

EUROPEAN TECHNICAL COMMITTEE 346 - CONSERVATION OF CULTURAL PROPERTY - UPDATING OF THE ACTIVITY AFTER A THREE YEAR PERIOD

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ABSTRACT

Conservation Science is a very recent issue developed in the last five decades and the International Scientific Community is nowadays much larger than it used to be until thirty or twenty years ago and this is "per se" the demonstration that the protection and conservation of our cultural property cannot be successful without science and research.

In 2001 UNI, the Italian standardization body presented a request to CEN (Comité Européen de Normalisation) to create a new TC (Technical Committee) dealing with the conservation of cultural property.

The scope of CEN/TC 346 is the standardization in the field of definitions and terminology, methods of testing and analysis, to support the characterisation of materials and deterioration processes of movable and immovable heritage, and the products and technologies used for the planning and execution of their conservation, restoration, repair and maintenance.

After a three year period the updating of the documents until now discussed is presented.

INTRODUCTION

The foremost aim of European standardization is to facilitate the exchange of goods and services through the elimination of technical barriers to trade [1]. Only thanks to a sound scientific knowledge of the materials constituting the cultural property, of its environmental and conservation conditions, the conservation/restoration works can be successfully carried out.

Unfortunately the great experience developed in this field by the different European countries, for the time being can not constitute a common background because there are too many differences not only in the methods of analysis, but also in the terminology used.

A specific European standardisation activity in the field of conservation of Cultural Heritage is essential to acquire a common unified scientific approach to the problems relevant to the preservation/conservation of the Cultural Heritage. Moreover, this common approach and the use of standardised methodologies and procedures would promote the exchange of information, would avoid the risk of duplication and foster synergy between the European experts and specialists involved in the preservation activity.

In particular, the standardisation activity on the conservation of Cultural Heritage deals with:

1. Terminology relevant to movable and immovable cultural property, and to the conservation of the cultural property and of the material constituting the cultural property themselves, so that a common European terminology can be created;
2. Guidelines for a methodological approach to the knowledge of the cultural property and of the materials constituting the cultural property, of the deterioration processes, and of conditions of optimum long-term conservation/preservation work;

3. Test and analysis methods for the diagnosis and for the characterisation of the cultural property and of their state of conservation with regards to outdoor and indoor environmental parameters;
4. Test and analysis methods (in laboratory and in-situ) for the evaluation of the performance of the products and methodologies to be used in the conservation work (ordinary and/or extraordinary maintenance);
5. Test and analysis methods for the evaluation of conservation conditions of indoor Cultural Heritage.

MARKET SITUATION IN RELATION TO THE OBJECTIVES OF CEN/TC 346

The market relevant to the conservation of Cultural Heritage is considerable and it involves a great number of small and medium enterprises, such as restoration companies, installation companies (e.g. lighting installation, conditioning and heating systems, air quality control), packing and transportation companies, small and medium companies which produce technological instruments and measurement devices, and control and analysis equipment, test laboratories, producers and manufacturers of various materials: paints, stones, plastics, glass, paper, mortars, cement, wood composites, archaeological excavations companies or institutions, etc.

The development of standardised test and analysis methods will provide the cultural institutions, enterprises and laboratories with correct instruments for carrying out their work, improving, at the same time their proficiency/competencies.

The standardisation for the conservation of Cultural Heritage may influence, determining also specific requirements, the production and adjusting of the following kind of equipment, products and devices:

1. Scientific equipment for laboratory and in situ chemical, geological, physical, mechanical and biological tests, measurements and analysis, in particular, for what concerns non-destructive ones, and production of standard reference materials whose compositions match those of cultural material (i.e. ancient alloys compositions), and reference data related to compounds found in degraded material for analysis purposes;
2. Products used in the different steps of the conservation work/treatment, such as cleaning agents, biocides, sealing materials and mortar for restoration, surface protective materials, water-repellent materials environmental friendly, varnishes, glues;
3. Equipment and technologies used during the conservation/restoration work (e.g. nebulizers/vaporisers, micro and macro-airbrasive machines, laser equipment), which are respectful of the professionals' health, of the cultural property and are environmental friendly.

The materials/products, the equipment and technologies used nowadays in the conservation and restoration works, or which are used in diagnostics laboratories, are materials and equipment often produced by multinationals industries with great experience, but these products and devices haven't been studied specifically for conservation or restoration purposes and, for this reason, need to be characterised and require a specific standardisation activity.

Finally, the programme of work of this CEN/TC, while defining the requirements and characteristics of the materials, of the equipment and technologies, can contribute to the improvement of the existing materials and equipment, and support the development of new ones for a more competitive European market.

ECONOMICAL FACTORS IN RELATION TO THE OBJECTIVES OF CEN/TC 346

The increasing atmospheric pollution, of different origins, causes decay of exposed building surfaces and the identification of environmental parameters and assessment of material-environment interactions is a cost effective way to increase longevity and reduce maintenance costs [4].

The importance of using correct materials in conservation work is crucial, as experience has shown, for example, that poor quality natural stones used to repair historic structures have in some instances, deteriorated to such an extent that complete restoration has had to be undertaken, costing millions of Euro.

Standardisation in the field of conservation of Cultural Heritage will:

1. Improve the efficiency and pertinence of the diagnosis, reduce their costs, with a subsequent better management of funding for the conservation/restoration works and therefore increasing the number of conservation projects and spin-off economic benefits/opportunities for new investment, and consequent job creation;
2. Give precise and appropriate indication on the kind of diagnostics studies to be performed, avoiding expensive researches, promoting in this way conservation works on an increasing number of artefacts;
3. Help to develop and improve products, materials, equipment and technologies to be specifically used for the conservation of Cultural Heritage;
4. Increase the durability of conservation works therefore reducing costs on a long-term range because conservation operations will be spaced out.

To explain better the advantage of a good standardisation in the field of Cultural Heritage we report an example of a Venetian monument which was restored in 1976 as it was strongly decayed. The Porta della Carta, built in XIV century as the entrance door of Ducal Palace, was preserved in a rather good state for four centuries and the only damage observed were ascribed to the natural weathering agents, as it is clearly visible in the photographic documentation of the last decades of XIX century (figg. 1,2). Comparison between two pictures taken at the beginning of XIX century and after seventy years respectively (figg. 2, 3), shows a sharp increase in the marble decay, ascribed to the contemporary pollution increase occurring in the Venetian district as a result of the industrialization of Porto Marghera, the industrial area, created at the beginning of 1930s [5,6].

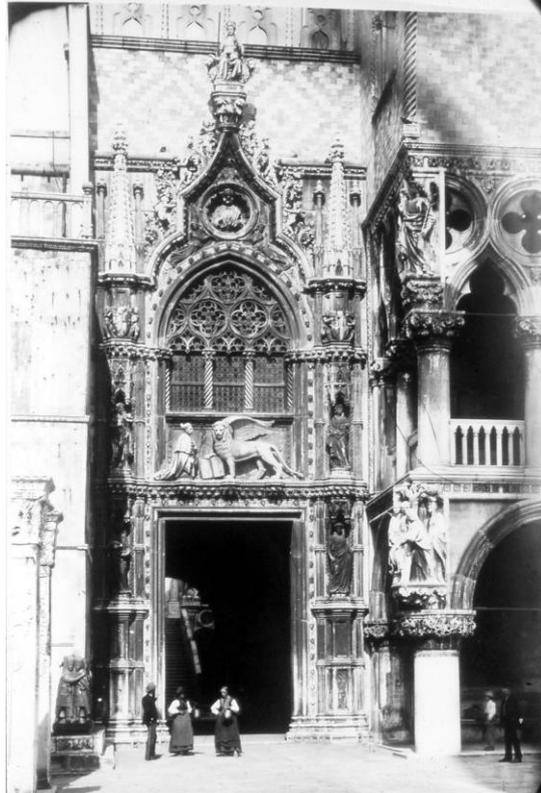


Fig. 1. Porta della Carta in 1875.

The sharp decay observed in 60'ies induced people in charged in the conservation to recover inside the Ducal Palace museum the four statues to prevent their complete destruction. In 1976 the conservation work of the whole Porta della Carta started, thanks to a financing of the Venice in Peril fund, and it was completed in a three year period. In 2001 in the framework of the National Research Council Project finalized to the Safeguard of Italian Cultural Heritage in cooperation with the Venice Superintendence for Monuments Care a check of the durability of restoration materials used in 1976 restoration work and of the state of conservation was carried out. The results obtained allow us to conclude that the decay processes, which has caused missing of pieces of marbles and disintegration of carved surfaces (as it is possible to observe from the comparison of figg. 2 and 3), since the industrialization until 1976, seems to be arrested or slowed down as it is possible to observe from the comparison of fig. 3 and 4 [7].



Fig. 2. Porta della Carta. Charity statue in 1930.



Fig. 3. Porta della Carta. Charity statue in 1978.

We can conclude that the stone treatment is still working after 25 years from the restoration work [8]. We believe that a good standardization process is a useful tool to increase the durability of conservation works therefore reducing costs on a long-term range because conservation operations will be spaced out.

There are also a number of national research programmes funded by EU member states for cultural heritage studies. Italy, for example, has allocated a budget of €40 million over five years (1997-2002) for a special project on the safeguard of Cultural Heritage.

Since 1986 the European Commission has spent more than 120 million Euros to improve the scientific knowledge in conservation of Cultural Heritage and at the end of 2006 a new Cultural Heritage research programme has been launched: the 7th framework Programme. The number of European Universities and research institutions and governmental institutions dealing with basic and innovative research has been increased exponentially in these last two decades.

Let me make some examples: for instances Sweden provides research grants through its Central Board of National Antiquities; the Netherlands announced that cultural heritage will be one of ten research themes for funding by its Organisation for Scientific Research (NWO) over the next three years; the Spanish Ministry of Science and Technology provides funds under the category Civil Construction and Conservation and Restoration of Cultural Heritage and the UK government funds conservation work undertaken by English Heritage, Historic Scotland and the National Trust.



Fig. 4. Porta della Carta. Charity statue in 2004.

USERS OF CEN/TC 346

Users of the standards developed by CEN/TC 346 are:

- Public and government bodies (e.g. Ministry of Culture and Education, Government Agencies);
- Public national and international non-government bodies (e.g. ICCROM, ICOMOS, IIC, ICOM, Regional administrations, Provincial administrations or local governments);
- Restoration/Conservation schools;
- Ecclesiastical bodies/organisations;
- Public and private analysis laboratories;
- Restoration companies;
- Professionals in the field of conservation and exhibitions planning;
- Distributors and manufacturers of materials used in restoration;
- Companies specialising in the preparation and organisation of exhibitions;
- Transportation and packaging companies;
- Lighting installation companies, air conditioning and heating installation companies, informatics and advanced technology companies;
- Cultural institutions: museums, galleries, libraries, archives;
- Architecture and surveyors;

STRUCTURE OF CEN/TC 346 AND WORK PROGRAMME

Chairman: Mr. Vasco Fassina (Italy)

The structure of CEN/TC 346 is constituted by 5 Working Groups (WG's), corresponding to the different main areas for which technical development work has to be done. Under each WG the standardisation projects, called Work Items (WI's) will be developed.

CEN/TC 346/WG 1 - General Guidelines and Terminology

Convenor: Mr. Lorenzo Appolonia (Italy)

This WG has the responsibility for the drafting of:

- guidelines on conservation planning, including monitoring;
- standards on terminology dealing with movable and immovable components, with degradation processes and its graphic and symbolic documentation;
- guidelines on security and safety conditions relating to the use of cultural heritage by the public.

The initial programme included the following work items:

- *WI 001-Terminology*
- *WI 002-Guide to the principles of conservation*
- *WI 003-Condition report of the cultural property*
- *WI 004- Security of cultural property and safety of the public*

Actually the WG1 is discussing the following draft documents:

- *WI 000346002-Main general terms and definitions concerning conservation of cultural property.*

Scope: definitions of general terms used in the field of conservation of cultural property with particular attention to those terms which have wide use or significance.

- *WI00346003: Glossary of damage.*

Scope: definition of damage terms determined by macroscopic examination as a first step to diagnosis.

CEN/TC 346/WG 2 - Materials Constituting Cultural Property

Convenor: Mrs. Vasilike Argyropoulos (Greece)

This WG has the responsibility to define tests and analyses methods:

- for the characterization of the materials,
- for the evaluation of the state of conservation/preservation of materials

The initial programme included the following work items:

- *WI 005-Diagnosis on buildings surfaces and structure.*
- *WI 006-Characterization and classification of paint and paintings.*
- *WI 007-Characterisation of the state of conservation/preservation of cultural property.*
- *WI 008-Characterisation of stone and related building materials.*

Actually the documents in discussion are the following:

- Sampling of cultural property
- Tentative recommendations for the selection of compatible stone for conservation purposes
- Characterisation of stone
- Characterisation of mortars
- Diagnosis of building structures

CEN/TC 346/WG 3 – Evaluation of Methods and Products for Conservation Works

Convenor: Mr. Vasco Fassina (Italy)

This WG has the responsibility of drafting documents on criteria to select methods and/or products and operating/working conditions in relation to the conservation/restoration, repair,

maintenance and preventive conservation works; and of drafting documents on the evaluation of the methodologies to be used.

The initial programme included:

- *WI 009-Surface protection for porous inorganic materials-Evaluation of methods and products.*

This document has the scope of giving guidelines on test method and methods of analysis (in laboratory and in-situ) for the evaluation of the performance of the products and of the methodologies to be used in protection of cultural property

- *WI 010-Consolidation products-Evaluation of methods and products.*
- *WI 011-Cleaning products-Evaluation of methods and products.*
- *WI 011bis-Chemical control of bio deterioration-Evaluation of methods and products*
- *WI12 Cultural heritage-Conservation of archaeological remains/objects - Evaluation of methods and products.*

Actually WG3 is discussing the following draft documents:

- *prEN 15801-Determination of water absorption by capillarity (under CEN enquiry).*
Scope : test method to characterise the water absorption by capillarity of porous inorganic materials.
- *prEN 15802-Measurement of static contact angle (under CEN enquiry)*
Scope: test method for the measurement of the static contact angle of a water drop of porous inorganic materials.
- *prEN 15803-Determination of water vapour permeability (δ) (under CEN enquiry).*
Scope: test method for the calculation of the water vapour permeability (WVP) of porous inorganic materials.
- *WI00346007-Colour measurement of surfaces.*
Scope: test method for measuring the surface colour of porous inorganic materials, and their possible chromatic changes due to any conservation work and/or natural ageing or artificial interventions.

CEN/TC 346/WG 4 – Environment

Convenor Mr. Jesper Stub Johnsen (Denmark)

WG4 has the responsibility for the drafting of guidelines for the control of environmental variables, and of standards on the measurement of indoor, including exhibition and storage conditions, and outdoor environmental conditions, and on cultural property/environment interaction.

- *WI 013-Specifications on environmental conditions*
- *WI 014-Guidelines on the measurement of environmental parameters*

Actually WG4 is discussing the following draft documents:

- *prEN 15757-Specifications for temperature and relative humidity to limit climate-induced damage in organic hygroscopic materials (under CEN enquiry)*
Scope: general specifications for temperature and relative humidity to limit climate induced mechanical damage of absorbing moisture, organic materials, especially in indoor environments of museums, galleries, archives, libraries, churches and modern or historical buildings
- *prEN 15758-Procedures and instruments for measuring temperatures of the air and the surfaces of objects (under CEN enquiry)*
Scope: the procedures for measuring the temperature of the air and of the surfaces of cultural heritage objects in indoor and outdoor environments.
- *prEN 15759-Specification and control of indoor environment-heating of historic churches (under CEN enquiry)*

Scope: recommendations for the heating of historic churches in order to prevent damage to the buildings and their contents.

CEN/TC 346/WG 5 – Transportation and Packing Method

Convenor: Mrs. Anne de Wallens (France)

This WG has the responsibility for the drafting of standards on methods of packaging and transportation of cultural heritage outside the institutions.

- *WI 015 Cultural heritage — Principles of transportation and packing of cultural property*

This standard has the scope of giving a guideline for the choice and the control of the microclimate finalised to the transportation and packing of cultural property

Actually is in preparation an European standard on packing methods

REFERENCES

1. BT N 6732, *Conservation of cultural property-New CEN/TC*, Bruxelles, 19 December 2002.
2. Unesco's *Recommendation Concerning the preservation of Cultural Property Endangered by Public or Private Works*, Paris, 15th October – 20th November, 1968.
3. Unesco's *Convention concerning the protection of the world Cultural and Natural Heritage*, Paris, November 1972
4. STOA (Scientific and technological Options Assessment), *Technological requirements for solutions in the conservation and protection of historic monuments and archaeological remains*, developed for the European Parliament, Directorate-General for European Panel on the Application of Science to Cultural Heritage, Bruxelles, October 2001.
5. V. Fassina, *The influence of atmospheric pollution and past treatments on stone weathering mechanisms of Venetian monuments*, European Cultural Heritage Newsletter on Research, 1994, vol. 8, n.2, 23-35.
6. V. Fassina, M. Favaro, A. Naccari, *Principal decay patterns on Venetian monuments, in Natural Stone, Weathering phenomena, Conservation Strategies and case Studies*, eds. S. Siegesmund, A. Volbrecht and T. Weiss, The Geological Society, London, Special Publications, 205, 2002, pp. 381-391.
7. M. Favaro, C. Menichelli, L. Bassotto, V. Fassina, *Preliminary results on the behaviour of restoration materials used in the past on monuments in relation to their durability and to decay processes case study: Porta della Carta in Venice*, in 3rd International Congress on Science and Technology for the safeguard of Cultural Heritage in the Mediterranean Basin, Alcalá de Henares, July 9-14, 2001, Ed. A Guarino, 2002, pp. 204-209.
8. M. Favaro, S. Simon, C. Menichelli, V. Fassina, P.A. Vigato, *The Four Virtues of the Porta della Carta, Ducal Palace, Venice-Assessment of preservation state and re-evaluation of the 1979 restoration*, *Studies in Conservation* 50, 2005, pp. 109-127.
9. COM (98) 239, 27. Bruxelles, April 1998.
10. COM (96) 160, Bruxelles, 17 April 1996.
11. Community Action Plan in the field of Cultural Heritage, Council decision O.J. 94/C 235/01 Bruxelles.
12. European Spatial Development Perspective, 10 May 1999, Bruxelles.

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