



SLOVENSKI STANDARD
SIST EN ISO 14922-2:2000
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Thermal spraying - Quality requirements of thermally sprayed structures - Part 2:
Comprehensive quality requirements (ISO 14922-2:1999)

Thermisches Spritzen - Qualitätsanforderungen an thermisch gespritzte Bauteile - Teil 2:
Umfassende Qualitätsanforderungen (ISO 14922-2:1999)

Projection thermique - Exigences qualité des constructions obtenues par projection
thermique - Partie 2: Exigences qualité complètes (ISO 14922-2:1999)

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Ta slovenski standard je istoveten z: EN ISO 14922-2:1999

ICS:

25.220.20 Površinska obdelava Surface treatment

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN ISO 14922-2

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English version

Thermal spraying - Quality requirements of thermally sprayed structures - Part 2: Comprehensive quality requirements (ISO 14922-2:1999)

Projection thermique - Exigences qualité des constructions obtenues par projection thermique - Partie 2: Exigences qualité complètes (ISO 14922-2:1999)

Thermisches Spritzen - Qualitätsanforderungen an thermisch gespritzte Bauteile - Teil 2: Umfassende Qualitätsanforderungen (ISO 14922-2:1999)

This European Standard was approved by CEN on 19 February 1999.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. 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.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.



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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Foreword

The text of EN ISO 14922-2:1999 has been prepared by Technical Committee CEN/TC 240 "Thermal spraying and thermally sprayed coatings", the secretariat of which is held by DIN, in collaboration with Technical Committee ISO/TC 107 "Metallic and other inorganic coatings".

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 December 1999, and conflicting national standards shall be withdrawn at the latest by December 1999.

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

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1 Scope

This standard specifies requirements so that:

- It is independent of the type of the thermally sprayed structure.
- It defines quality requirements for thermal spraying both in workshops and on site.
- It provides guidance for describing a manufacturer's capability to produce thermally sprayed constructions to meet specified requirements.
- It may also be used as a basis for assessing the manufacturer in respect to his thermal spraying capability.

This standard is appropriate when demonstration of a manufacturer's capability to produce thermally sprayed construction, fulfilling specified quality requirements, are specified in one or more of the following:

- a contract between involved parties;
- an application standard;
- a regulatory requirement.

The requirements contained within this standard may be adopted in full or may be selectively deleted by the manufacturer if not applicable to the construction concerned. They provide a flexible framework for the control of thermal spraying in the following cases:

- Case 1

To provide specific requirements for thermal spraying in contracts which require the manufacturer to have a quality system in accordance with EN ISO 9001 or EN ISO 9002.

- Case 2

To provide specific requirements for thermal spraying in contracts which require the manufacturer to have a quality system other than EN ISO 9001 or EN ISO 9002.

- Case 3

To provide specific requirements for thermal spraying in contracts which require the manufacturer developing a quality system.

- Case 4

To provide specific requirements for thermal spraying in application standards which uses thermal spraying as part of its requirements or in a contract between relevant parties. It may however be more appropriate for EN ISO 14922-3 or EN ISO 14922-4 to be used in such cases.

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.

EN 473

Non-destructive testing – Qualification and certification of personnel

EN 582

Thermal spraying – Determination of the tensile adhesive strength

EN 657

Thermal spraying – Terminology – Classification

EN 1274

Thermal spraying – Powders – Composition – Technical supply conditions

EN 1395

Thermal spraying – Acceptance inspection of thermal spraying equipment

prEN 13214

Thermal spraying – Thermal spray coordination – Tasks and responsibilities

EN ISO 9001

Quality systems – Model for quality assurance in design/development, production, installation and servicing (ISO 9001 : 1984)

EN ISO 9002

Quality systems – Model for quality assurance in production, installation and servicing (ISO 9002 : 1994)

EN ISO 14918

Thermal spraying – Approval testing of thermal sprayers

prEN ISO 14919

Thermal spraying – Wires, rods and cords for flame and arc spraying – Classification – Technical supply conditions

EN ISO 14922-1

Thermal spraying – Quality requirements of thermally sprayed structures – Part 1: Guidelines for selection and use

ISO 8402 : 1994

Quality management and quality assurance – Vocabulary

3 Definitions

For the purposes of this standard definitions given in EN 657 and listed in part 1 of this standard apply.

4 Contract and design review

4.1 General

The manufacturer shall review the contractual requirements and the design data provided by the purchaser or in-house data for construction designed by the manufacturer. This is to ensure that all information necessary to carry out the fabrication operations is available prior to the commencement of the work. The manufacturer shall affirm his capability to meet all thermal spraying contract requirements and ensure adequate planning of all quality related activities.

Contract review is carried out by the manufacturer to verify that the contract is within his capability to perform, that sufficient resources are available to achieve delivery schedules and documentation is clear and unambiguous. The manufacturer should ensure any variations between the contract and previous tender documentation are identified and the purchaser notified of any programme, cost or engineering changes that may result.

The items in 4.2 are typically considered at or before time of the contract review. The items in 4.3 usually form part of the design review and should be taken into account during the contract review if the design is not carried out by the manufacturer. It shall be ensured that all relevant information has been supplied by the purchaser.

When a contract does not exist or items were made for stock, the manufacturer is required to take into consideration the requirements of 4.2, whilst carrying out his design review (4.3).

4.2 Application – Contract review

Contractual requirements to be considered should include:

- a) the application standard to be used, together with any supplementary requirements;
- b) the specification of thermal spraying procedures, non-destructive testing procedures and heat treatment procedures;
- c) the approach to be used for thermal spraying procedure approval;
- d) the approval of personnel;
- e) post treatment;
- f) inspection and testing;
- g) selection, identification and/or traceability, e.g. for materials, thermal sprayers and coatings (see clause 16);
- h) quality control arrangements, including any involvement of an independent inspection body;
- i) other thermal spraying requirements, e.g. batch testing of consumables; grain size, distribution and morphology and composition;
- j) environmental conditions relevant to thermal spraying on site;
- k) sub-contracting;
- l) handling of non-conformance.

4.3 Application – Design review

Design requirements to be considered should include:

- a) location, accessibility and sequence of all coatings;
- b) surface finish of the coating;
- c) substrate material specification and coating properties;
- d) dimensions and details of prepared substrate surfaces and sprayed coatings
- e) quality and acceptance requirements for coatings;
- f) other special requirements, e.g. acceptability of shotpeening, heat treatment, cooling, masking.

5 Sub-contracting

When a manufacturer intends to use sub-contracted services (e.g. inspection, non-destructive testing, post treatment) all relevant specifications and requirements shall be supplied by the manufacturer to the sub-contractor. The subcontractor shall provide such records and documentation of his work as may be specified by the manufacturer.

Any sub-contractor shall work under the order and responsibility of the manufacturer and shall fully comply with the relevant requirements of this standard.

The manufacturer has to ensure that the sub-contractor can comply with the quality requirements of the contract.

The information to be provided by the manufacturer to the sub-contractor shall include all relevant data from the contract review (see 4.2) and the design review (see 4.3). Additional requirements may need to be specified, if the design of a structure is to be sub-contracted.

6 Personnel for thermal spraying

6.1 General

The manufacturer shall have at his disposal sufficient and competent personnel for the planning, performing, supervising and examining of the thermal spraying production according to specified requirements.

6.2 Qualified thermal sprayer

All thermal sprayers shall be approved by a suitable qualification test according to EN ISO 14918. All records of approval shall be maintained up to date.

6.3 Thermal spraying coordinator

The manufacturer shall have at his disposal appropriate thermal spraying coordination personnel such that the thermal spraying personnel can be supplied with the necessary thermal spraying and work instructions and that the work can be properly performed and controlled. Such persons having responsibility for quality activities shall have sufficient authority to enable any necessary action to be taken. The duties, inter-relationships and limits of responsibility of such persons shall be clearly defined, see prEN 13214.

7 Personnel for quality testing

7.1 General

The manufacturer shall have at his disposal sufficient and competent personnel for planning and performing, supervising and inspection, testing and examination of the thermal spraying production according to specified requirements.

7.2 Non-destructive testing

The non-destructive testing personnel shall be approved according to EN 473.

8 Equipment

8.1 Equipment for manufacturing

The following equipment shall be available when necessary:

- workshops, generally as roofed working sites;

- stores for correct storage of substrate materials (to be coated components), consumables and other additives for thermal spraying;
- equipment for drying spray powders;
- equipment and machine tools to prepare and machine the components for thermal spraying (e. g. degreasing equipment, sand blasting cabins);
- spraying equipment, including equipment for supply, setting and control;
- handling systems (e. g. turntables, turning machines, robot systems);
- exhaust systems, dust filters, protective means against noise and radiation;
- equipment for thermal treatment of the components before and after spraying;
- cooling equipment;
- machines, tools and equipment for post treatment of thermally sprayed coatings (e. g. grinding, turning);
- equipment and means for testing and measuring materials and thermally sprayed coatings;
- for spraying on site, appropriate conditions have to be installed.

8.2 Description of equipment

The manufacturer shall maintain a list of essential equipment, used for thermal spraying production. This list shall identify items of major equipment, essential for an evaluation of workshop capacity and capability. The list includes for instance:

- capacity of the biggest crane;
- size of the components, that may be sprayed;
- capacity of blasting chambers and for spraying.

8.3 Suitability of equipment (standards.iteh.ai)

The equipment shall be adequate for the application concerned. Approval of thermal spraying and pre- and post treatment equipment is not usually required unless specified in the contract. (Requirements according EN 1395.)

8.4 New equipment

After installation of new (or refurbished) equipment (see 9.1) appropriate tests of the equipment shall be performed according to EN 1395. These tests shall verify the correct function of the equipment. The tests shall be carried out in accordance with appropriate standards, whenever relevant. Records shall be maintained of such tests.

8.5 Maintenance

The manufacturer shall have documented plans for the maintenance of equipment. The plan shall ensure maintenance checks on those features in the equipment which control variables listed in the relevant thermal spraying procedure specification. The plans may be limited to those features (variables), which are essential for assuring the quality of thermally sprayed construction.

Examples for such features are:

- conditions of guides in equipment for mechanised thermal spraying fixtures;
- conditions of equipment for measuring current and voltage, flow meters etc. used for the operation of the thermal spraying machines;
- conditions of cables, hoses, connections etc.;
- conditions of control system in mechanised and/or automatic thermal spraying;
- conditions of thermocouples and other temperature measurement instruments;
- condition of powder and wire feeders and conduits.

Defective equipment shall not be used.

8.6 Health and safety and environmental aspects

Equipment necessary for health and safety and environmental protection must be available. All necessary activities to assure standards of health and safety and of emission have to be conducted.