

**Aluminium och aluminiumlegeringar – Produkter
för användning i bärande komponenter i
järnvägsapplikationer – Tekniska
leveransbestämmelser –
Del 3: Gjutgods**

**Aluminium and aluminium alloys – Products for
structural railway applications and delivery –
Technical conditions for inspection –
Part 3: Castings**

Europastandarden EN 13981-3:2006 gäller som svensk standard. Detta dokument innehåller den officiella engelska versionen av EN 13981-3:2006.

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Aluminium und Aluminiumlegierungen - Erzeugnisse für tragende Anwendungen im Schienenfahrzeugbau - Technische Lieferbedingungen - Teil 3: Gussstücke

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EN 13981-3:2006 (E)**Foreword**

This document (EN 13981-3:2006) has been prepared by Technical Committee CEN/TC 132 "Aluminium and aluminium alloys", the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by March 2007, and conflicting national standards shall be withdrawn at the latest by March 2007.

Within its program of work, Technical Committee CEN/TC 132 entrusted CEN/TC 132/WG 21 "*Aluminium for railway applications*" to prepare the following standard :

EN 13981-3, *Aluminium and aluminium alloys – Products for structural railway applications — Technical conditions for inspection and delivery – Part 3 : Castings*.

"EN 13981 comprises the following parts under the general title "Aluminium and aluminium alloys – Products for structural railway applications – Technical conditions for inspection and delivery".

- *Part 1 : Extruded products*
- *Part 2 : Plates and sheets*
- *Part 3 : Castings*
- *Part 4 : Forgings*

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1 Scope

This document specifies requirements for castings which contribute to the structural properties of the railcar bodyshell and other major structural components.

It specifies particular requirements regarding qualification, quality control, material properties and dimensional tolerances and gives guide-lines for application and use.

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 444, *Non-destructive testing – General principles for radiographic examination of metallic materials by X- and gamma-rays*

EN 462-1, *Non-destructive testing – Image quality of radiographs – Part 1: Image quality indicators (wire type) – Determination of image quality value*

EN 473, *Non destructive testing – Qualification and certification of NDT personnel – General principles*

EN 571-1, *Non destructive testing – Penetrant testing – Part 1: General principles*

EN 895, *Destructive tests on welds in metallic materials – Transverse tensile test*

EN 1011-4, *Welding – Recommendations for welding of metallic materials - Part 4: Arc welding of aluminium and aluminium alloys*

EN 1371-1, *Founding - Liquid penetrant inspection – Part 1: Sand, gravity die and low pressure die castings*

EN 1559-1, *Founding – Technical conditions of delivery – Part 1: General*

EN 1559-4, *Founding – Technical conditions of delivery – Part 4: Additional requirements for aluminium alloy castings*

EN 1706:1998, *Aluminium and aluminium alloys – Castings – Chemical compositions and mechanical properties*

EN 10204, *Metallic products – Types of inspection documents.*

EN 12258-1:1998, *Aluminium and aluminium alloys – Terms and definitions – Part 1: General terms*

EN 12681, *Founding – Radiographic examination*

EN ISO 9606-2, *Qualification test of welders – Fusion welding – Part 2: Aluminium and aluminium alloys (ISO 9606-2:2004)*

EN ISO 10042, *Welding - Arc-welded joints in aluminium and its alloys – Quality levels for imperfections (ISO 10042:2005)*

EN 13981-3:2006 (E)

EN ISO 15614-4, *Specification and qualification of welding procedures for metallic materials – Welding procedure test – Part 4: Finishing welding of aluminium castings (ISO 15614-4:2005)*

ISO 5579, *Non-destructive testing – Radiographic examination of metallic materials by X- and gamma-rays – Basic rules*

ISO 8062, *Castings – System of dimensional tolerances and machining allowances*

ASTM-E 155 Standard, *Reference Radiographs for Inspection of Aluminium and Magnesium Castings*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 12258-1:1998 and the following apply.

3.1**cast**

quantity of products of the same shape and cast from the same melt

3.2**inspection lot**

consignment, or part thereof, submitted for inspection, comprising products of the same grade or alloy, form, temper, size, shape, thickness or cross-section and processed in the same manner

3.3**structural property**

property having a direct effect on the static and dynamic load carrying capability of a component or assembly

4 Ordering information

The order shall define the product required for structural applications and shall contain the following information:

- a) designation of the aluminium alloy and temper according to EN 1706;
- b) drawing of casting including the following indications:
 - area for X-ray-testing and the relevant acceptance criteria according to ASTM-E 155;
 - acceptance criteria for surface imperfections according to EN 1371-1;
- c) reference to this European Standard (EN 13981-3);
- d) quantity:
 - total mass or number of pieces;
 - tolerances on quantity if required;
- e) any requirements for certificates of conformity, test and/or analysis reports or inspection certificates;
- f) any additional requirements agreed between supplier and purchaser.

If special requirements are stated in the order agreed between supplier and purchaser which differ from requirements specified or referenced in this document, then these special requirements shall apply.