



**NSAI**  
Standards

Irish Standard  
I.S. EN 16782:2016

# Conservation of cultural heritage - Cleaning of porous inorganic materials - Laser cleaning techniques for cultural heritage

**I.S. EN 16782:2016**

*Incorporating amendments/corrigenda/National Annexes issued since publication:*

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## National Foreword

I.S. EN 16782:2016 is the adopted Irish version of the European Document EN 16782:2016, Conservation of cultural heritage - Cleaning of porous inorganic materials - Laser cleaning techniques for cultural heritage

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**EUROPEAN STANDARD**

**EN 16782**

**NORME EUROPÉENNE**

**EUROPÄISCHE NORM**

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English Version

## **Conservation of cultural heritage - Cleaning of porous inorganic materials - Laser cleaning techniques for cultural heritage**

Conservation du patrimoine culturel - Nettoyage des matériaux inorganiques poreux - Techniques de nettoyage au laser des biens culturels

Erhaltung des kulturellen Erbes - Reinigung von porösen anorganischen Materialien - Laserstrahlreinigungsverfahren für kulturelles Erbe

This European Standard was approved by CEN on 27 February 2016.

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## European foreword

This document (EN 16782:2016) 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of an identical text or by endorsement, at the latest by November 2016, and conflicting national standards shall be withdrawn at the latest by November 2016.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

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## **Introduction**

A cleaning method can be applied out if it follows the ethical code of conservation practice as stated in International Charters.

Laser cleaning consists in the removal of the unwanted surface materials from a substrate by using laser irradiation. The removal of unwanted substances on surfaces of artworks is done by photo-thermal processes and/or photomechanical processes, and/or photochemical processes.

Laser cleaning is generally characterized by a high precision and selectivity, which may allow the process to be stopped at a pre-determined level.

Laser cleaning requires very precise control to be selective and prevent surface damage. As with other cleaning systems, laser cleaning can only be performed by trained operators with sufficient knowledge of all relevant laser safety regulations and guidelines.

This standard specifies the requirements for the selection of laser cleaning methods and devices applicable to natural stone, ceramics and mortars (plasters, renders and stucco). When it is not possible to identify a safe working fluence (for example for certain stone lithologies or some painted artworks containing sensitive materials), laser cleaning is not suitable.



## 1 Scope

This European standard applies to porous inorganic materials constituting cultural heritage. It provides the fundamental requirements of the laser parameters and guidelines for the choice of the laser operational parameters, in order to optimize the cleaning procedure.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 15898:2011, *Conservation of cultural property — Main general terms and definitions*

EN 16572:2015, *Conservation of cultural heritage — Glossary of technical terms concerning mortars for masonry, renders and plasters used in cultural heritage*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 15898:2011, EN 16572:2015 and the following apply.

### 3.1

#### **cleaning**

removal of unwanted material from an object

Note 1 to entry: The criteria for something being “unwanted” can always be stated, e.g. potentially damaging, obscuring detail, unaesthetic, etc.

[SOURCE: EN 15898:2011, 3.5.3]

### 3.2

#### **mortar**

material traditionally composed of one or more (usually inorganic) binders, aggregates, water, possible additives and admixtures combined to form a paste used in masonry to provide for bedding, jointing and bonding, and for surface finishing (plastering and rendering) of masonry units, which subsequently sets to form a stiff material

[SOURCE: EN 16572:2015, 3.1.1]

### 3.3

#### **plaster**

coating composed of one or more mortar layers applied in one accomplishment sequence, used on internal masonry surface such as ceiling, walls, and partition

Note 1 to entry: Plaster is a traditional English term.

[SOURCE: EN 16572:2015, 3.2.5]

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