

Aluminium and aluminium alloys — Foil —

Part 3: Tolerances on dimensions

The European Standard EN 546-3:2006 has the status of a
British Standard

ICS 77.150.10

National foreword

This British Standard was published by BSI. It is the UK implementation of EN 546-3:2006. It supersedes BS EN 546-3:1997 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee NFE/35, Light metals and their alloys.

A list of organizations represented on NFE/35 can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 28 February 2007

© BSI 2007

ISBN 978 0 580 50134 0

Amendments issued since publication

Amd. No.	Date	Comments

English Version

Aluminium and aluminium alloys - Foil - Part 3: Tolerances on dimensions

Aluminium et alliages d'aluminium - Feuille mince - Partie 3
: Tolérances sur dimensions

Aluminium und Aluminiumlegierungen - Folien - Teil 3:
Grenzabmaße

This European Standard was approved by CEN on 25 November 2006.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of 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.



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

Management Centre: rue de Stassart, 36 B-1050 Brussels

Contents

Page

Foreword.....	3
1 Scope	4
2 Normative references	4
3 Tolerances on dimensions for single-rolled foil.....	4
3.1 Gauge.....	4
3.2 Width	6
4 Tolerances on dimensions for double-rolled foil	6
4.1 Gauge.....	6
4.2 Width	7
Bibliography	8

Tables

Table 1 — Tolerances on average evaluation of gauge for single rolled foil	5
Table 2 — Density	6
Table 3 — Tolerance on width for single-rolled foil	6
Table 4 — Tolerances on mean measurement of gauge for double-rolled foil	7

Foreword

This document (EN 546-3:2006) 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 June 2007, and conflicting national standards shall be withdrawn at the latest by June 2007.

This document supersedes EN 546-3:1996.

Within its program of work, Technical Committee CEN/TC 132 entrusted CEN/TC 132/WG 6 "Foil and finstock" to revise EN 546-3:1996.

The following modifications have been made:

- subclause 3.1.1: the following text "... at 90 % confidence limits" has been deleted;
- subclause 3.1.2: title is changed;
- subclause 4.1.1: the following text "... at 90 % confidence limits" has been deleted;
- subclause 4.1.2: title is changed.

EN 546 comprises the following parts under the general title "*Aluminium and aluminium alloys- Foil*":

- *Part 1: Technical conditions for inspection and delivery*
- *Part 2: Mechanical properties*
- *Part 3: Tolerances on dimensions*
- *Part 4: Special property requirements*

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

CEN/TC 132 affirms it is its policy that in the case when a patentee refuses to grant licenses on standardised standard products under reasonable and not discriminatory conditions, then this product shall be removed from the corresponding standard.

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.

1 Scope

This document specifies the tolerances on dimensions for single and double-rolled aluminium and aluminium alloy foil supplied in accordance with EN 546-1.

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.

Not Applicable

3 Tolerances on dimensions for single-rolled foil

3.1 Gauge

3.1.1 Single gauge measurement

The tolerance on gauge for a single measurement for single-rolled foil shall be $\pm 6\%$.

Gauge can be measured with any of the usual precision instruments capable of assessing foil thickness but, in the event of a dispute, the weighing method shall be used as a referee procedure.

Description of the weighing method:

- for the test sample, cut an area A of approximately 1 dm^2 either square or circular. Degrease the sample if necessary in a suitable solvent and weigh on a laboratory balance with an accuracy of equal to or better than 1 mg . The dimensions of the sample (sides of square or diameter of circle) shall be measured with an accuracy of equal to or better than $\pm 0,1\text{ mm}$.

Gauge shall be calculated by use of the formula:

$$E = \frac{M}{10 \times A \times D}$$

where:

E is the gauge in micrometres;

M is the mass in milligrams;

D is the density as defined in Table 2, in grams per cubic centimetre;

A is the area in square decimetres.

3.1.2 Average gauge evaluation

The tolerance on gauge for an average evaluation is specified in Table 1.

Table 1 — Tolerances on average evaluation of gauge for single rolled foil

Lot size kg	Tolerance %
≤ 3 000	± 6
> 3 000 to ≤ 10 000	± 5
> 10 000	± 4

Mean gauge may be obtained by either :

a) Calculation :

- calculation of average evaluation by this method requires an accurate knowledge of length and net mass of the reels. The average evaluation shall be calculated by the formula :

$$E_m = \frac{P \times 10^6}{L \times W \times D}$$

where:

E_m is the average evaluation in micrometers;

P is the net mass in kilograms;

L is the length in metres;

W is the width in millimetres;

D is the density as defined in Table 2, in grams per cubic centimetres.

Table 2 — Density

Material	Density g/cm ³
EN AW-1050A	2,70
EN AW-1200	2,71
EN AW-3003	2,73
EN AW-3005	2,73
EN AW-3103	2,73
EN AW-8006	2,74
EN AW-8008	2,74
EN AW-8011A	2,71
EN AW-8014	2,73
EN AW-8021B	2,72
EN AW-8079	2,71
EN AW-8111	2,71

b) averaging spot measurements.

The method shall be agreed between purchaser and supplier.

3.2 Width

The tolerance on width for single-rolled foil is specified in Table 3.

Table 3 — Tolerance on width for single-rolled foil

Dimensions in millimetres

Width	Tolerance		
	Symmetrical	Only plus	Only minus
≤ 1 000	± 1	+ $\frac{2}{0}$	$\frac{0}{-2}$
> 1 000	± 2	+ $\frac{4}{0}$	$\frac{0}{-4}$

Unless otherwise specified in the order, the type of tolerance is at the discretion of the supplier.

4 Tolerances on dimensions for double-rolled foil

4.1 Gauge

4.1.1 Single gauge measurement

The tolerance on gauge for a single measurement for double-rolled foil shall be ± 8 %.

The method of single gauge measurement shall be as given in 3.1.1.

4.1.2 Average gauge evaluation

The tolerance on gauge for an average evaluation for double-rolled foil is specified in Table 4.

Table 4 — Tolerances on mean measurement of gauge for double-rolled foil

Lot size kg	Tolerance %
≤ 3 000	± 8
> 3 000 to ≤ 10 000	± 6
> 10 000	± 4

The method of average gauge evaluation shall be as specified in 3.1.2.

4.2 Width

The tolerance on width for double-rolled foil shall be as specified in Table 3 for single-rolled foil.

Bibliography

- [1] EN 546-1, *Aluminium and aluminium alloys — Foil — Part 1: Technical conditions for inspection and delivery*

BSI — British Standards Institution

BSI is the independent national body responsible for preparing British Standards. It presents the UK view on standards in Europe and at the international level. It is incorporated by Royal Charter.

Revisions

British Standards are updated by amendment or revision. Users of British Standards should make sure that they possess the latest amendments or editions.

It is the constant aim of BSI to improve the quality of our products and services. We would be grateful if anyone finding an inaccuracy or ambiguity while using this British Standard would inform the Secretary of the technical committee responsible, the identity of which can be found on the inside front cover.
Tel: +44 (0)20 8996 9000. Fax: +44 (0)20 8996 7400.

BSI offers members an individual updating service called PLUS which ensures that subscribers automatically receive the latest editions of standards.

Buying standards

Orders for all BSI, international and foreign standards publications should be addressed to Customer Services. Tel: +44 (0)20 8996 9001.
Fax: +44 (0)20 8996 7001. Email: orders@bsi-global.com. Standards are also available from the BSI website at <http://www.bsi-global.com>.

In response to orders for international standards, it is BSI policy to supply the BSI implementation of those that have been published as British Standards, unless otherwise requested.

Information on standards

BSI provides a wide range of information on national, European and international standards through its Library and its Technical Help to Exporters Service. Various BSI electronic information services are also available which give details on all its products and services. Contact the Information Centre.
Tel: +44 (0)20 8996 7111. Fax: +44 (0)20 8996 7048. Email: info@bsi-global.com.

Subscribing members of BSI are kept up to date with standards developments and receive substantial discounts on the purchase price of standards. For details of these and other benefits contact Membership Administration.
Tel: +44 (0)20 8996 7002. Fax: +44 (0)20 8996 7001.
Email: membership@bsi-global.com.

Information regarding online access to British Standards via British Standards Online can be found at <http://www.bsi-global.com/bsonline>.

Further information about BSI is available on the BSI website at <http://www.bsi-global.com>.

Copyright

Copyright subsists in all BSI publications. BSI also holds the copyright, in the UK, of the publications of the international standardization bodies. Except as permitted under the Copyright, Designs and Patents Act 1988 no extract may be reproduced, stored in a retrieval system or transmitted in any form or by any means – electronic, photocopying, recording or otherwise – without prior written permission from BSI.

This does not preclude the free use, in the course of implementing the standard, of necessary details such as symbols, and size, type or grade designations. If these details are to be used for any other purpose than implementation then the prior written permission of BSI must be obtained.

Details and advice can be obtained from the Copyright & Licensing Manager.
Tel: +44 (0)20 8996 7070. Fax: +44 (0)20 8996 7553.
Email: copyright@bsi-global.com.