



**SLOVENSKI STANDARD**  
**SIST EN 12081:2008+A1:2010**  
**01-december-2010**

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**Železniške naprave - Ohišja ležajev kolesnih dvojic - Maziva**

Railway applications - Axleboxes - Lubricating greases

Bahnanwendungen - Radsatzlager - Schmierfette

Applications ferroviaires - Boîtes d'essieux - Graisses pour lubrification

**Ta slovenski standard je istoveten z: EN 12081:2007+A1:2010**

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**ICS:**

45.040	Materiali in deli za železniško tehniko	Materials and components for railway engineering
75.100	Maziva	Lubricants, industrial oils and related products

**SIST EN 12081:2008+A1:2010**

**en,fr,de**

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EUROPEAN STANDARD

**EN 12081:2007+A1**

NORME EUROPÉENNE

EUROPÄISCHE NORM

October 2010

ICS 75.100

Supersedes EN 12081:2007

English Version

**Railway applications - Axleboxes - Lubricating greases**Applications ferroviaires - Boîtes d'essieux - Graisses pour  
lubrification

Bahnanwendungen - Radsatzlager - Schmierfette

This European Standard was approved by CEN on 8 December 2007 and includes Amendment 1 approved by CEN on 14 September 2010.

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

Management Centre: Avenue Marnix 17, B-1000 Brussels

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## Foreword

This document (EN 12081:2007+A1:2010) 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of an identical text or by endorsement, at the latest by April 2011, and conflicting national standards shall be withdrawn at the latest by April 2011.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 2010-09-14.

This document supersedes A1 EN 12081:2007 A1.

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

**EN 12081:2007+A1:2010 (E)****Introduction**

This European Standard has been drawn up with the purpose to define the minimum requirements of greases used for the lubrication of rolling bearings in railway axleboxes. The purpose is to ensure a certain performance level in the interest of operating safety in international traffic. Performance implies a certain quality level of the vehicle running gear, which every railway undertaking may require, notably by imposing procedures in approval and quality assurance for the supply of axleboxes.

Lubricating greases intended for use in axlebox bearing application need to fulfil the requirements of this European Standard, complying with Table A.1. Additional requirements for high speed or specific bearing types, environment or operating conditions are detailed in Table B.1.

This specification has been written so that it reflects the typical performance of e.g. a NLGI grade 2 simple lithium soap grease, based on a mineral oil with a base oil viscosity of 100 mm<sup>2</sup>/s at 40 °C such as would be found in current use. However, this specification needs to not restrict or limit grease evolution for more demanding applications of today and in the future, hence several parameters are left open for agreement. For example, the base oil viscosity can be reduced for high speed applications, and where sealed bearing units are being used the grease grade may need to be lower.

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## 1 Scope

This European Standard specifies the quality requirements of greases intended for the lubrication of axlebox rolling bearings according to EN 12080, required for reliable operation of trains on European networks. It covers the approval procedure, the method of quality control and quality monitoring of the grease. The grease requirements are given for two speed classes.

## 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 12082, *Railway applications — Axleboxes — Performance testing*

prEN 14865-1, *Railway applications — Axlebox lubricating greases — Part 1: Method to test the ability to lubricate ordinary-speed vehicles with speeds up to 200 km/h and high-speed vehicles with speeds up to 300 km/h*

EN 14865-2, *Railway applications — Axlebox lubricating greases — Part 2: Method to test the mechanical stability to cover vehicle speeds up to 200 km/h*

EN ISO 3104, *Petroleum products — Transparent and opaque liquids — Determination of kinematic viscosity and calculation of dynamic viscosity (ISO 3104:1994)*

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

ISO 2176, *Petroleum products — Lubricating grease — Determination of dropping point*

ISO 3733, *Petroleum products and bituminous materials — Determination of water — Distillation method*

ISO 11007, *Petroleum products and lubricants — Determination of rust-prevention characteristics of lubricating greases*

ISO 13737 *Petroleum products and lubricants -- Determination of low-temperature cone penetration of lubricating greases*

BS 2000-121<sup>1)</sup>, *Methods of test for petroleum and its products — Determination of oil separation from lubricating grease — Pressure filtration method*

DIN 51777-2<sup>2)</sup>, *Prüfung von Mineralöl-Kohlenwasserstoffen und Lösungsmitteln — Bestimmung des Wassergehaltes, nach Karl Fischer — Indirektes Verfahren*

DIN 51811, *Prüfung von Schmierstoffen — Prüfung der Korrosionswirkung von Schmierfetten auf Kupfer — Kupferstreifenprüfung*

DIN 51817, *Prüfung von Schmierstoffen — Bestimmung der Ölabscheidung aus Schmierfetten unter statischen Bedingungen*

DIN 51820-1, *Prüfung von Schmierstoffen — Infrarotspektrometrische Analyse von Schmierfetten — Aufnahme und Auswertung von Infrarotspektren*

<sup>1)</sup> BS — BSI Customer Services, British Standards Institution, 389 Chiswick High Road, London W4 4AL, United Kingdom, Tel.: +44 (0) 20 8996 9001, Fax: +44 (0) 20 8996 7001, E-mail: [cservices@bsi-global.com](mailto:cservices@bsi-global.com).

<sup>2)</sup> DIN — Beuth Verlag GmbH, 10772 Berlin, Tel.: +49 0 30/26 01-0, Fax: +49 0 30/26 01-12 60.

**EN 12081:2007+A1:2010 (E)**

DIN 53521, *Prüfung von Kautschuk und Elastomeren — Bestimmung des Verhaltens gegen Flüssigkeiten, Dämpfe und Gase*

NF F 19-502<sup>3)</sup>, *Matériel roulant ferroviaire — Méthode d'essais des graisses pour boîtes d'essieux à roulements — Essai de résistance aux vibrations et aux chocs sur banc ROPECS*

NF F 19-503, *Matériel roulant ferroviaire — Méthode d'essais des graisses pour boîtes d'essieux à roulements — Essai dynamique de la stabilité à l'oxydation des graisses*

NF F 19-504, *Matériel roulant ferroviaire — Méthode d'essais des graisses pour boîtes d'essieux à roulements — Essai d'aptitude à la lubrification sur machine R2F*

NF T60-189, *Graisses lubrifiantes — Tendances à l'écoulement des graisses pour moyeux de roues automobiles*

NF T60-191, *Produits pétroliers et graisses lubrifiantes — Séparation d'huile au stockage des graisses lubrifiantes — Méthode sous pression — Conditions statiques*

ASTM D1831<sup>4)</sup>, *Standard Test Method for Roll Stability of Lubricating Grease*

**3 Terms and definitions**

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

**3.1 customer**  
railway undertaking, manufacturer or buyer of railway rolling stock or subassemblies, or their representative

**3.2 railway undertaking**  
organisation or its representative, whatever status it has, which is responsible for the registration of rolling stock

**3.3 supplier**  
supplier of lubricating greases manufactured under his responsibility

**3.4 network**  
infrastructure, on which any railway undertaking can operate rolling stock

**3.5 grease**  
semi-solid lubricant, which consists of a thickener and additives dispersed in a lubricating oil

**3.6 grease batch**  
entire content of a single production of grease from a finishing vessel

<sup>3)</sup> NF — Association Française de Normalisation (AFNOR), 11 avenue Francis de Pressensé, 93571 La Plaine Saint-Denis Cedex, Tel.: +33 (0) 1 41 62 80 00, Fax: +33 (0) 1 49 17 90 00.

<sup>4)</sup> ASTM — ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA, 19428-2959 USA, Tel.: +1 (610) 832-9585, Fax: +1 (610) 832-9555.



## 4 Restriction of greases

Greases, complying with this European Standard, shall meet European legislation with respect to toxic or harmful substances.

## 5 Information and requirements to be agreed and documented

### 5.1 General

The following information shall be fully documented by the supplier. The requirements specified throughout this European Standard, and the following documented requirements, shall be satisfied before a claim of compliance can be made and verified.

### 5.2 Information to be provided by customer

The following information shall be provided and fully documented:

- relevant application data – bearings types, loads, ambient temperatures, speed Class a or b (see Clause 8) and intended maintenance plan;
- level of approval and conditions (see Clause 7 and Annexes A, B and C);
- additional technical requirements – including security data and storage conditions (see Clause 11);
- required quality system, quality records and traceability (see Clause 9);
- conditions for delivery, packaging and marking (see Clause 10).

### 5.3 Information to be provided by supplier

The following information is to be provided by the supplier and shall be fully documented:

- for the approval, a comprehensive technical data sheet of the grease and the safety data sheet in accordance with European legislation.

### 5.4 Requirements for agreement

The following requirements are to be agreed between the contracting parties, which are specified in the clauses referred to, and shall be fully documented in a specification sheet, which is to be established after the approval of the product with:

- additional technical requirements;
- required quality system testing, quality records and traceability (see Clause 9);
- conditions for delivery, packaging and marking (see Clause 10);
- results of the approval tests (see Clause 7 and Annexes A, B and C);
- speed Class, a or b, for which the grease is approved (see Clause 8);
- limits for base oil viscosity, grease consistency and water content for the approval and batch control tests (see Annex A);
- method to evaluate the ability to lubricate (see Annex A);
- characteristics subject to the batch control tests, the limits and the frequency of these tests (see 9.3).