



SLOVENSKI STANDARD SIST EN 12081:2017

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Nadomešča:

SIST EN 12081:2008+A1:2010

Železniške naprave - Ohišja ležajev kolesnih dvojic - Maziva

Railway applications - Axleboxes - Lubricating greases

Bahnanwendungen - Radsatzlager - Schmierfette

Applications ferroviaires - Boîtes d'essieux - Graisses pour lubrification
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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

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en,fr,de

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EUROPEAN STANDARD

EN 12081

NORME EUROPÉENNE

EUROPÄISCHE NORM

September 2017

ICS 75.100

Supersedes EN 12081:2007+A1:2010

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 19 June 2017.

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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.

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents	Page
European foreword.....	3
Introduction	4
1 Scope.....	5
2 Normative references.....	5
3 Terms and definitions	6
4 Restriction of greases	7
5 Technical specification.....	7
5.1 General.....	7
5.2 Technical specification content	7
6 Quality systems.....	8
7 Approval	8
8 Bearing speed classes.....	8
9 Production.....	8
9.1 General.....	8
9.2 Manufacturing procedure	8
9.3 Quality batch control	9
9.4 Traceability	9
10 Delivery.....	9
10.1 Packaging.....	9
10.2 Marking.....	9
11 Storage	10
Annex A (normative) Approval procedures	11
A.1 General.....	11
A.2 Complete procedure, Type C.....	11
A.3 Reduced procedure, Type R	12
Annex B (normative) Approval tests.....	13
Annex C (informative) Mechanical stability of rolling bearing greases under vibration stress.....	15
C.1 General.....	15
C.2 Description	15
C.3 Test procedure.....	15
C.4 Requirements.....	15
Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 2008/57/EC aimed to be covered	17
Bibliography.....	19

European foreword

This document (EN 12081:2017) 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 March 2018, and conflicting national standards shall be withdrawn at the latest by March 2018.

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 supersedes EN 12081:2007+A1 2010.

The main changes compared to the previous edition are the following:

- Clause 1: revised scope of the standard;
- Clause 2: revised and updated normative references;
- Clause 4: added REACH legislation;
- Clause 8: new definition of speed classes;
- Clause 9: revised for quality batch control and traceability;
- Clause 10: revised pack marking;
- Clause 11: revised storage prescriptions;
- Annex A: revised topic, now Approval Procedure;
- Annex B: Revised topic, now contains requirements for initial grease approval and quality batch control in Table B.1;
- Annex C (informative): added.

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

According to the CEN-CENELEC Internal Regulations, the national standards organisations 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 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 B.1.

This European Standard has been written so that it reflects the typical performance of, e.g. an NLGI grade 2 simple lithium soap grease, based on a mineral oil with a base oil viscosity of 100 mm²/s at 40 °C such as would be found in current use. However, this European Standard does not restrict or limit grease evolution for more demanding applications of today and in the future, hence several parameters are left open for agreement.

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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 for a not-yet-approved grease, the management of modification for an approved grease and the method of quality batch control of the grease. The grease requirements are given for two speed classes.

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 12080:2017, *Railway applications — Axleboxes — Rolling bearings*

EN 12082:2017, *Railway applications — Axleboxes — Performance testing*

EN 14865-1:2009+A1:2010, *Railway applications — Axlebox lubricating greases — Part 1: Method to test the ability to lubricate*

EN 14865-2:2017+A2:2010, *Railway applications — Axlebox lubricating greases — Part 2: Method to test the mechanical stability to cover vehicle speeds up to 200 km/h*

EN ISO 3104:1996, *Petroleum products - Transparent and opaque liquids - Determination of kinematic viscosity and calculation of dynamic viscosity (ISO 3104:1994)*

ISO 1817:2015, *Rubber, vulcanized or thermoplastic — Determination of the effect of liquids*

ISO 2137:2007, *Petroleum products and lubricants — Determination of cone penetration of lubricating greases and petrolatum*

ISO 2176:1995, *Petroleum products — Lubricating grease — Determination of dropping point*

ISO 11007:1997, *Petroleum products and lubricants — Determination of rust-prevention characteristics of lubricating greases*

ISO 13737:2004, *Petroleum products and lubricants — Determination of low-temperature cone penetration of lubricating greases*

ASTM D1831:2011, *Standard Test Method for Roll Stability of Lubricating Grease*

DIN 51777-2:1974, *Testing of mineral oil hydrocarbons and solvents; determination of water content according to Karl Fischer; indirect method*

DIN 51811:2017, *Testing of lubricants — Testing of corrosiveness to copper of greases — Copper strip tarnish test*

DIN 51817:1998, *Testing of lubricants — Determination of oil separation from greases under static conditions*

DIN 51820:1989, *Testing of lubricants; analysis of greases by infrared spectrometry; taking and evaluating an infrared spectrum*

EN 12081:2017 (E)

NF F 19-502:1989, *Railway rolling stock — Test method of greases for axle-boxes to rolling bearings — Vibrations and shocks enduring test on machine « ROPECS »*

NF F 19-503:1989, *Railway rolling stock — Test method of greases for axle-boxes to rolling bearings — Dynamic test for stability to oxydation of grease*

NF F 19-504:21993, *Railway rolling stock — Test method of greases for axle-boxes to rolling bearings — Grease suitability test on the « R2F » machine*

NF T 60-190:2011, *Petroleum products — rolling stability of lubricating greases*

NF T60-191:2011, *Petroleum products and lubricating greases — Oil separation on storage of lubricating greases — Method under pressure — Static conditions*

NF T60-627:2006, *Petroleum products and lubricants — Dropping point of lubricating greases — Automatic apparatus method*

NF T 60-637:2017¹, *Water content in grease by Karl Fischer after purging after final survey*)

3 Terms and definitions

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

- 3.1 Certificate of Analysis (CoA)**
document issued by the supplier that certifies the quality of the grease batch
- 3.2 customer**
railway undertaking, entity in charge of the maintenance, manufacturer or buyer of railway rolling stock or subassemblies, bearing manufacturer or their representative
- 3.3 railway undertaking**
organization or its representative, whatever status it has, which is responsible for registration of rolling stock
- 3.4 supplier**
supplier of lubricating greases manufactured under his responsibility
- 3.5 network**
infrastructure, on which any railway undertaking can operate rolling stock
- 3.6 grease**
semi-solid lubricant, which consists of a thickener and additives dispersed in a lubricating oil
- 3.7 grease batch**
entire content of a production of grease from the filling vessel

¹) This document is in draft stage at the time of publication of this standard.

3.8

rolling bearing

bearing, operating with rolling motion between the parts supporting load and moving in relation to each other

3.9

filling vessel

container filled with grease from which the representative sample for testing is taken and from which commercial packs of grease are being filled

4 Restriction of greases

The bearing grease shall be free from toxic or harmful substances according to the current regulations.

NOTE In particular, but not limited to REACH (Registration, Evaluation, Authorization and Restriction of Chemicals).

5 Technical specification

5.1 General

The following information shall be fully documented. 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 Technical specification content

The following information shall be provided and fully documented:

- a) relevant application data – bearings types, loads, ambient temperatures, speed Class (see Clause 8) and intended maintenance plan;
- b) level of approval and conditions (see Clause 7 and Annex A and Annex B);
- c) additional technical requirements – including security data and storage conditions (see Clause 11);
- d) required quality system, quality records and traceability (see 9.3 and 9.4);
- e) conditions for delivery, packaging and marking (see Clause 10).

NOTE 1 The information mentioned above is usually offered by the customer.

- f) for the approval, a comprehensive technical data sheet of the grease and the safety data sheet in accordance with European legislation;
- g) see also 9.2.

NOTE 2 The information mentioned above in f) and g) is usually offered by the supplier. In case a different source of information is utilized, an agreement between the parties is needed.

EN 12081:2017 (E)

The following requirements which are specified in the clauses referred to shall be fully documented in a specification sheet:

NOTE 3 The specification sheet is established after the approval of the product.

- h) additional technical requirements;
- i) required quality system testing, quality records and traceability (see 9.3 and 9.4);
- j) conditions for delivery, packaging and marking (see Clause 10);
- k) results of the approval tests (see Clause 7 and Annex A and Annex B);
- l) speed Class for which the grease is approved (see Clause 8);
- m) limits for characteristics which tolerances are not defined in Annex B;
- n) method to evaluate wear prevention ability (see Annex B);
- o) description of the quality batch control procedure (see 9.3).

6 Quality systems

The manufacturer is responsible for the quality of workmanship and construction to ensure the requirements of the technical specification are met.

NOTE A quality management system according EN ISO 9001 is usually used.

7 Approval

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Greases shall pass an approval procedure as agreed and documented in accordance with 5.2.

Every new grease or new application of a grease already in use shall be approved in accordance with Annex A and Annex B.

The quantity of grease used for all the product approval tests shall be from the same industrial batch.

8 Bearing speed classes

For the bearing speed classes, refer to the soundness classes in EN 12080:2017, Clause 10.

9 Production**9.1 General**

The manufacturing procedure is left to the discretion of the grease manufacturer, but subject to the conditions in 9.2 to 9.4.

9.2 Manufacturing procedure

The manufacturing process of the mass production of the grease shall be the same as that used for the grease submitted for approval.

Any changes relating to the requirements that led to the approval (i.e. manufacturing process, composition, manufacturing location) shall be identified and may require a new approval procedure.

NOTE Usually written notification is given by the supplier and agreement is reached between the supplier and the customer.-

9.3 Quality batch control

For purposes of quality assurance and quality controls, the greases are allocated with batch identifications (see Clause 3). Quality controls shall be as agreed and documented in accordance with 5.2, based on the mandatory tests list reported in Annex B. The following items shall be defined in the technical specification:

- entities in charge and location of the sampling process;
- entities in charge of the controls;
- frequency of the controls.

NOTE Irrespective of who performs the quality batch control, the grease manufacturer is responsible for batch release.

9.4 Traceability

A system of identification and traceability of the grease shall be set up and maintained in accordance with 5.2.

If required in the technical specification, a system shall be established and maintained for identification and traceability of the grease and the grease components at every stage of production, testing and delivery.

Each released batch shall be accompanied by a Certificate of Analysis (CoA) and a statement that the batch fulfills the present standard. This statement can be included in the CoA or in a separate document attached to the CoA.

Any out-of-tolerance result within these tests shall cause the rejection of the whole batch.

Documents should be kept at least 10 years and grease samples at least 15 months.

10 Delivery

10.1 Packaging

The grease shall be supplied in the packs agreed and documented in accordance with 5.2.

10.2 Marking

Every pack shall be marked with:

- name of supplier;
- brand name of grease;
- batch number and manufacturing date, in un-coded form;
- net mass;
- safety labelling in compliance with European legislation;
- other information as agreed and documented in accordance with Clause 5.