

---

International Standard



657/13

---

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

---

**Hot-rolled steel sections —  
Part 13 : Tolerances on sloping flange beam, column and  
channel sections**

*Profilés en acier laminés à chaud — Partie 13 : Tolérances sur les poutrelles, les colonnes et les profilés en U à faces inclinées*

First edition — 1981-04-01

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[ISO 657-13:1981](https://standards.iteh.ai/catalog/standards/sist/75b90d66-8d72-4863-891b-e8574607b0d2/iso-657-13-1981)

<https://standards.iteh.ai/catalog/standards/sist/75b90d66-8d72-4863-891b-e8574607b0d2/iso-657-13-1981>

---

UDC 669.14 — 423

Ref. No. ISO 657/13-1981 (E)

Descriptors : iron and steel products, hot rolled products, metal sections, channel iron, dimensions, dimensional tolerances, sectional properties

## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

**iTeh STANDARD PREVIEW**  
(standards.itih.ai)

International Standard ISO 657/13 was developed by Technical Committee ISO/TC 17, *Steel*, and was circulated to the member bodies in October 1979.

It has been approved by the member bodies of the following countries :

Australia	Finland	New Zealand
Austria	France	Poland
Belgium	Germany, F.R.	Romania
Canada	Hungary	South Africa, Rep. of
Chile	India	Sweden
China	Italy	Switzerland
Czechoslovakia	Korea, Dem. P. Rep. of	Turkey
Denmark	Korea, Rep. of	USSR
Egypt, Arab Rep. of	Netherlands	

The member bodies of the following countries expressed disapproval of the document on technical grounds :

Japan  
United Kingdom  
USA

# Hot-rolled steel sections — Part 13 : Tolerances on sloping flange beam, column and channel sections

## iTeh STANDARD PREVIEW (standards.iteh.ai)

### 1 Scope and field of application

1.1 This International Standard specifies metric dimensional tolerances applicable to hot-rolled steel beam, column and channel sections with sloping flanges, the dimensions of which are covered in the following International Standard :

- a) Sloping flange beam sections (metric series) :  
ISO 657/15
- b) Sloping flange column sections (metric series) :  
ISO 657/16
- c) Sloping flange channel sections (metric series) :  
ISO 657/11

1.2 This International Standard covers the following two alternatives :

- a) Tolerances for the thickness of the web and the flanges

are specified (see clause 2.3) along with a higher mass tolerance given in table 8, column 3. This alternative is designated by the symbol *D* (dimensional tolerance), or

b) where no tolerances are specified for the thickness of the web and the flanges, tighter mass tolerances given in table 8, column 2, are applicable. This alternative is designated by the symbol *M* (mass tolerance).

At the time of ordering, the interested parties shall agree as to which of these two above-mentioned alternatives would be applicable, designating the choice by the appropriate symbol *D* or *M*.

*Example* : Column ISO 657/15 — SC 100 — *D*

If no symbol is indicated in the order, the supply can be made complying to either of the two above alternatives.

2 Tolerances

2.1 Tolerance on depth

The tolerance on depth shall be as given in table 1 (see figure 1 and figure 2).

Table 1 – Tolerance on depth

Values in millimetres

Depth $H$		Tolerance on depth
Over	Up to and including	
—	200	$\pm 2,0$
200	400	$\pm 3,0$
400	600	$\pm 4,0$

2.2 Tolerance on width of flange

The tolerance on width of flange shall be as given in table 2 for beams and columns. The tolerance shall be as given in table 3 for channels.

Table 2 – Tolerance on width of flange for beams and columns

Values in millimetres

Width of flange $B$		Tolerance on width of flange
Over	Up to and including	
—	100	$\pm 2,0$
100	125	$\pm 2,5$
125	250	$\pm 4,0$

Table 3 – Tolerance on width of flange for channels

Values in millimetres

Width of flange $B$		Tolerance on width of flange
Including and over	Up to	
—	75	$\pm 2,0$
75	—	$\pm 3,0$

2.3 Tolerance on thickness of flange and web

2.3.1 When the section is ordered to designation  $D$  (see 1.2), tolerance on thickness of web shall be as given in table 4.

Table 4 – Tolerance on thickness of web

Values in millimetres

Thickness of web $t$		Tolerance
Over	Up to and including	
—	10	$\pm 0,5$
10	—	$\pm 5\% \text{ of } t$

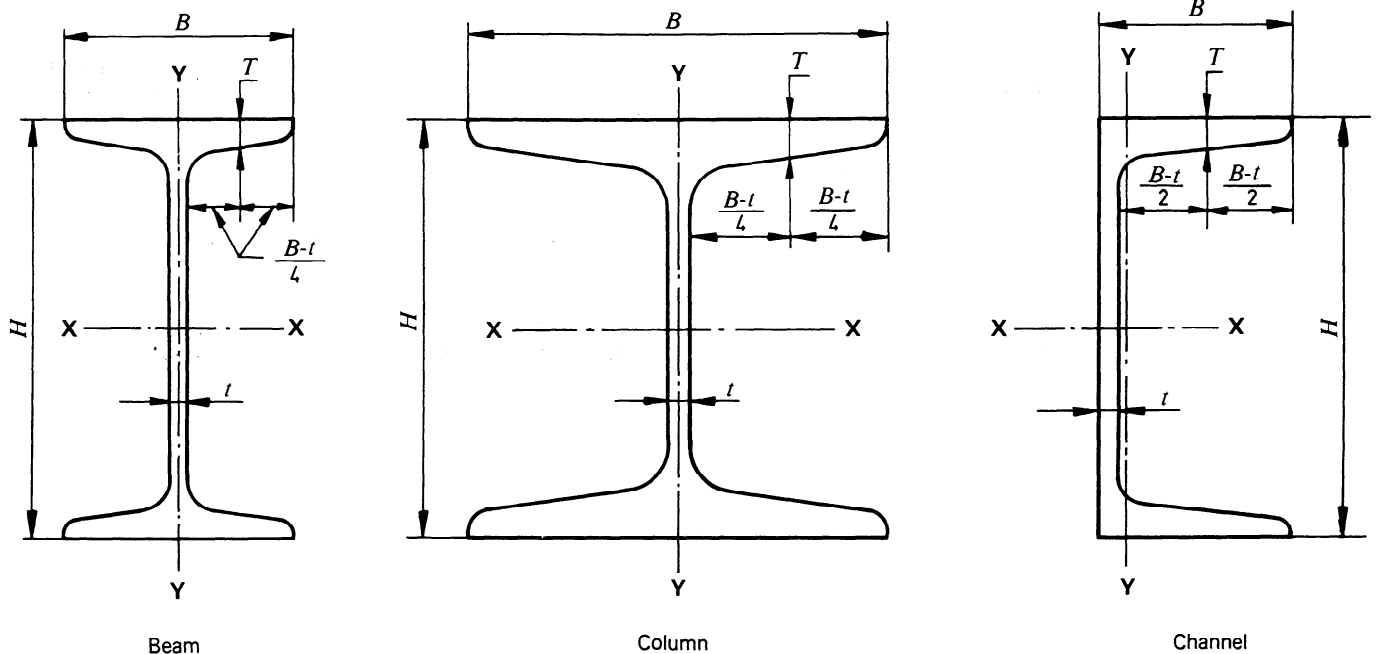


Figure 1 – Dimensions of sloping flange sections

2.3.2 When the section is ordered to designation  $D$  (see 1.2), tolerance on thickness of flange shall be as given in table 5.

Table 5 — Tolerance on thickness of flange

Values in millimetres

Depth $H$		Tolerance on thickness $T$ of flange
Over	Up to and including	
—	140	— 0,5
140	300	— 1,0
300	600	— 1,5

NOTE — The plus tolerance on thickness of flange is limited by the permissible deviation in mass.

## 2.4 Flange out-of-square

The flanges shall be parallel within the tolerances specified in table 6 (see figure 2).

Table 6 — Tolerance on flange out-of-square

Values in millimetres

Width of flange $B$		$\Delta + \Delta'$ (max.)
Over	Up to and including	
—	100	3,0 mm
100	250	3 % of $B$

## 2.5 Camber

Camber measured as shown in figure 3 shall not exceed 0,20 % of the total length.

iTeh STANDARD PREVIEW  
(standards.iteh.ai)

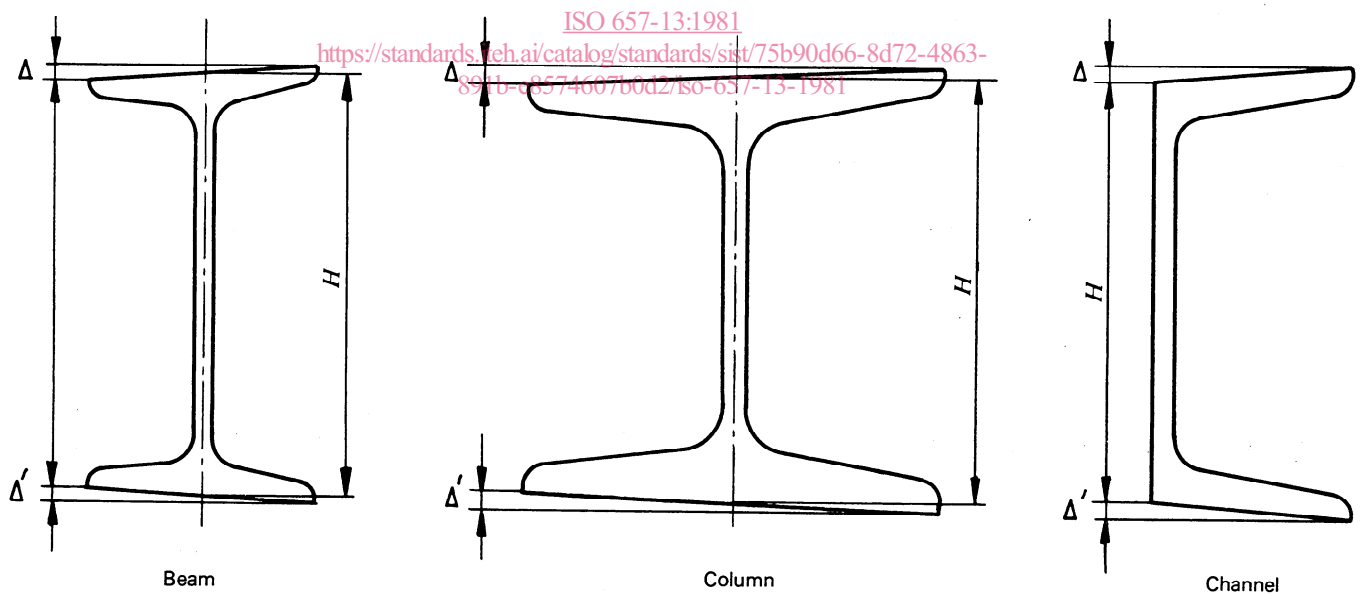
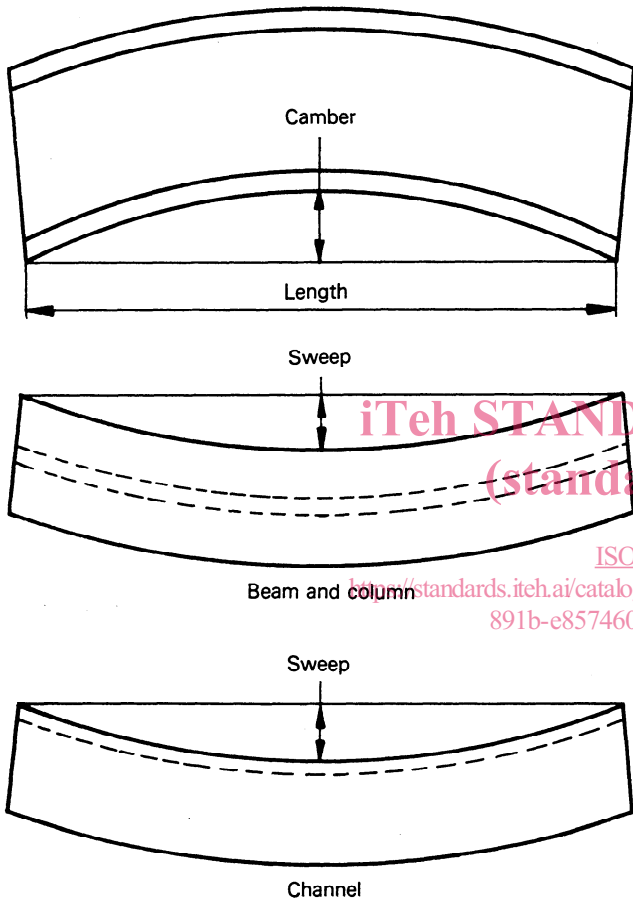


Figure 2 — Flange out-of-square

**2.6 Sweep**

In the case of columns, sweep measured as shown in figure 3 shall not exceed 0,20 % of the total length.

NOTE — Due to the greater flexibility of beams and channels in comparison to columns about the Y-Y axis, sweep tolerances if necessary are subject to negotiation at the time of enquiry and order.



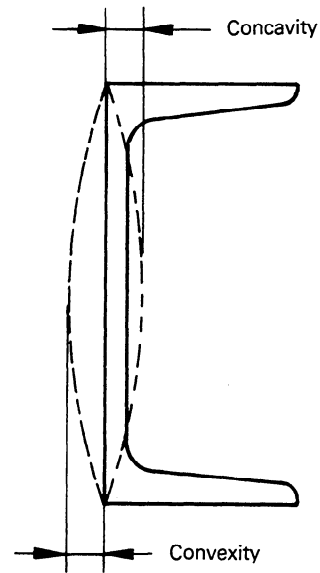
**Figure 3 — Measurement of camber and sweep**

**2.7 Flatness of web**

The tolerance on flatness of outer face of web of channel shall be as follows (see figure 4).

Convexity : Not permitted

Concavity : 15 % of nominal thickness of web



**Figure 4 — Flatness of web of channels**

**2.8 Tolerance on length**

Tolerance on length, unless otherwise negotiated, shall be as given in table 7.

ISO 657-13:1981  
<http://standards.iteh.ai/catalog/standards/sist/75b90d66-8d72-4863-891b-e8574607b0d2/iso-657-13-1981>

**Table 7 — Tolerance on length**

Length	Tolerance
m	mm
Up to and including 12	+ 75 0
Over 12	+ 100 0

**2.9 Tolerance on mass (see 1.2)**

When tolerance on mass per unit length is specified as the controlling tolerance in lieu of tolerance on thickness of flange and web, the tolerance specified in column 2 of table 8 shall apply; for all other cases, tolerances specified in column 3 shall apply.

**Table 8 — Tolerance on mass per unit length**

Depth (1)	Mass-controlling tolerance (2)	Thickness-controlling tolerance (3)
	%	%
Up to 150	± 3,0	± 5,0
Including and over 150	± 2,5	± 4,0

**iTeh STANDARD PREVIEW**  
This page intentionally left blank  
**(standards.iteh.ai)**

ISO 657-13:1981

<https://standards.iteh.ai/catalog/standards/sist/75b90d66-8d72-4863-891b-e8574607b0d2/iso-657-13-1981>

**iTeh STANDARD PREVIEW**  
This page intentionally left blank  
**(standards.iteh.ai)**

ISO 657-13:1981

<https://standards.iteh.ai/catalog/standards/sist/75b90d66-8d72-4863-891b-e8574607b0d2/iso-657-13-1981>