EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 12588

December 2006

ICS 77.150.60

Supersedes EN 12588:1999

English Version

Lead and lead alloys - Rolled lead sheet for building purposes

Plomb et alliages de plomb - Feuilles de plomb laminé pour le bâtiment

Blei und Bleilegierungen - Gewalzte Bleche aus Blei für das Bauwesen

This European Standard was approved by CEN on 19 November 2006.

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EUROPÄISCHES KOMITEE FÜR NORMUNG

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Ref. No. EN 12588:2006: E

National Standards Authority of Ireland

IRISH STANDARD

I.S. EN 12588:2006

ICS 77.150.60

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LEAD AND LEAD ALLOYS - ROLLED LEAD SHEET FOR BUILDING PURPOSES

This Irish Standard was published under the authority of the National Standards Authority of Ireland and comes into effect on:
7 February 2007

Price Code F

Údarás um Chaighdeáin Náisiúnta na hÉireann

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Foreword

This document (EN 12588:2006) has been prepared by Technical Committee CEN/TC 306 "Lead and lead alloys", the secretariat of which is held by NEN.

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of an identical text or by endorsement, at the latest by June 2007, and conflicting national standards shall be withdrawn at the latest by June 2007.

This document supersedes EN 12588:1999.

Changes to the previous version, amongst others, are the following:

Chemical composition: Following extensive research carried out by TNO Institution Holland it was found that higher levels of tin content improved the products resistance to surface corrosion. Therefore the impurity maximum has been increased from 0,005 % to 0,05 %.

Safety: The product covered in this standard, by definition is heavy. It has been necessary to provide clear guidance on manual lifting of the product.

Environment: Studies into construction and demolition waste carried out by Enviros Aspinall have shown that the recycling rate of the product is above 90 %. Recommendations have been included within this standard on good management of surplus material during construction.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, 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

In this European Standard, the performance of the product has been defined as far as possible in terms of a number of type tests.

The performance of a building element made with these products depends not only on the properties of the product as it is required by this European standard, but also on the design and quality of the fabrication of the building element and on the design, construction and behaviour of the part of the building concerned in relation to the environment and conditions of use.

The lead sheet supplied shall be specified and used according to the National Code of Practice, depending on service conditions such as exposure to direct sunlight and the area of the piece of lead to be fixed.

1 Scope

This European Standard specifies the designation, the requirements for chemical composition, surface condition and dimensional tolerances for rolled lead sheet. Lead sheet covered by this European standard is made by the roll deformation process and is intended for roofs, flashings, weatherings, claddings, pre-formed panels, damp-proof courses and similar building work.

No requirements for supporting construction, design of roof or cladding systems and methods of joining are included.

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.

ISO 11014-1, *Safety data sheet for chemical products – Part 1: Content and order of sections*

3 Terms and definitions

For the purposes of this European Standard, the following term and definition applies.

rolled lead sheet
flat product made of lead of rectangular cross-section with uniform thickness and width supplied in coiled or flat form

4 Designation

4.1 Material number

The material is designated with a number (see 6.1). This material number designation is in accordance with the system given in Annex A (normative).

4.2 Product

The product designation for products to this European standard shall consist of:

— denomination (Lead sheet);

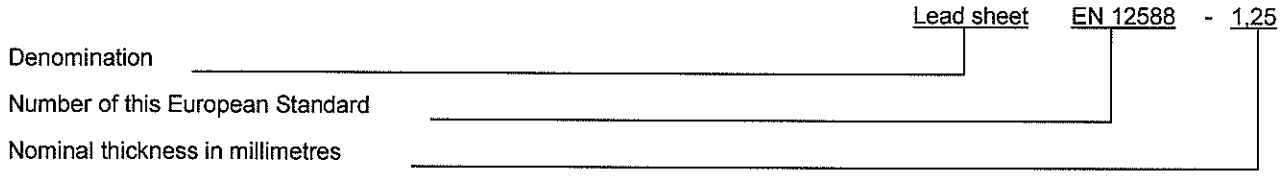
— number of this European Standard (EN 12588);

— nominal thickness in millimetres.

NOTE The material number is not a part of the product designation because this European standard contains only one material.

The derivation of a product designation is shown in the following example.

EXAMPLE



5 Ordering information

In order to facilitate the enquiry, order and confirmation of order procedures between the purchaser and the supplier, the purchaser shall state on his enquiry and/or order the following information:

a) quantity of product to be delivered (number of pieces);

b) product designation (according to 4.2);

c) nominal width in millimetres;

d) nominal length in metres;

e) form of delivery (coiled or flat).

In addition, the purchaser shall also state on the enquiry and/or order if any of the following is required:

f) declaration of conformity (see clause 8);

g) special packaging;

h) any other requirements.

EXAMPLE Ordering details for 10 pieces lead sheet in accordance with EN 12588, nominal thickness 2,50 mm, nominal width 1 000 mm, nominal length 2,0 m, delivered in coils, with a declaration of conformity:

10 pieces Lead sheet EN 12588
- 2,50
- nominal width 1 000 mm
- nominal length 2,0 m
- coils
- declaration of conformity

A.3.2.2.3 Position 6

The character for the 6th position shall be a letter designating one of the material groups given in Table A.1.

A.3.2.2.4 Examples

Examples for a complete number are:

PB001K

PB810M

A.4 Allocation and administration of material numbers

The significance of positions 3 to 6 is given in Table A.1.

NOTE 1 CEN/TC 306 is responsible for allocation and administration of material numbers.

Table A.1 — Significance of positions 3 to 6

Material group	Position 3, 4 and 5 (a number in the range)	Position 6 (letter designating material group)
Cable alloys	001 to 099	K
Battery alloys		
Sb ≤ 3 %	100 to 199	
Sb > 3 %	200 to 299	A
Ca	300 to 399	
Sn	400 to 499	
Miscellaneous (all alloys)	800 to 899	M
Pure Lead	900 to 999	R

NOTE 2 At present no lead alloys for battery applications are standardised in European Standards. However, ranges of numbers have been allocated to the various battery alloys in case their inclusion is required in the future.

6 Requirements

6.1 Chemical composition

The chemical composition of the material, designated PB810M shall comply with the specified values of Table 1.

Table 1 — Chemical composition of material PB810M

Element	% by mass (*m/m*)
Copper	0,03 to 0,06
Antimony	max. 0,005
Bismuth	max. 0,100
Silver	max. 0,005
Tin	max. 0,05
Zinc	max. 0,001
Other impurities	max. 0,005
Lead	Remainder

6.2 Dimensions and tolerances

6.2.1 Dimensions

The length, width and thickness shall be agreed between the purchaser and the supplier, within the following limits:

thickness: up to and including 6 mm;

width: from 100 mm up to and including 2 500 mm;

length: up to and including 12 m in the coiled form.

6.2.2 Tolerances

6.2.2.1 Thickness

The maximum deviation from the ordered nominal thickness, when measured in accordance with 7.1.2, shall not exceed ± 5 %.

6.2.2.2 Width

The maximum deviation from the ordered nominal width shall not exceed ± 5 mm.

6.2.2.3 Length

The maximum deviation from the ordered nominal length shall not exceed $^{+50}_{0}$ mm.

6.3 Surface condition

The surface of the lead sheet shall be smooth, free from holes, cracks, dross inclusions and laminations.

NOTE Lead sheet sourced from different suppliers can present a different surface appearance.

7 Test methods

7.1 Thickness

7.1.1 Apparatus

Care shall be taken when measuring the thickness of lead sheet because of the softness of the material. For this reason a micrometer with a thimble ratchet and flat faced anvils of a 6 mm diameter shall be used to prevent indentation into the surface of the lead.

7.1.2 Procedure

Measurements shall be carried out on flat undamaged areas, at each end of the coil or slit coil, at least 20 mm away from the edges to avoid any burrs, physical marks and creases.

Three evenly spaced measurements shall be carried out across the sheet and five along the sheet at 100 mm intervals.

7.2 Chemical analysis

7.2.1 Sampling

When a chemical analysis is required a representative sample shall be taken from the consignment and prepared into a form which is suitable for the method of analysis to be used.

7.2.2 Method

The chemical analytical method shall be at the discretion of the supplier. In cases of dispute, the chemical analytical method shall be agreed between the purchaser and the supplier.

8 Declaration of conformity

When requested by the purchaser as an ordering requirement [see 5 f)], the supplier shall issue a declaration of conformity to confirm that the lead sheet complies with the requirements of this European Standard. The form of the declaration of conformity shall be agreed between the purchaser and the supplier.

9 Marking, labelling and packaging

9.1 Marking and labelling

9.1.1 General

Unless otherwise agreed at the time of ordering the following minimum requirements shall apply. Every roll and/or pack of flat sheet shall be provided with a label or print showing the following information:

— manufacturer's name or trade mark;

— number of this European Standard (EN 12588);

— nominal dimensions (length, width, thickness);

— identification code;

— mass in kg of the product (either as nominal or actual mass depending on agreement between purchaser and supplier).

Any instructions regarding handling and storage shall be clearly visible on the package.

9.1.2 Colour codes for thickness

The colour codes given in Table 2 shall be used on the label or product to designate the thickness of the product.

Table 2 — Colour codes for thickness

Nominal thickness (mm)	Colour
1,25 or 1,32	green
1,50 or 1,59	yellow
1,75 or 1,80	blue
2,00 or 2,24	red
2,50 or 2,65	black
3,00 or 3,15	white
3,50 or 3,55	orange
NOTE The thicknesses given are used in practice.	

The selection of the product thickness shall be determined by building practices, installation techniques and national custom and practice. For building and construction purposes a thickness less than 1,25 mm for any application is not recommended. Thicknesses not included in Table 2 may be agreed between the supplier and customer.

9.2 Packaging

The packaging shall be agreed between the purchaser and the supplier and shall be suitable for normal conditions of transport. The packaging shall never impair the quality of the product.

10 Transport, storage and handling

The products shall be dispatched and stored in conditions, which protect them from humidity and condensation and shall be handled with care to maintain their quality.

The products shall be stored under cover and separated from the ground by wedging which allows enough space for good ventilation. Care shall be taken to avoid permanent deformation of the products during handling and storage.

NOTE Moisture, in particular condensation inside the packaging can lead to the formation of stains. If there is a lengthy contact with moisture there can be further aesthetic damage to the products, particularly the formation of white staining. If this should occur advice for the removal of the stains should be sought from the supplier.

As with most industrial products gloves shall be worn when handling the product to keep hands clean. The purchaser of the product shall be encouraged to collect all surplus materials and to make them available for recycling to maintain the high levels already achieved.

11 Safety

Any risks involved in handling and use of lead are detailed in the supplier's safety data sheet. This data sheet shall conform to ISO 11014-1.

In accordance with manual lifting regulations and subsequent requirements the product label shall at least provide an indication of the nominal mass of the product. A risk assessment shall be carried out when attempting to move products. For product masses over 25 kg two people should lift the product by placing a strong bar through the centre of the product that is wider than the products width. This will allow the two people to hold the bar at each end and lift the product together.

The technique for lifting the product shall contain the following steps:

a) Consider the job:
- are there any obstructions?
- study the mass of the product – does it require two people or further mechanical means?

b) Correct standing position:
- stand close to the product with feet spread out about 300 mm apart with one foot ahead of the other in the direction of the move.

c) Bend the knees:
- keep the back straight with the chin held in.

d) Get a firm grip:
- use the whole of the fingers through the centre of the product or around a lifting bar – not just the tips; keep the product close to the body.

e) Lift with the legs:
- lift by straightening the legs; use the impetus of the lift to move off in the required direction.

f) Putting down the product:
- keep back straight: bend legs to avoid trapping fingers or feet.

When lifting a product with two people and a bar, make sure that the people are of similar heights and coordinate the lift together following where applicable the advice given above.

Product masses in excess to be lifted manually shall be moved into place by use of mechanical lifting equipment.

Annex A
(normative)

European numbering system for lead and lead alloys

A.1 Introduction

The numbering system described in this Annex is based on Annex A to ISO/TR 7003 in which a unique number is allocated to a lead material (lead or lead alloy) in order to categorize it.

A.2 General

This Annex establishes a numbering system for identifying lead and lead alloys and the responsibility for the allocation and administration of numbers for individual lead materials.

The system is applicable to metallic lead materials standardized in European Standards, prepared by CEN TC 306.

A.3 Details of the system

A.3.1 General

The number shall be composed of alphabetic (upper case Latin letters) and numeric (Arabic) characters.

The system shall provide only one number for each material. A number assigned to an individual material shall not be re-assigned to another material even if the first mentioned material has been withdrawn.

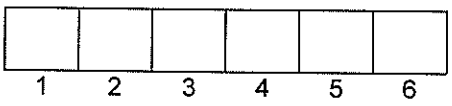
A.3.2 Structure of number

A.3.2.1 Complete number

The number shall consist of six characters.

A.3.2.2 Positions of characters

The positions of characters shall be as follows:



A.3.2.2.1 Positions 1 and 2

The characters for the first two positions shall be the letters 'PB' to designate lead material.

A.3.2.2.2 Positions 3 to 5

The characters for the third, fourth and fifth position shall form a number in the range 001 to 999, see Table A.1.

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