

Nederlandse norm

# NEN-EN 14865-2+A2

(en)

Railway applications - Axlebox lubricating greases - Part 2: Method to test the mechanical stability to cover vehicle speeds up to 200 km/h

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VOORBEELD  
Preview

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EUROPEAN STANDARD

**EN 14865-2:2006+A2**

NORME EUROPÉENNE

EUROPÄISCHE NORM

October 2010

ICS 45.040; 75.100

Supersedes EN 14865-2:2006+A1:2009

English Version

## Railway applications - Axlebox lubricating greases - Part 2: Method to test the mechanical stability to cover vehicle speeds up to 200 km/h

Applications ferroviaires - Graisses lubrifiantes pour boîtes d'essieux - Partie 2: Méthode d'essai de stabilité mécanique pour des vitesses de véhicules allant jusqu'à 200 km/h

Bahnanwendungen - Schmierfette für Radsatzlager - Teil 2: Prüfverfahren für mechanische Stabilität bei Schienenfahrzeugen bis zu Geschwindigkeiten von 200 km/h

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## Foreword

This document (EN 14865-2:2006+A2:2010) 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of an identical text or by endorsement, at the latest by April 2011, and conflicting national standards shall be withdrawn at the latest by April 2011.

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

This document includes Amendment 1, approved by CEN on 2009-02-24 and Amendment 2 approved by CEN on 2010-09-14.

This document supersedes <sup>A1</sup> EN 14865-2:2006+A1:2009 <sup>A1</sup>.

The start and finish of text introduced or altered by amendment is indicated in the text by tags <sup>A1</sup>, <sup>A1</sup> and <sup>A2</sup>, <sup>A2</sup>.

<sup>A2</sup> This document has been prepared under a mandate given to CEN/CENELEC/ETSI 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. <sup>A2</sup>

EN 14865 consists of the following parts, under the general title *Railway applications — Axlebox lubricating greases*:

- *Part 1: Method to test the ability to lubricate*
- *Part 2: Method to test the mechanical stability to cover vehicle speeds up to 200 km/h*

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

## Introduction

A test method is standardized, which is referred to in EN 12081.

This European Standard standardizes a test method and acceptance criteria for the demand in EN 12081 for testing the mechanical stability of axlebox lubricating greases. It addresses the issue of mechanical stability of lubricating greases operating under severe conditions.

All lubricants have three main functions – to form a lubricating film that separates rolling elements and raceways, to protect the bearings from corrosion and to give good longevity. For lubricating grease there is a further demand: the product needs to be mechanically stable in use. Currently several common lubricating grease shear stability tests are available to industry, but the procedure in this European Standard is the most severe. It has been available for many years and it is used to discriminate between lubricating greases of different stabilities.

## 1 Scope

This European Standard specifies a test method and sets the acceptance criteria for the determination of the mechanical stability of lubricating greases intended for the lubrication of axlebox bearings according to EN 12081. In the test, impacts are applied to the lubricating grease so that only very stable lubricating greases will perform acceptably. The method is used in a discrimination process for finding lubricating greases of such mechanical stability that they are considered accepted lubricating greases for more extensive performance tests according to EN 12082.

For purposes of quality assurance and quality control, this test method is also used for batch testing of lubricating greases.

## 2 Normative references

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

EN ISO 868, *Plastics and ebonite — Determination of indentation hardness by means of a durometer (Shore hardness)* (ISO 868:2003)

EN ISO 3170, *Petroleum liquids — Manual sampling* (ISO 3170:2004)

EN ISO 4259:1995, *Petroleum products — Determination and application of precision data in relation to methods of test* (ISO 4259:1992/Cor 1:1993)

ISO 2137:1985, *Petroleum products — Lubricating grease and petrolatum — Determination of cone penetration*

ISO 5725-6:1994, *Accuracy (trueness and precision) of measurement methods and results — Part 6: Use in practice of accuracy values*

## 3 Terms and definitions

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

## 4



### 3.1

#### **lubricating grease**

semi-solid product consisting of a mixture of liquid lubricant and thickened with soaps or other thickeners, and may also contain other ingredients, imparting special properties (additives)

### 3.2

#### **lubricating grease mechanical stability**

resistance to breakdown of the lubricating grease structure under shear, causing the product to become softer

### 3.3

#### **lifting device**

hoist, block and tackle suitably supported, a traverse or other device suitable to support and safely manoeuvre the axlebox and its components

## 4 Testing principle

A typical type of railway axlebox with a labyrinth seal and two spherical roller bearings is packed with test lubricating grease. The axlebox axle is first rotated for 72 h at 500 r/min (52,4 rad/s) while the axlebox is subject to vibrational accelerations. The vibration is brought about by hitting the axlebox every second with a hammer with a falling height of 4,5 mm. The second part of the test continues in the same way for another 72 h, but the rotational speed of the axle is increased to 1 000 r/min (104,7 rad/s). The weight of lubricating grease lost from the axlebox is recorded as a measure of mechanical stability.

## 5 Reagents and materials

Use only reagents of recognised analytical grades (e.g. white spirit according to BS 245 specification).

## 6 Apparatus<sup>1)</sup>

The following V2F test rig and equipment are used in the test:

- test rig as described in Annex A and detailed in Annex B;
- lifting device suitable for supporting and manoeuvring the assembled axlebox (approximately 100 kg);
- spatula;
- balance;
- thermocouple.

## 7 Sampling

The following measures shall be taken when taking samples:

- unless otherwise specified, samples shall be taken in accordance with one of the procedures specified in EN ISO 3170;
- laboratory samples shall be examined for homogeneity before taking the test portion.

NOTE How lubricating grease samples are to be taken after the test procedure is described in 8.10;

1) Information about suitable equipment is available from SKF Quality Technology Centre, A-4400 Steyr, Austria.

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