

# Aluminium and aluminium alloys — Foil —

## Part 3: Tolerances on dimensions

SIGMA ALUMINUM

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

ICS 77.150.10

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## 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 It supersedes BS EN 546-3:1997 which is withdrawn.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.

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

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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

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of an identical text or by endorsement, at the latest by June 2007, and conflicting national standards shall be withdrawn at the latest by June 2007.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

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## 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  $1 \text{ dm}^2$  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  $1 \text{ mg}$ . 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 <sup>3</sup>
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	+ 2 0	0 - 2
> 1 000	± 2	+ 4 0	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 %
$\leq 3\ 000$	$\pm 8$
$> 3\ 000$ to $\leq 10\ 000$	$\pm 6$
$> 10\ 000$	$\pm 4$

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.

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## Bibliography

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

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