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**Järnvägsanläggningar –
Kablar med särskilda brandegenskaper avsedda för rälsfordon –
Kablar för höga temperaturer –
Del 1: Allmänna fordringar**

Railway applications –

Railway rolling stock high temperature power cables having special fire performance –

Part 1: General requirements

Som svensk standard gäller europastandarden EN 50382-1:2008. Den svenska standarden innehåller den officiella engelska språkversionen av EN 50382-1:2008.

Nationellt förord

Standarden ska användas tillsammans med SS-EN 50382-2.

Standarder underlättar utvecklingen och höjer elsäkerheten

Det finns många fördelar med att ha gemensamma tekniska regler för bl a säkerhet, prestanda, dokumentation, utförande och skötsel av elprodukter, elanläggningar och metoder. Genom att utforma sådana standarder blir säkerhetskraven tydliga och utvecklingskostnaderna rimliga samtidigt som marknadens acceptans för produkten eller tjänsten ökar.

Många standarder inom elområdet beskriver tekniska lösningar och metoder som åstadkommer den elsäkerhet som föreskrivs av svenska myndigheter och av EU.

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SEK samordnar svenska intressenters medverkan i SEKs tekniska kommittéer och stödjer svenska experters medverkan i internationella och europeiska projekt.

Stora delar av arbetet sker internationellt

Utformningen av standarder sker i allt väsentligt i internationellt och europeiskt samarbete. SEK är svensk nationalkommitté av International Electrotechnical Commission (IEC) och Comité Européen de Normalisation Electrotechnique (CENELEC).

Standardiseringsarbetet inom SEK är organiserat i referensgrupper bestående av ett antal tekniska kommittéer som speglar hur arbetet inom IEC och CENELEC är organiserat.

Arbetet i de tekniska kommittéerna är öppet för alla svenska organisationer, företag, institutioner, myndigheter och statliga verk. Den årliga avgiften för deltagandet och intäkter från försäljning finansierar SEKs standardiseringsverksamhet och medlemsavgift till IEC och CENELEC.

Var med och påverka!

Den som deltar i SEKs tekniska kommittéarbete har möjlighet att påverka framtida standarder och får tidig tillgång till information och dokumentation om utvecklingen inom sitt teknikområde. Arbetet och kontakterna med kollegor, kunder och konkurrenter kan gynnsamt påverka enskilda företags affärsutveckling och bidrar till deltagarnas egen kompetensutveckling.

Du som vill dra nytta av dessa möjligheter är välkommen att kontakta SEKs kansli för mer information.

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**Railway applications -
Railway rolling stock high temperature power cables
having special fire performance -
Part 1: General requirements**

Applications ferroviaires -
Câbles pour matériel roulant ferroviaire
ayant des performances particulières
de comportement au feu -
Partie 1: Prescriptions générales

Bahnanwendungen -
Hochtemperaturkabel und -leitungen
für Schienenfahrzeuge mit verbessertem
Verhalten im Brandfall -
Teil 1: Allgemeine Anforderungen

This European Standard was approved by CENELEC on 2008-02-01. CENELEC 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 CENELEC 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 CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC

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

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Foreword

This European Standard was prepared for the Technical Committee CENELEC TC 20, Electric cables, by Working Group 12, Railway Cables, as part of the overall programme of work in the Technical Committee CENELEC TC 9X, Electrical and electronic applications for railways.

The text of the draft was submitted to the formal vote and was approved by CENELEC as EN 50382-1 on 2008-02-01.

The following dates were fixed:

- latest date by which the EN has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 2009-02-01
 - latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2011-02-01
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Introduction

The railway industry is generally concerned with the movement of people as well as goods. It is therefore essential that a high level of safety is achieved, even when failures occur which may involve fire, howsoever caused, affecting railway rolling stock.

Hence it is necessary to provide cables for use in railway environments which minimise the hazard to people when a fire may damage the cable, irrespective of whether the fire is caused by an external source or from within the electrical system.

EN 50382 specifies cables for power and associated circuits which, in the event of fire, will limit the risk to people and improve the safety on railways in general. It covers cables, for use in railway rolling stock, and having standard wall thickness of insulation, based on materials that allow them to operate at high temperature and which are also halogen free. In the event of a fire affecting cables to EN 50382 they will have a limited flame spread and limited emission of toxic gases. In addition these cables when burnt produce limited amounts of smoke. This last characteristic will minimise loss of visibility in the event of a fire and will aid reduced evacuation times.

The objects of this standard are

- to standardise cables that are safe and reliable when properly used,
- to state the characteristics, performance, and construction requirements directly or indirectly bearing on safety,
- to specify methods for checking conformity with these requirements.

EN 50382, which covers a range of cables rated at up to 3,6/6 kV with conductor sizes 1,5 mm² up to 400 mm², is divided into 2 parts:

- Part 1: General requirements;
- Part 2: Single core silicone rubber insulated cables for 120 °C or 150 °C.

These cables are intended for a limited number of applications.

Information regarding selection and installation of cables including current ratings can be found in EN 50355 and EN 50343. The procedure for selection of cable cross-sectional area, including reduction factors for ambient temperature and installation type, are described in EN 50343.

NOTE Current ratings for inclusion in EN 50355 are under development for the next amendment.

Special test methods referred to in EN 50382 are given in EN 50305.

1 Scope

This Part 1 of EN 50382 specifies the general requirements applicable to the cables given in EN 50382-2. It includes the detailed requirements for the insulating and sheathing materials and other components called up in EN 50382-2. In particular EN 50382-1 specifies those requirements relating to fire safety.

Based on proven experience and reliability over many years these cables are rated for occasional thermal stresses causing ageing equivalent to continuous operational life at a conductor temperature of either 120 °C or 150 °C.

NOTE This rating is based upon the polymer defined in 3.1. Before this polymer had gained widespread acceptance in the cable industry, ageing performance had been assessed via long term thermal endurance testing and had been extrapolated to 20 000 h using techniques equivalent to those in EN 60216. Subsequent experience in service has demonstrated that the predicted performance levels were correct.

Where extrapolated data is used to predict lifetime in service it should be confirmed with the cable manufacturer, and should be based on a failure mode appropriate to the type of material or cable.

The maximum temperature for short circuit conditions for silicone rubber is 350 °C based on a duration of 5 s.

Although both of the insulating and one of the sheathing compounds specified in this standard are thermally capable of operating at 150 °C, where tinned conductors are used the maximum operating temperature is limited to 120 °C and for the same technical reason the maximum short circuit temperature, for tinned copper conductors, is limited to 250 °C. The choice of sheath may also limit the operating temperature to 120 °C.

This Part 1 should be used in conjunction with EN 50382-2.

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 10002-1	Metallic materials – Tensile testing – Part 1: Method of test (at ambient temperature)
EN 50266-2-4	Common test methods for cables under fire conditions – Test for vertical flame spread of vertically-mounted bunched wires or cables – Part 2-4: Procedures – Category C
EN 50266-2-5	Common test methods for cables under fire conditions – Test for vertical flame spread of vertically-mounted bunched wires or cables – Part 2-5: Procedures – Small cables – Category D
EN 50267-2-1	Common test methods for cables under fire conditions – Tests on gases evolved during combustion of materials from cables – Part 2-1: Procedures – Determination of the amount of halogen acid gas
EN 50267-2-2	Common test methods for cables under fire conditions – Tests on gases evolved during combustion of materials from cables – Part 2-2: Procedures – Determination of degree of acidity of gases for materials by measuring pH and conductivity
EN 50305:2002	Railway applications – Railway rolling stock cables having special fire performance – Test methods
EN 50382-2	Railway applications – Railway rolling stock high temperature power cables having special fire performance – Part 2: Single core silicone rubber insulated cables for 120 °C or 150 °C