

SVENSK STANDARD

SS-EN 16455:2014



Fastställt/Approved: 2014-09-16
Publicerad/Published: 2014-09-17
Utgåva/Edition: 1
Språk/Language: engelska/English
ICS: 97.195

Bevarande av kulturarv – Bestämning av lösliga salter i natursten och liknande material som används i det byggda kulturarvet

Conservation of cultural heritage – Extraction and determination of soluble salts in natural stone and related materials used in and from cultural heritage

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EUROPEAN STANDARD

EN 16455

NORME EUROPÉENNE

EUROPÄISCHE NORM

September 2014

ICS 97.195

English Version

**Conservation of cultural heritage - Extraction and determination
of soluble salts in natural stone and related materials used in
and from cultural heritage**

Conservation du patrimoine culturel - Extraction et
détermination des sels solubles dans la pierre naturelle et
les matériaux associés utilisés dans le patrimoine culturel

Erhaltung des kulturellen Erbes - Auflösung und
Bestimmung von löslichen Salzen in Naturstein und
artverwandten Materialien des kulturellen Erbes

This European Standard was approved by CEN on 25 July 2014.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN 16455:2014) has been prepared by Technical Committee CEN/TC 346 "Conservation of cultural heritage", the secretariat of which is held by UNI.

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of an identical text or by endorsement, at the latest by March 2015 and conflicting national standards shall be withdrawn at the latest by March 2015.

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Introduction

Soluble salts are often present in stones and other porous inorganic building materials as alteration products of chemical or biological origin. They can originate from surface deposition of environmental pollutants or from water capillary transport from other external sources and also from materials themselves or from conservation interventions.

Soluble salts present in *porous inorganic materials* can, (depending on material properties, environmental conditions or possible treatments the surrounding conditions), initiate physical-chemical degradation processes.

This standard describes a procedure to extract soluble salts present in porous inorganic materials to determine the ions and to estimate the content of soluble salts.

There are several test methods for the analysis of salts, for example:

- a) recognition of salt crystals by microscopy;
- b) qualitative chemical reactions. These make it possible to identify the type of *anions and cations* present in a solution, after dissolution of salts in water (i.e. sulphates, nitrates, chlorides);
- c) semiquantitative tests. These are mostly based on colourimetric reactions that lead to the formation of coloured compounds formed by each *anion* and its specific reagent;
- d) X-ray diffraction, which provides information on the nature of a salt (in *crystalline form*) identifying the mineralogical composition of a compound;
- e) spectroscopic techniques like flame photometry, AAS (Atomic Absorption Spectrometry), ICP-AES (Inductively Coupled Plasma - Atomic Emission Spectrometry) for cations;
- f) ion chromatography which makes it possible to identify and quantify separately anions and cations.