical compounds, ammonium chloride, description, physical properties, chemical properties, impurities, toxic substances, tests, labelling, storage, information, warning notices

English version

## Chemicals used for treatment of water intended for human consumption - Ammonium chloride

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destinée à la consommation humaine - Chlorure  
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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

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# CEN

European Committee for Standardization  
Comité Européen de Normalisation  
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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Corrected 1996-04-17
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## Foreword

This European Standard has been prepared by the Technical Committee CEN/TC 164 "Water supply", the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a National Standard, either by publication of an identical text or by endorsement, at the latest by October 1996, and conflicting national standards shall be withdrawn at the latest by October 1996.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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## Introduction

In respect of potential adverse effects on the quality of water intended for human consumption, caused by the product covered by this Standard :

- 1) this Standard provides no information as to whether the product may be used without restriction in any of the Member States of the EU or EFTA ;
- 2) it should be noted that, while awaiting the adoption of verifiable European criteria, existing national regulations concerning the use and/or the characteristics of this product remain in force.

## 1 Scope

This European Standard is applicable to ammonium chloride used for treatment of water intended for human consumption. It describes the characteristics of, specifies the requirements and the corresponding test methods for ammonium chloride.

## 2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

ISO 2762	Hydrochloric acid for industrial use - Determination of soluble sulphates - Turbidimetric method
ISO 3165	Sampling of chemical products for industrial use - Safety in sampling
ISO 3332	Ammonium sulphate for industrial use - Determination of ammoniacal nitrogen content - Titrimetric method after distillation
ISO 3696	Water for analytical laboratory use - Specifications and test methods
ISO 5666-1	Water quality - Determination of total mercury by flameless atomic absorption spectrometry - Part 1 : method after digestion with permanganate - peroxidisulfate
ISO 6206	Chemical products for industrial use - Sampling - Vocabulary
ISO 6332	Water quality - Determination of iron - Spectrometric method using 1,10-phenanthroline
ISO 8213	Chemical products for industrial use - Sampling techniques - Solid chemical products in the form of particles varying from powders to coarse lumps
ISO 8288	Water quality - Determination of cobalt, nickel, copper, zinc, cadmium and lead - Flame atomic absorption spectrometric methods
ISO 9174	Water quality - Determination of total chromium - Atomic absorption spectrometric method

ISO 9965	Water quality - Determination of selenium - Atomic absorption spectrometric method
EN 26595	Water quality - Determination of total arsenic - Silver diethyldithiocarbamate spectrophotometric method

### 3 Description

#### 3.1 Identification

3.1.1 Chemical name : Ammonium chloride.

3.1.2 Synonym or common name : Sal-ammoniac.

3.1.3 Relative molecular mass : 53,5.

3.1.4 Empirical formula :  $\text{NH}_4\text{Cl}$ .

3.1.5 Chemical formula :  $\text{NH}_4\text{Cl}$ .

3.1.6 CAS Registry Number <sup>1)</sup> : 12125-02-9.

3.1.7 EINECS reference <sup>2)</sup> : 235-186-4.

3.2 Commercial form : Powder.

#### 3.3 Physical properties

##### 3.3.1 Appearance

The product is a white powder or white crystals, without any odour.

##### 3.3.2 Density

The particle size density of the product is  $1,53 \text{ g/cm}^3$  at  $20 \text{ }^\circ\text{C}$ .  
The bulk density is  $0,6 \text{ g/cm}^3$  to  $1 \text{ g/cm}^3$  depending on granular size.

<sup>1)</sup> Chemical Abstracts Service Registry Number.

<sup>2)</sup> European Inventory of Existing Commercial Chemical Substances.

### 3.3.3 Solubility

The solubility of the product in the water at 20 °C is 374 g/l.  
The solubility of the product in the water at 50 °C is 504 g/l.

NOTE : Dissolution of  $\text{NH}_4\text{Cl}$  in water is a strongly endothermic reaction and the resulting decrease in temperature may lead to crystallization.

3.3.4 Vapour pressure : 100 Pa at 160 °C.

3.3.5 Boiling point at 100 kPa<sup>3)</sup> : Not applicable.

3.3.6 Melting point : Sublimation at 338 °C.

3.3.7 Specific heat : Not known.

3.3.8 Viscosity : Not applicable.

3.3.9 Critical temperature : Not applicable.

3.3.10 Critical pressure : Not applicable.

3.3.11 Physical hardness : Not applicable.

## 3.4 Chemical properties

The pH value of a 5 (% (m/m)) aqueous solution is about 4 to 6.

Ammonium chloride attacks metals, e.g. iron, copper, nickel, zinc.

Reaction with strong acids can generate hydrochloric acid gas ; reaction with strong alkalis can generate ammonia gas.

## 4 Purity criteria

Limits have been given for impurities and toxic substances where these are likely to be present in significant quantities from the current production process and raw materials. If a change in the production process or raw materials leads to significant quantities of other impurities or by products being present, this shall be notified to the user.

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<sup>3)</sup> 100 kPa = 1 bar.



#### 4.1 Composition of commercial product

The product shall contain not less than 99 % (*m/m*) of ammonium chloride (NH<sub>4</sub>Cl).

#### 4.2 Impurities and main by-products

The product shall conform to the requirements specified in table 1.

Table 1 : Impurities

Impurity	Limit of the product mg/kg
Sulfate (SO <sub>4</sub> <sup>2-</sup> ) max.	100
Iron (Fe) max.	5

#### 4.3 Toxic substances limits

NOTE : For the purpose of this standard, "toxic substances" are those defined in the directive 80/778/EEC of July 15, 1980.

The content of toxic substances shall conform to the requirements specified in table 2.

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Table 2 : Toxic substances

Parameter	Limit of the product mg/kg
Antimony (Sb) max.	1
Arsenic (As) max.	5
Cadmium (Cd) max.	0,5
Chromium (Cr) max.	5
Lead (Pb) max.	5
Mercury (Hg) max.	0,1
Nickel (Ni) max.	5
Selenium (Se) max.	1
NOTE : Pesticides and polycyclic aromatic hydrocarbons and cyanides -as listed in directive 80/778/EEC of July 15, 1980- are not relevant toxic substances in ammonium chloride because the raw materials used in the manufacturing process are free of them.	

## 5 Test methods

### 5.1 Sampling

Sampling shall be in accordance with ISO 8213 and recommendations given in ISO 3165 shall be followed.