SVENSK STANDARD
SS-ISO 12856-1:2022

Järnvägar – Plastsliprar för spår och spårväxlar – Del 1: Materialegenskaper (ISO 12856-1:2022, IDT)

Railway applications — Polymeric composite sleepers, bearers and transoms — Part 1: Material characteristics (ISO 12856-1:2022, IDT)

Svenska Institutet för Standarder

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Svenska Institutet för Standarder

Den här standarden kan hjälpa dig att effektivisera och kvalitetssäkra ditt arbete. SIS har fler tjänster att erbjuda dig för att underlätta tillämpningen av standarder i din verksamhet.

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Kontakt
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Upplysningar om sakinnehållet i standarden lämnas av Svenska institutet för standarder, telefon 08 - 555 520 00. Standarder kan beställas hos SIS som även lämnar allmänna upplysningar om svensk och utländsk standard.

Standarden är framtagen av kommittén för Järnvägar, SIS/TK 254.

Har du synpunkter på innehållet i den här standarden, vill du delta i ett kommande revideringsarbete eller vara med och ta fram andra standarder inom området? Gå in på www.sis.se - där hittar du mer information.

Fastställd: 2022-02-22
ICS: 14.540; 45.080; 83.140.99

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Den internationella standarden ISO 12856-1:2022 gäller som svensk standard. Detta dokument innehåller den officiella engelska versionen av ISO 12856-1:2022.

Denna standard ersätter SS-ISO 12856-1:2019, utgåva 1

The International Standard ISO 12856-1:2022 has the status of a Swedish Standard. This document contains the official English version of ISO 12856-1:2022.

This standard supersedes the SS-ISO 12856-1:2019, edition 1

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LÄSANVISNINGAR FÖR STANDARDER

I dessa anvisningar behandlas huvudprinciperna för hur regler och yttre begränsningar anges i standardiseringsprodukter.

Krav

Ett krav är ett uttryck i ett dokuments innehåll som anger objektivt verifierbara kriterier som ska uppfyllas och från vilka ingen avvikelse tillåts om efterlevnad av dokumentet ska kunna åberopas.
Krav uttrycks med hjälpverbet ska (eller ska inte för förbud).

Rekommendation

En rekommendation är ett uttryck i ett dokuments innehåll som anger en valmöjlighet eller ett tillvägagångssätt som bedöms vara särskilt lämpligt utan att nödvändigtvis nämna eller utesluta andra.
Rekommendationer uttrycks med hjälpverbet bör (eller bör inte för avrådanden).

Instruktion

Instruktioner anges i imperativ form och används för att ange hur något görs eller utförs. De kan underordnas en annan regel, såsom ett krav eller en rekommendation. De kan även användas självständigt, och är då att betrakta som krav.

Förklaring

En förklaring är ett uttryck i ett dokuments innehåll som förmedlar information. En förklaring kan uttrycka tillåtelse, möjlighet eller förmåga. Tillåtelse uttrycks med hjälpverbet får (eller motsatsen behöver inte). Möjlighet och förmåga uttrycks med hjälpverbet kan (eller motsatsen kan inte).

READING INSTRUCTIONS FOR STANDARDS

These instructions cover the main principles for the use of provisions and external constraints in standardization deliverables.

Requirement

A requirement is an expression, in the content of a document, that conveys objectively verifiable criteria to be fulfilled, and from which no deviation is permitted if conformance with the document is to be claimed. Requirements are expressed by the auxiliary shall (or shall not for prohibition).

Recommendation

A recommendation is an expression, in the content of a document, that conveys a suggested possible choice or course of action deemed to be particularly suitable, without necessarily mentioning or excluding others. Recommendations are expressed by the auxiliary should (or should not for dissuasion).

Instruction

An instruction is expressed in the imperative mood and is used in order to convey an action to be performed. It can be subordinated to another provision, such as a requirement or a recommendation. It can also be used independently and is then to be regarded as a requirement.

Statement

A statement is an expression, in the content of a document, that conveys information. A statement can express permission, possibility or capability. Permission is expressed by the auxiliary may (its opposite being need not). Possibility and capability are expressed by the auxiliary can (its opposite being cannot).

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 269, *Railway applications*, Subcommittee SC 1, *Infrastructure.*

This second edition cancels and replaces the first edition (ISO 12856-1:2014), which has been technically revised.

The main changes are as follows:

— this document has been updated in accordance with addition of the new ISO 12856-2 (product testing) and ISO 12856-3 (general requirements).

A list of all parts in the ISO 12856 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Railway applications — Polymeric composite sleepers, bearers and transoms —

Part 1: Material characteristics

1 Scope

This document specifies the characteristics of polymeric composite and reinforced polymeric composite materials in the manufacture of polymeric composite railway sleepers. It is applicable to sleepers, bearers and transoms to be installed in all tracks (both heavy and urban rail) with or without ballast.

NOTE In this document, the term "sleeper" refers to "sleeper, bearer and transom".

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

ISO 4582, *Plastics — Determination of changes in colour and variations in properties after exposure to glass-filtered solar radiation, natural weathering or laboratory radiation sources*

ISO 4892-2:2013, *Plastics — Methods of exposure to laboratory light sources — Part 2: Xenon-arc lamps*

ISO 4892-4, *Plastics — Methods of exposure to laboratory light sources — Part 4: Open-flame carbon-arc lamps*

ISO 12856-2:2020, *Railway applications — Polymeric composite sleepers, bearers and transoms — Part 2: Product testing*

ISO 12856-3, *Railway applications — Polymeric composite sleepers bearers and transoms — Part 3: General requirements*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 12856-3 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

4 Material characteristics

4.1 Resistance

4.1.1 Chemical compatibility

The material of the polymeric composite sleepers shall be resistant against all chemicals that can regularly contaminate the sleepers in conventional railway traffic, e.g. oils/grease/hydrocarbons (media dripping from railway vehicles) and possibly de-icing salts and herbicides/fungicides from weed control on the railway track.

The manufacturer shall prove the resistance to chemical media in suitable form, if necessary, through studies and demonstration of transferable knowledge from other application cases.

If the purchaser requests high resistance to specific chemicals (e.g. for use in loading and unloading areas of chemical factories, oil and chemical transhipment ports), the purchaser shall define requirements and the sleeper manufacturer shall prove these requirements/the resistance if necessary.

The purchaser may specify tests if the manufacturer's proof is not satisfactory or plausible according to the generally recognized state of scientific and technical knowledge.

4.1.2 Environmental resistance

4.1.2.1 Weathering resistance

The load bearing capacities of the sleeper until the end of its service life shall remain sufficient for service regardless of weathering effects. The requirements for the weathering resistance of the materials shall be agreed on between the interested parties.

The weathering resistance shall be demonstrated either:

— by a documented and substantially proven experience; or

— by assessing the changes of properties in accordance with ISO 4582:

  — after an exposure to xenon-arc lamps in accordance with ISO 4892-2:2013, Method A, Cycle 1;

  — and/or after an exposure to carbon-arc lamps in accordance with ISO 4892-4.

4.1.2.2 Resistance to water

The sleepers shall be highly resistant to water absorption, precipitation of water (rain, snow, dew, fog etc.). The purchaser may limit the possible water absorption when reasonably necessary.

The manufacturer may prove the basic non-water absorbing capacity of the material in suitable form, if necessary, through studies and demonstration of transferable knowledge from other application cases.

The purchaser may specify tests if the manufacturer's proof is not satisfactory or plausible according to the generally recognized state of scientific and technical knowledge.

4.1.2.3 Frost in connection with water

The sleepers shall be designed so that any penetrating and freezing water produces no frost damage to the sleepers.

The manufacturer may prove the basic non-water absorbing capacity of the material in suitable form, if necessary, through studies and demonstration of transferable knowledge from other application cases.

The purchaser may specify tests if the manufacturer's proof is not satisfactory or plausible according to the generally recognized state of scientific and technical knowledge.

4.1.2.4 Temperature resistance

4.1.2.4.1 Deformation

The material of the sleepers shall be selected in a way that sleepers subject to normally occurring long term temperature cycles do not deform to any extent (bend, rotate, twist), or do not soften or solidify too much in order to meet the specific values required by the infrastructure operator in ISO 12856-2:2020, Clause 4.