SLOVENSKI STANDARD
SIST EN 15877-1:2012+A1:2019

01-februar-2019

Železniške naprave - Oznake železniških vozil - 1. del: Tovorni vagoni

Railway applications - Marking on railway vehicles - Part 1: Freight wagons

Bahnanwendungen - Kennzeichnung von Schienenfahrzeugen - Teil 1: Güterwagen

Applications ferroviaires - Inscriptions pour véhicules ferroviaires - Partie 1: Wagons pour le fret

Ta slovenski standard je istoveten z: **EN 15877-1:2012+A1:2018**

ICS:

45.060.20	Železniški vagoni	Trailing stock

SIST EN 15877-1:2012+A1:2019 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 15877-1:2012+A1

December 2018

ICS 45.060.01

Supersedes EN 15877-1:2012

English Version

Railway applications - Marking on railway vehicles - Part 1: Freight wagons

Applications ferroviaires - Inscriptions pour véhicules ferroviaires - Partie 1: Wagons pour le fret

Bahnanwendungen - Kennzeichnung von Schienenfahrzeugen - Teil 1: Güterwagen

This European Standard was approved by CEN on 9 March 2012 and includes Amendment 1 approved by CEN on 15 July 2018.

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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Ref. No. EN 15877-1:2012+A1:2018 E

Contents

Page

European foreword

This document (EN 15877-1:2012+A1:2018) 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 June 2019, and conflicting national standards shall be withdrawn at the latest by June 2019.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document includes Amendment 1 approved by CEN on 2018-07-15.

This document supersedes EN 15877-1:2012.

The start and finish of text introduced or altered by amendment is indicated in the text by tags ⟨A1⟩ ⟨A1⟩.

⟨A1⟩ This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive 2008/57/EC.

For relationship with EU Directive 2008/57/EC, see informative Annex ZA, which is an integral part of this document. ⟨A1⟩

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

Introduction

This European standard describes standardised markings for use on railway vehicles. These markings are used to provide various items of information relating to the characteristics and intended use of vehicles in a clear and concise manner. Among those markings are safety signs used to alert equipment operators to hazards that may be encountered in the use or maintenance of the vehicles.

The standard consists of two parts:

— *Part 1: Freight wagons;*
— *Part 2: External Markings on Coaches, Motive Power Units, Locomotives and On Track Machines.*

The provisions of this Part 1 of the standard cover:

— the markings required by the Conventional Rail Rolling Stock Freight Wagon TSI which mandates the minimum set of markings relevant to its design and operation to be carried by any wagon which is certified as TSI and/or UTP compliant;
— the markings, in addition to those which are TSI/UTP mandatory, which are relevant to its design and operation as required by industry.

In addition to the markings shown in this standard, there might be other industrial markings and text applied to a freight wagon, e.g. instructions and warnings concerning the use of equipment. Such additional markings are not in contravention of this standard provided they do not interfere with or affect the markings in the standard.

The standard is applicable to all railway freight wagons operating within the European Union, the European Free Trade Association Member States and states which are member of OTIF (Intergovernmental Organisation for International Carriage by Rail) and it satisfies the legal requirements within these institutions.

The standard is consistent with:

〈A1〉

— the Technical Specification for Interoperability Subsystem: Rolling Stock Scope: Freight Wagons as published in the Official Journal L 104, 12.4.2013, p.1, and its amendments;

— the Technical Specification for Interoperability Subsystem: Operation and Traffic Management published in the Official Journal L 165, 30.06.2015, p.1; 〈A1〉

— the Convention Concerning International Carriage by Rail (COTIF) as amended by the Vilnius Protocol in force from 1.7.2006, applicable from 01.01.2011

It therefore supports the essential requirements of:

— Directive 2008/57/EC on the interoperability of the rail system within the Community;
— COTIF UTP GEN-A: General provisions – Essential requirements (A 94-01A/1.2009) in force since 1st August 2009.

It is intended to be used by all parties concerned with the marking of railway vehicles.

1 Scope

This European Standard identifies the information required to be marked on freight wagons, or parts of freight wagons, relating to their technical, operational and maintenance characteristics. It defines the characteristics of these markings, the requirements pertaining to their presentation, their shape and position on a vehicle and their meaning. Some markings are accompanied with a note(s) where appropriate.

Tank barrel manufacturers' design criteria, test and product specification plates have not been considered in this European Standard as they are specified in EN 12561-1:2011, Railway applications — Tank wagons — Part 1: Identification plates for tank wagons for the carriage of dangerous goods.

Dangerous Goods markings have not been considered in this European Standard where fully specified in RID (dimensions, colour, location and form). Where markings are not fully specified in RID they are included in this standard

2 Normative references

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

EN 12561-1, *Railway applications — Tank wagons — Part 1: Identification plates for tank wagons for the carriage of dangerous goods*

EN 15528, *Railway applications — Line categories for managing the interface between load limits of vehicles and infrastructure*

prEN 15877-2, *Railway applications — Marking on railway vehicles — Part 2: External markings on coaches, motives power units, locomotives and on track machines*

ISO 3864-1, *Graphical symbols — Safety colours and safety signs — Part 1: Design principles for safety signs and safety markings*

CIE 015-2004, *Colorimetry* — 3rd edition

CIE 054.2-2001, *Retroreflection: Definition and Measurement*

3 Terms, definitions and abbreviations

3.1 Terms and definitions

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

3.1.1
buffer stroke
measured distance difference between an uncompressed and a fully compressed buffer

3.1.2
decal
a picture or design printed on specially prepared plastic sheeting for the purpose of adherence to a freight wagon

3.1.3
luminance contrast, *k*
luminance of colour L_1 divided by the luminance of colour L_2 where L_1 is greater than L_2

$$k = \frac{L_1}{L_2}$$

[SOURCE: IEC 60050-845:1987, 845-04-69]"

3.1.4
luminance factor, *β*
ratio of the luminance of the surface element in a given direction to that of a perfect reflecting or transmitting diffuser identically illuminated

3.1.5
marking
lettering or symbols applied to a freight wagon by means of decals, hand painting or by another agreed method, with the purpose of providing information concerning the wagon

3.1.6
paint
liquid mixture, usually of a solid pigment in a liquid medium such as oil or water

3.1.7
railway vehicle
vehicle suitable for circulation on its own wheels on railway lines with or without traction

3.1.8
stencil
template for the required lettering

3.1.9
tare
weight of a railway vehicle without fuel or load

Note 1 to entry: To follow common practice, “weight” is used throughout this standard as kilogramme or tonne.

3.1.10
vehicle
vehicle is the smallest part in a train (a single vehicle)

Note 1 to entry: It features an individual body shell lying on its own sets of bogies or wheels or sharing them with adjacent vehicles

3.1.11
wagon
railway vehicle without traction designed to carry freight or goods

3.2 Abbreviations

Term	Definition
AC	Alternate current
ATP	Automatic Train Protection

CER	Community of European Railways and Infrastructures Companies.
CIE	International Commission on Illumination, Vienna, Austria. http://www.cie.co.at/cie/
COTIF	Convention concerning International Carriage by Rail (COTIF) of 9 May 1980 in the version of the Protocol of Modification of 3 June 1999
CR	Conventional Rail System
DC	Direct current
EFTA	European Free Trade Association
ERA	European Railway Agency
EU	European Union
EVN	European Vehicle Number - Article 32 of the 2008/57/EC
OSJD	Warsaw based Organisation for Collaboration between Railways
OTIF	Intergovernmental Organisation for International Carriage by Rail
PPV/PPW	OSJD Rules for International Operation of Wagons and Coaches of 01/01/1956 updated 01/01/1997
RAL	Colour standardisation system of the German Institute for Quality Assurance and Certification
RID	RID means the Regulations concerning the International Carriage of Dangerous Goods (Appendix C to COTIF 1999) (RID is also Annex to EU Council Directive 2008/68/EC)
RIV	"RIV" means the agreements between Railway Undertakings governing the exchange and use of wagons between railway undertakings (version 2000)
RST	Rolling stock
RU	Railway Undertaking
TSI	Technical Specifications for Interoperability, the specifications by which each subsystem or part subsystem is covered in order to meet the essential requirements and ensure the interoperability of the trans-European rail system.
TEN	Trans European Network
UIC	International Union of Railways
UIP	International Union of Private Wagon Owners.
UIRR	International Union of Combined Road-Rail Transport Companies.
UNIFE	Union of the European Railway Industries.
UITP	International Association of Public Transport.
UTP	Uniform Technical Prescriptions according to Appendix F (APTU) of COTIF1999
VKM	Vehicle Keeper Marking
WAG TSI	Freight Wagons TSI

4 Markings

4.1 General principles

4.1.1 The markings and the content of information are as given in 4.5.

4.1.2 A marking shall be located on the wagon at a position easily visible by staff standing at ground level and presented in a way clearly understandable to persons concerned. If the marking is intended to be read by a person standing at ground level, it should not be located at a level higher than 2 000 mm above the rail surface[1)].The visibility shall also be ensured if the marking needs to be read from a

[1)] For the assessment of the location criteria, the ground level should not to be lower than 200 mm below the rail surface; in accordance with anthropometric data, the eye level of the reading person should not to be less than 1500 mm

position other than ground level or if it is placed on a non-vertical surface. Hazard markings, e.g. the warning sign for live catenary, shall be located in such a position that they can be seen before the hazard zone is actually reached.

The location of a marking shall be such that correctly positioned tarpaulins, which may be used to sheet the wagon, do not obscure the marking.

4.1.3 Advertising, designs or other text or pictures not relating to the markings applied to a wagon shall not affect the visibility and the clear and unambiguous understanding of the marking. Such items may only be placed on the side walls or on the tank shell. In this case, a border of minimum 100 mm shall be placed around each marking or composition of markings; these borders shall have a “neutral” colour or be the same colour which accentuates the marking. The requirement for a 100 mm minimum width shall also apply if the colour of the material on which the marking is placed does not provide enough contrast to the marking; for example, the markings in 4.5.13 which have a yellow outer part will need a border if they are placed on a wagon that is painted yellow.

4.1.4 Graffiti which affects the visibility or understanding of the markings shall be removed.

4.1.5 Unless otherwise indicated in the diagrams, the markings shall be placed on both sides of the wagon.

4.1.6 A marking shall ensure durable, non-degraded marking for a period of at least 6 years under a temperature range of -40 to +90 °C. If a marking is defective or illegible, it shall be restored. It shall be weather-resistant and resistant to cleaning agents, high pressure water or air cleaning and cleaning machines with brushes. If a marking has faded e.g. due to sunlight, it shall be restored.

4.1.7 Alphanumeric characters used on markings shall use Latin characters and Arabic numerals. The font to be used shall be non-italic, sans serif and of a type such as Univers 67, Helvetica, Arial.

4.1.8 The dimensions indicated in this document may have a tolerance of plus or minus 10 % when hand produced. For better readability, it is recommended to use industrial foils or stencils for hand produced markings.

4.1.9 When employing the use of moveable panels it shall be ensured that the required panel is suitably secured so as not to be inadvertently changed or get lost.

4.1.10 The inscription panel may be replaced by applying the requisite markings directly to the sidewall or tank.

4.2 Colour

4.2.1 Colours used shall conform to the colour areas indicated in the chromaticity diagram (Figure 1). Table 1 shows the coordinates in the chromaticity diagram of the four corners which, connected by straight lines, indicates the boundaries for the allowed variation of the colour. Colours that do not meet these chromaticity coordinates shall not be used. The colours indicated in the diagrams are defined according to ISO 3864-1.

4.2.2 Unless otherwise indicated in the diagrams, the colours need not be made of retro reflecting material.

---

above ground; and the reading distance should be minimum 700 mm from the side of the wagon. Tilting the head back, it should be possible to look up at an angle of 45 degrees above horizontal; a calculation using these parameters gives the limitation 2000 mm.

4.2.3 The luminance contrast *k* shall be greater than 5.

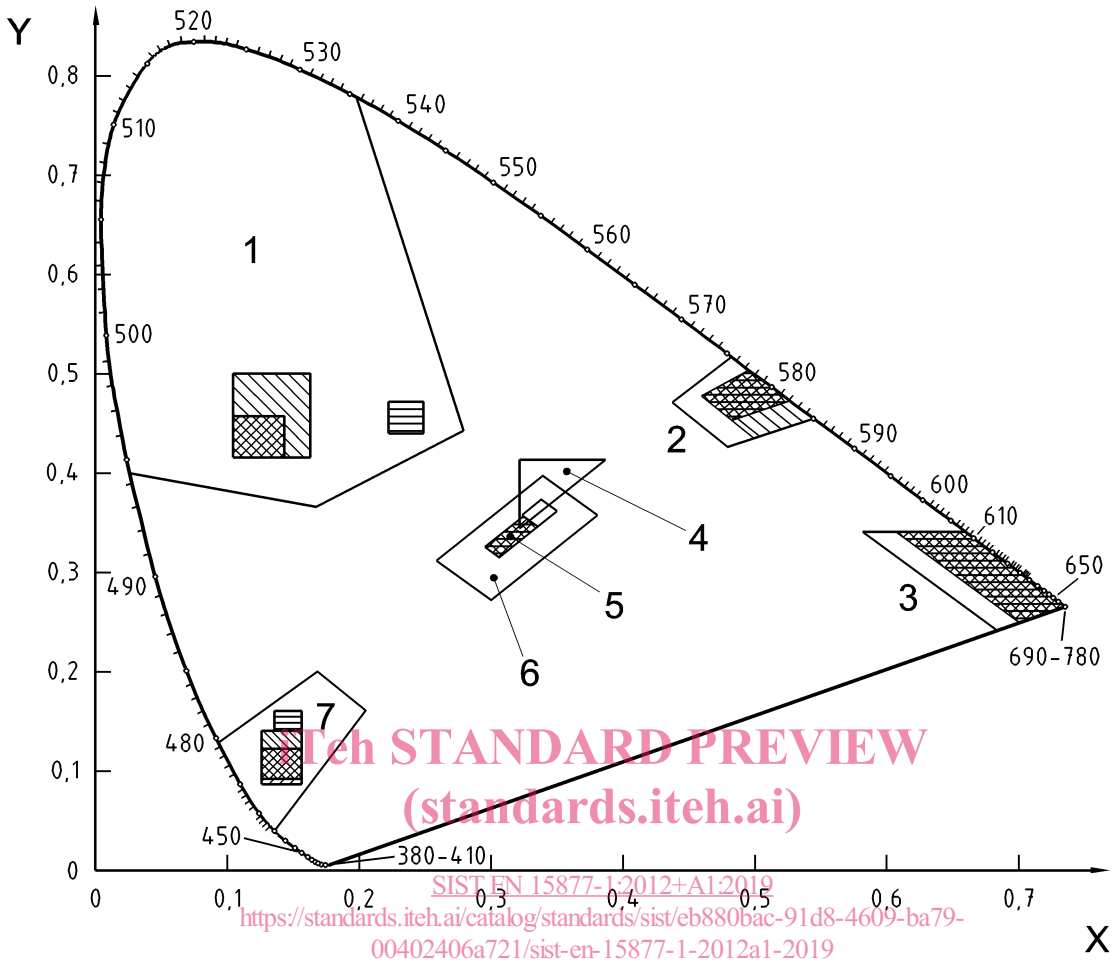
4.2.4 If there is no colour specification indicated with the specification of a marking, the colour of the informative part (the symbol, letters/numbers, borders and lines) shall be black on a light background or white on a dark background. The background for decals, stencils and painted markings may be transparent and thereby represented by the colour of the material on which the marking is placed, e.g. the wall of the wagon. In any case, when a part of the marking is indicated to be the wagon colour background, the requirement to the luminance contrast shall be met.

Table 1

		Chromaticity coordinates of corner point				Luminance factor *ß*		
Colour		1	2	3	4	ordinary material	retro reflecting	RAL®
Red	*x*	0,735	0,681	0,579	0,655	≥ 0,07	≥ 0,05	3020
	y	0,265	0,239	0,341	0,345			
Blue	*x*	0,094	0,172	0,210	0,137	≥ 0,05	≥ 0,01	5015
	y	0,125	0,198	0,160	0,038			
Yellow	*x*	0,545	0,494	0,444	0,481	≥ 0,45	—	1023
	y	0,454	0,426	0,476	0,518			
Yellow retro reflecting	*x*	0,494	0,470	0,493	0,522	—	≥ 0,27	
	y	0,505	0,480	0,457	0,477			
Green	*x*	0,201	0,285	0,170	0,026	≥ 0,12	≥ 0,04	6018
	y	0,776	0,441	0,364	0,399			
White	*x*	0,350	0,305	0,295	0,340	≥ 0,75	≥ 0,35	9016
	y	0,360	0,315	0,325	0,370			
Black	*x*	0,385	0,300	0,260	0,345	≤ 0,03	—	9011
	y	0,355	0,270	0,310	0,395			
Orange*	*x*	0,520	0,520	0,578	0,618	≥ 0,22	≥ 0,12	2003
	y	0,380	0,400	0,422	0,380			

* This colour is not specified in ISO 3864 but is specified in RID.

The column RAL® is not normative for colour matching, but an example from an industry colour order system to indicate what the respective colours look like.



Key

1 green
2 yellow
3 red
4 yellowish phosphorescent white
5 white
6 black
7 blue

Figure 1 — Chromaticity diagram

4.2.5 Conditions

The physical requirements that safety signs have to meet are primarily related to daytime colour.

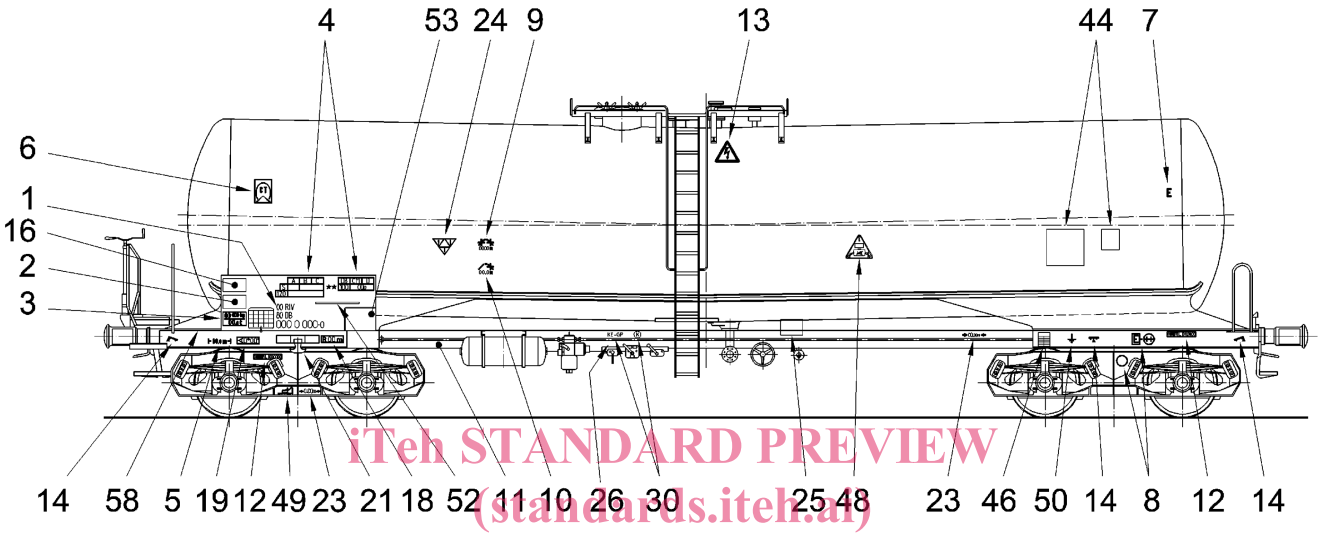
Measurements of chromaticity coordinates and luminance factor ß shall be made as specified in CIE 015-2004.

For the measurement of chromaticity coordinates and luminance factor ß of ordinary, luminescent and retro reflecting markings, the material is considered to be illuminated by daylight as represented by the standard illuminant D65 at an angle of 45° with the normal to the surface and the observation made in the direction of the normal (45/0 geometry).

The coefficient of retro reflection shall be measured in accordance with CIE 054.2–2001, using standard illuminant A with the condition that the entrance and observation angles are in the same plane.

4.3 Positioning

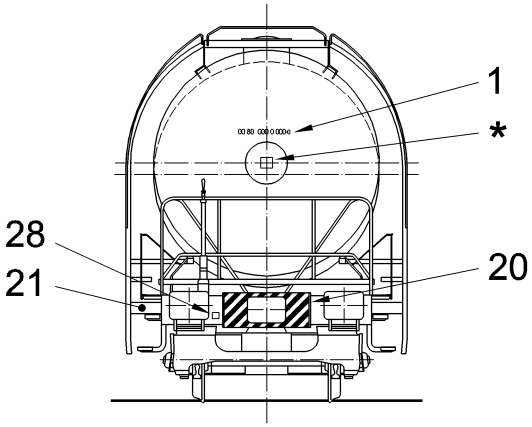
Where applicable, markings shall be positioned generally according to Figures 2.a, 2.b and 3. The list of markings is contained in the table under 4.4 and their position and meaning described in 4.5. Not all markings can be accommodated in the diagrams.



Key

See 4.4

Figure 2a



Key

See 4.4

NOTE Where movable panels are used, the name of the substance transported position No. 52 and the maximum permissible load weight for that substance should be written on the same panel but shall not exceed the maximum permissible loads as indicated on the tank identification plate* or the maximum of the load table Position No.4

* Details of the Tank Identification Plate are specified in EN 12561-1 “Railway applications — Tank wagons —

Part 1: Identification plates for tank wagons for the carriage of dangerous goods”.

Figure 2b