SLOVENSKI STANDARD

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Železniške naprave - Zgornji ustroj - Aluminotermično varjenje tirnic - 2. del: Kvalifikacije varilcev, cerificiranje izvajalcev in prevzem zvarov

Railway applications - Track - Aluminothermic welding of rails - Part 2: Qualification of aluminothermic welders, approval of contractors and acceptance of welds

Bahnanwendungen - Oberbau - Aluminothermisches Schweißen von Schienen - Teil 2: Qualifizierung aluminothermischer Schweißer, Zertifizierung von Betrieben und Abnahme von Schweißungen

Applications ferroviaires - Voie - Soudage des rails par aluminothermie - Partie 2 : Qualification des soudeurs par aluminothermie, agréments des entreprises et réception des soudures

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This European Standard was approved by CEN on 12 June 2006.

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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.

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Foreword

This document (EN 14730-2:2006) has been prepared by Technical Committee CEN/TC 256 “Railway applications”, the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by February 2007, and conflicting national standards shall be withdrawn at the latest by February 2007.

The purpose of this standard is to provide systems for successful delivery of aluminothermic welds in track.

This standard covers:

— qualifications of aluminothermic welders;

— approval of aluminothermic welding contractors;

— Acceptance of welds.

The minimum information requirements shown in Annex A and B are normative. The format is informative.

The standard contains "alternative requirements" in certain clauses, which enable a railway authority to select a position that will protect those principles which might be considered as "sovereign rights."

When installing aluminothermic welds in track across Europe, railway authorities, process suppliers and contractors shall comply with rules, regulations and codes of practice pertaining to the country where the work is executed.

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

1 Scope

This standard applies to aluminothermic welds made on Vignole rails of 46 kg/m and above as contained in EN 13674-1:

This standard specifies:

— the system for training, testing and maintaining the skills of aluminothermic welders. It applies to those aluminothermic welding processes compliant with the requirements of EN 14730-1 "Railway applications – Track – Aluminothermic welding of rails – Part 1: Approval of welding processes". It requires that the system for training and testing of welders shall be approved by the relevant railway authority;

— the systems and requirements for the approval of aluminothermic welding contractors. It applies to those contractors using aluminothermic welding processes compliant with the requirements of EN 14730-1 "Railway applications – Track – Aluminothermic welding of rails – Part 1: Approval of welding processes" and who employ welders who are in possession of a valid Permit to Weld as defined in Clause 4 of this standard;

— the acceptance requirements for aluminothermic welds. It requires that weld inspectors are competent in aluminothermic weld inspection and are approved by the relevant railway authority. It covers the final inspection of aluminothermic welds for acceptance in track. It does not cover any previous inspections by welders or others.

2 Normative references

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

EN 14730-1, *Railway applications – Track – Aluminothermic welding of rails – Part 1: Approval of welding processes*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
railway authority
either the railway regulator or the owner of a railway infrastructure or the custodian with a delegated responsibility for a railway infrastructure

3.2
aluminothermic welder
track operative trained and certified for the joining of rails by aluminothermic welding processes

3.3
welding contractor and welding subcontractor
company accepted in accordance with the requirements of a railway authority to execute the production of aluminothermic welds on that particular infrastructure

3.4
process supplier
company which provides an approved aluminothermic welding process accepted in accordance with EN 14730-1 and which is approved by the railway authority to supply consumables and tools for the execution of aluminothermic welds

3.5
employer
company that employs aluminothermic welders who are approved by a process supplier and railway authority, or by the railway authority itself

3.6
process manual
manual referred to and described in EN 14730-1, produced by the process supplier, identifying all the consumable materials and equipment used and the operating method to be followed for all steps of welding. The manual specifies the critical parameters of the welding process and their safe bounds

3.7
training establishment
welder training organisation or centre approved by the railway authority

4 Qualification of aluminothermic welders

4.1 Initial training and issue of a Diploma in Aluminothermic Welding of Rails

The initial training and testing shall be conducted in a training establishment.

The process supplier shall provide the process manual and determine the duration of training and the minimum number of welds to be made.

The initial training shall be carried out in accordance with the supplier's process manual. In addition to the welding processes the initial training shall include as a minimum:

— basic safety items relating to the process;

— cause and effect of operating outside of the correct processes;

— rail identification;

— basic grinding;

— visual weld inspection.

The training shall conclude with a practical and theoretical test or tests so designed to confirm the trainees' ability to carry out the aluminothermic welding of rails in accordance with the requirements of that supplier's process manual.

Upon the successful completion of training and testing the welder shall be issued with a Diploma in Aluminothermic Welding of Rails by the training establishment. The minimum information to be given on the diploma is:

— Full name of the welder;

— Date of birth;

— Date of examination;

— Number of diploma;

— Process supplier;

— Skill modules;

— Extra skills;

— Cutting method(s);

— Training establishment;

— Signature and name of the examiner.

A specimen Diploma in Aluminothermic Welding of Rails showing the format is given in informative Annex A.

The possession of the Diploma in Aluminothermic Welding of Rails shall be a prerequisite to applying for the Permit to Weld.

Diplomas in Aluminothermic Welding of Rails shall remain the property of the welder.

4.2 Permit to Weld

The Permit to Weld shall remain the property of the railway authority.

The validity of the Permit to Weld shall not exceed 5 years.

The railway authority shall define any relevant conditions relating to the training, testing, re-training, re-testing and the validity and renewal of the Permit to Weld as well as the extension of the welder's skill.

The subjects to be included in the training for a Permit to Weld shall be defined by the railway authority. The employer shall be responsible for ensuring that the training of aluminothermic welders to obtain a Permit to Weld is in accordance with the requirements of the railway authority.

Upon successful completion of the requirements and demonstration of the necessary competencies, which shall include railway authority tests if required, the welder shall be issued with a Permit to Weld by the relevant railway authority upon receipt of the relevant qualifying information from the employer. The issue of the Permit to Weld shall be via the welder's employer who shall maintain up to date records.

The Permit to Weld shall include a unique identification relating to the particular welder and the employer, and shall contain as a minimum:

— Employer;

— Certificate number;

— Welder’s full name;

— Stamp number;

— Photo of the welder;

— Issue date;

— Expiry date;

— Line categories;

— Process supplier;

— Process;

— Rail cutting method(s);

— Issuing railway authority;

— Signature of the issuing railway authority;

— Surrender conditions.

In any instance of a welder changing employment to another welding contractor or employer, the railway authority shall issue a new Permit to Weld on the request, and receipt of relevant qualifying proof, from the new welding contractor or employer.

The railway authority shall, at any time, withdraw the Permit to Weld upon evidence of poor performance by the welder and ask the employer to return it.

The railway authority shall also withdraw the Permit to Weld upon accepted documented notification from the employer. The employer shall return it to the railway authority.

Upon request from the employer, the Permit to Weld shall be renewed by the railway authority as may be necessary to reflect the maintenance and/or extension of the welder's skills. Such renewal shall require receipt of the relevant qualifying information from the employer.

A specimen of the Permit to Weld is shown in the informative Annex B.

4.3 Welder identification

To identify the welder, each and every weld shall be marked by the stamp number allocated in the Permit to Weld.

4.4 Welder records

The contractor or sub-contractor shall maintain welder records, which shall form part of a quality management system and which shall include:

— Welder training and competences;

— Weld records;

— Number of welds produced in a given period;

— Number of welds rejected;

— Notified number of welds failed in service.

5 Approval of aluminothermic welding contractors

5.1 General

The railway authority shall be responsible for specifying the requirements for the qualification of aluminothermic welding contractors.

A certifying document shall be issued by the railway authority or the authorised body to contractors meeting the requirements.

5.2 Quality management system

The welding contractor shall operate a quality management system which addresses this European Standard to ensure that aluminothermic welds consistently comply with the specified requirements.

5.3 Practical experience

The railway authority may require prospective contractors to provide evidence that they have the necessary experience for the type of work to be carried out.

5.4 Aluminothermic welders

The welding contractor shall employ aluminothermic welders who are in possession of a valid Permit to Weld, as defined in Clause 4 of this standard.

5.5 Training

The welding contractor shall maintain a system that ensures the competence of their aluminothermic welding personnel by appropriate training and assessment.

5.6 Equipment

Aluminothermic welding equipment shall comply with the process supplier's manual. Inspection and calibration of equipment shall comply with those requirements specified by the process and equipment supplier and the relevant railway authority.

5.7 Purchase, management and control of consumables

The welding contractor shall maintain a system of welding consumable purchases, management and control in line with the process supplier's specifications.

5.8 Supervision

The welding contractor shall maintain a system of management and supervision of aluminothermic welding that complies with the regulations of the railway authority.

5.9 Weld inspection

The welding contractor shall maintain a system of weld inspection according to the railway authority requirements. Non-conformances found during these inspections shall be recorded in the traceability system.

5.10 Traceability

As a minimum, each weld shall be marked at the time of production with the welder's unique identification, as defined in 4.3, and with the year of installation.

The welding contractor shall maintain a traceability system. The system shall include a daily record signed by the welder, detailing every weld produced.

The daily record shall include the following minimum information:

— Date of installation;

— Contractor and welder identification;

— Supplier and process;

— Portion details e.g. batch portion no. and date of manufacture;

— Weather conditions;

— Rail profile and grade;

— Location (mileage/kilometric point, line route, rail or "other references");

— Stress balancing activities e.g. welds made between tensors or in conjunction with rail heaters;

— Any non-conformances with the process manual and the railway authority requirements before or during welding including track conditions such as battered, bent or twisted rail ends.

5.11 Audits

Auditing of the welding contractor may be required by the railway authority.

6 Acceptance of aluminothermic welds

6.1 General

Documentation and records as defined in 5.10 shall be made available upon request by the railway authority. All welds installed in accordance with this standard shall be inspected and documented.

6.2 Weld inspector qualification

Persons carrying out final weld inspections, called "Weld Inspectors" in the following clauses, shall have completed and passed a railway authority approved course on aluminothermic weld inspection. These Weld Inspectors shall be approved by the relevant railway authority and shall as appropriate act on behalf of that authority.

6.3 Weld inspection

Prior to any inspection the weld shall be completed and:

— Identified as defined in 5.10,

— Free from mould and luting material,

— Secured in its final position,

— In the final ground condition.

A Weld Inspection Report containing the result and details of the weld inspection shall be completed.

6.4 Geometric requirements

6.4.1 General

Geometrical measurements shall be made of the

— Alignment and match of the weld collar;