SLOVENSKI STANDARD

SIST HD 384.4.482 S1:2002

prva izdaja
julij 2002

Electrical installations of buildings - Part 4: Protection for safety - Chapter 48: Choice of protective measures as a function of external influences - Section 482: Protection against fire where particular risks or danger exist

ICS 13.220.01; 91.140.50

Referenčna številka
SIST HD 384.4.482 S1:2002(en)

HARMONIZATION DOCUMENT

DOCUMENT D'HARMONISATION

HARMONISIERUNGSDOKUMENT

HD 384.4.482 S1

February 1997

ICS 13.220.00; 91.140.50

Descriptors: Electrical installation, measures of protection, external influences, protection against fire

English version

Electrical installations of buildings
Part 4: Protection for safety
Chapter 48: Choice of protective measures as a function of external influences
Section 482: Protection against fire where particular risks or danger exist

Installations électriques des bâtiments
Partie 4: Protection pour assurer la sécurité
Chapitre 48: Choix des mesures de protection en fonction des influences externes
Section 482: Protection contre l'incendie dans des emplacements à risques

Elektrische Anlagen von Gebäuden
Teil 4: Schutzmaßnahmen
Kapitel 48: Auswahl von Schutzmaßnahmen als Funktion äußerer Einflüsse
Hauptabschnitt 482: Brandschutz bei besonderen Risiken oder Gefahren

This Harmonization Document was approved by CENELEC on 1996-07-02. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for implementation of this Harmonization Document on a national level.

Up-to-date lists and bibliographical references concerning such national implementation may be obtained on application to the Central Secretariat or to any CENELEC member.

This Harmonization Document exists in three official versions (English, French, German).

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

This Harmonization Document was prepared by SC 64B, Protection against thermal effects, of Technical Committee CENELEC TC 64, Electrical installations of buildings.

The text of the draft was submitted to the formal vote and was approved by CENELEC as HD 384.4.482 S1 on 1996-07-02.

The following dates were fixed:

- latest date by which the existence of the HD has to be announced at national level (doa) 1997-01-01
- latest date by which the HD has to be implemented at national level by publication of a harmonized national standard or by endorsement (dop) 1997-06-01
- latest date by which the national standards conflicting with the HD have to be withdrawn (dow) 1997-06-01

CENELEC

Corrigendum to HD 384.4.482:1997

English version

Foreword

Replace the implementation dates by:

– latest date by which the HD has to be announced at national level	(doa)	1997-01-01
– latest date by which the HD has to be implemented at national level by publication of a harmonized national standard or by endorsement	(dop)	1997-09-01
– latest date by which the national standards conflicting with the HD have to be withdrawn	(dow)	1997-09-01

July 1997

482 Protection against fire where particular risks or dangers exist

482.0 General

The requirements of this section shall be observed in addition to those of HD 384.4.42.

NOTE : This section provides the minimum requirements. National legislations providing additional requirements may exist.

Section 482 covers :

- selection and erection of installations in locations with risks of fire due to the nature of processed or stored materials like the manufacturing, processing, storage of combustible materials, including the accumulation of dust as in barns, woodworking factories, paper mills, textile factories or similar;

> **NOTE** :The nature and allowed quantities of combustible materials, surface or volume of the locations may be regulated by national authorities.

- selection and erection of installations in locations with mainly combustible constructional materials;

- selection and erection of installations in locations with endangering of irreplaceable goods.
(under consideration)

Electrical equipment shall be so selected and erected that its temperature in normal operation , and the foreseeable temperature rise in the event of a fault, is unlikely to cause a fire, taking due account of external influences.

This may be achieved by an adequate construction of equipment or by additionnal protective measures during erection.

Additional measures are not needed where the surface temperature of equipment is unlikely to cause ignition of nearby combustible substances.

Section 482 does not cover :

- selection and erection of installations in locations with explosion risks, see prEN 50014 : Electrical apparatus in potentially explosive gas atmospheres (other than mines);

> **NOTE** : Locations with dust explosion risks are under consideration.

- selection and erection of installations in escape routes. These areas may be regulated by the relevant authorities responsible e.g for building construction, public gathering or fire prevention where different regulations exist in several countries.

482.1 Locations with risks of fire due to the nature of processed or stored materials

482.1.1 In locations where dangerous amounts of combustible materials may come close to electrical equipment, installations shall be restricted, as far as possible, to those necessary to the use of these locations. Such installations shall fulfill the requirements of sub-clauses 482.1.2 to 482.1.19.

482.1.2 Where it is expected that dust, sufficient to cause a fire hazard, could accumulate on enclosures of electrical equipment, adequate measures shall be taken to prevent the enclosures from attaining excessive temperatures.

482.1.3 Electrical equipment shall be appropriate for such locations. Its enclosures shall provide a degree of protection of at least :

IP 5X in case of accumulation of dust.

Where presence of dust is not to be expected, the protection degree shall meet the relevant national rules.

482.1.4 In principle, general rules apply for wiring systems. However, wiring not completely embedded in non-combustible material like plaster, concrete or otherwise protected from fire , shall meet the flame retardant characteristics as defined in HD 405.1.

NOTE :Where the risk of flame propagation is high, e.g in long vertical runs or bunched cables, the cable should meet the flame propagation characteristics as defined in HD 405-3.

482.1.5 In addition to 482.1.4, wiring systems which traverse such locations, but are not intended for electrical supply within the location, shall satisfy the following condition :

- they shall have no connection along the route inside these locations, unless :

- the connection is placed in an enclosure fullfilling the fire test as defined in the relevant product standards, e.g special requirements for wall boxes as defined in IEC 670.

482.1.6 Wiring systems supplying or traversing such locations shall be protected against overload and against short-circuit by overcurrent protective devices placed between the origin of the circuits and the location.

A wiring system originating in such a location shall be protected against overload and short-circuit by overcurrent protective devices placed at the origin of these circuits

482.1.7 Wiring systems, other than mineral insulated cables and busbar trunking systems, shall be protected against insulation faults :

a) in TN and TT systems, with RCD's with a rated residual operating current $I_{\Delta n} \leq 300$ mA according to 531.2.4 of IEC 364-5-53 and to the relevant product standards.

Where resistive faults may cause a fire, e.g for overhead heating with heating film elements, the rated residual operating current shall be of $I_{\Delta n} \leq 30$ mA.

b) in an IT-System, insulation monitoring devices with audible and visible signals shall be provided. In the event of a second fault, the disconnecting time of the overcurrent protective device shall not exceed 5s.

Adequate instruction shall ensure manual disconnection, as soon as possible, in the event of a first fault.

NOTE : Cables with metallic covering are recommended. The metallic covering should be connected to the protective conductor.

482.1.8 PEN conductors are not allowed, except in wiring systems solely traversing these locations.

482.1.9 Every neutral conductor shall be provided with a linked isolating device according to 537.2 of IEC 364-5-53.

482.1.10 Bare conductors shall not be used.
Precautions shall be taken to prevent arcs, sparks or hot particles igniting adjacent combustible material.

482.1.11 For flexible wiring, cables and cords intended for heavy duty according to HD 516 should be selected, e.g. type HO7RN-F or other cables suitably protected.

482.1.12 Switchgear shall be placed outside such locations, unless it is mounted in enclosures with IP rating according to 482.1.3.

482.1.13 Motors, which are automatically or remotely controlled or which are not continously supervised shall be protected against excessive temperature by an overload protective device with manual resetting or equivalent overload protective device.

Motors with star-delta starting shall be protected against excessive temperature in the star connection.

482.1.14 Only luminaires with limited surface temperature shall be used.
In locations where there may be fire hazards due to dust and/or fibres, luminaires shall be constructed so that in case of fault, there is only a limited temperature on their surface and dust and/or fibres cannot be accumulated in dangerous amounts.

The surface temperature is limited to :

- under normal conditions : 90 °C;
- under fault conditions :115 °C;

If no information is given by the manufacturer, small spotlights and projectors shall be kept from combustible materials at a distance of :

- up to 100 W : 0,5 m;
- from 100 to 300 W : 0,8 m;
- from 300 to 500 W : 1 m.

482.1.15 Lamps and other components of luminaires shall be protected against foreseeable mechanical stresses. Such protective means shall not be fixed on lampholders unless they form an integral part of the luminaire construction.
Components, e.g lamps or hot elements shall be prevented from falling out of the luminaire.

482.1.16 Where heating and ventilation systems are employed, the dust content and the temperature of the air shall not present a fire hazard in that location.
Temperature limiting devices according to 424.1.1 of HD 384-4-42 shall have manual resetting only.

482.1.17 Heating appliances shall be mounted on non-combustible pads.

482.1.18 Heating appliances mounted close to combustible materials shall be provided with appropiate barriers preventing the ignition of these materials.
Heat storage appliances shall be of a type which prevents the ignition of combustible dust or/and fibres by the heating core.

482.1.19 Enclosures of electrothermal appliances such as heaters, resistors, etc. shall not attain higher temperatures than those specified in 482.1.14. These appliances shall be designed or installed to prevent any accumulation of materials likely to hamper the heat dissipation.

482.2 Locations with combustible constructional materials

482.2.1 Precautions shall be taken against electrical equipment causing ignition of any part of the building structure. This can be achieved by :

- prevention of fire caused by insulation faults;
- proper design, selection and erection of electrical equipment.