UDC 622.281.5:669.14-423

April 1991

Beaded IB and GI sections for mine support

DIN 21552

Grubenausbau; IB- und GI-Profile; genockt

Supersedes December 1990 edition.

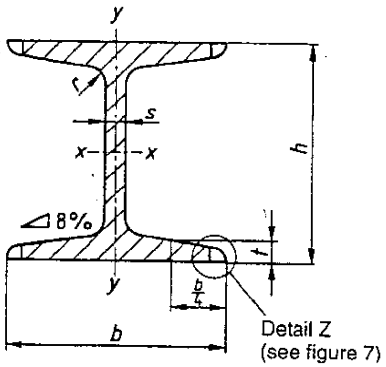
In keeping with current practice in standards published by the International Organization for Standardization (ISO), a comma has been used throughout as the decimal marker.

Dimensions in mm

1 Scope and field of application

This standard specifies requirements for beaded IB and GI sections which have not undergone any machining, used for mine support.

2 Dimensions and designation



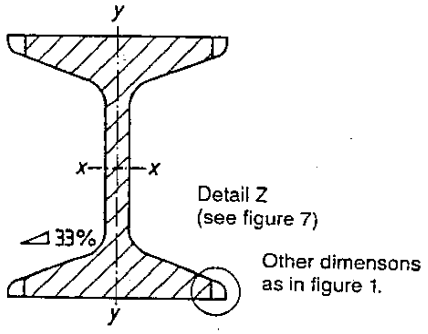


Figure 2: GI section

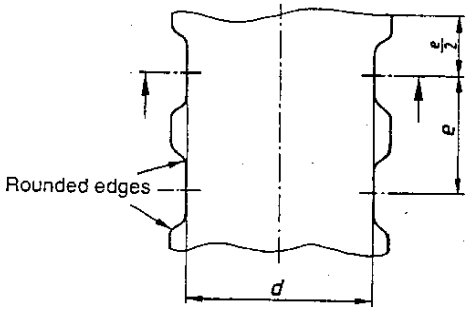


Figure 1: IB section

Designation of a beaded ('No') GI section made from 31 Mn 4 steel (material number 1.0520), with a height, h, of 120 mm, supplied in the hot rolled condition (symbol U as specified in DIN 21544 or appended number 00 as specified in DIN 17007 Part 2:

Section DIN 21552 - GI 120 No - 31 Mn 4 U

or

Section DIN 21552 - GI 120 No - 1.0520.00

Continued on pages 2 and 3.

Table 1

Section symbol	h ± 2	b ± 2,5	s ± 0,6	t ± 0,7	d ± 2	e ± 2	r ≈	Cross-sectional area, in cm², as seen from d	Cross-sectional area, in cm², as seen from b	Mass, in kg/m
IB 100 No	100	100	8,0	10,0	86	54	10	24,5	26,7	20
GI 120 No	120	100	8,8	15,3	86	54	15	35,7	39,1	30
GI 130 No	130	100	12,0	16,3	86	54	16	41,0	44,6	34

Table 1 (concluded)

Section symbol	Static parameters[1]) $x-x$ I_x[2]) cm⁴	W_x[2]) cm³	i_x cm	$y-y$ I_y[2]) cm⁴	W_y[2]) cm³	i_y cm
IB 100 No	395	79,1	4,02	100	23,2	2,02
GI 120 No	794	132	4,72	137	32,0	1,96
GI 130 No	1 018	157	4,99	149	34,7	1,91

The values specified for cross-sectional area, mass and static parameters are a function of the other dimensions and have been calculated taking the material density as 7 850 kg/m³.

[1]) I = moment of inertia, W = section modulus, i = radius of gyration (subscripts x and y denoting the relevant axis).

[2]) Values for I and W have been specified for dimension d.

3 Geometrical tolerances

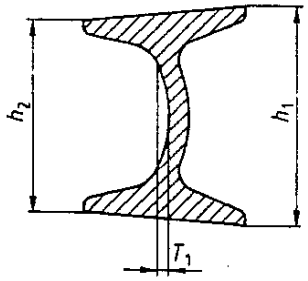


Figure 3: Convex web and non-parallel outside flange faces

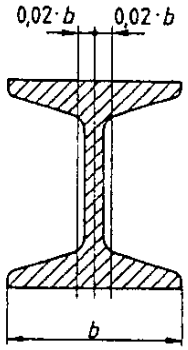


Figure 4: Section symmetry

3.1 Straightness of web

Table 2

Section height, h	Tolerance on straightness of web, T_1
100	≤ 0,5
120, 130	≤ 1,0

3.2 Parallelism of outside flange faces

The parallelism of the outside flange faces shall be subject to a tolerance of 0,024 · b, which is to be compared to the value determined by measuring the distances between the two faces (h_1 and h_2) (cf. figure 3), and subtracting the smaller from the larger.

3.3 Section symmetry

The symmetry of the section shall be subject to a tolerance of 0,04 · b (cf. figure 4).

3.4 Straightness

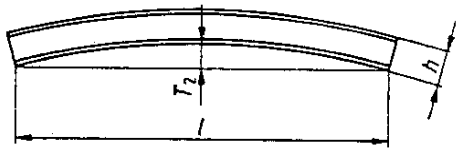


Figure 5: Deviation from straightness of vertical web

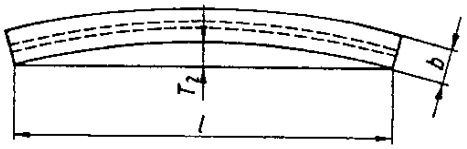


Figure 6: Deviation from straightness of horizontal web

The deviation from straightness, T_2 (cf. figures 5 and 6), shall not exceed 0,003 · l, this being determined for the total length of the web, and taken as the largest value measured.

3.5 Bead depth

The bead depth shall not exceed 2,5 mm (cf. figure 7).

Detail Z

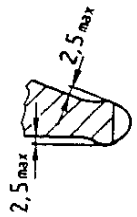


Figure 7: Bead depth

4 Material

The sections shall be made from DIN 21544 steel.

5 Mass

The lower limit deviation for the mass of a single section shall be equal to −3,5 %.

6 Marking

The manufacturer's mark shall be rolled in relief on the semi-finished product, such marking being the manufacturer's responsibility.

7 Acceptance inspection

Where sections are to undergo acceptance inspection, a check for dimensional accuracy shall be carried out on 1 % of the sections in one batch, but on at least three sections. If one section does not meet the requirements, two additional sections shall be checked, which shall be satisfactory. If this is not the case, the batch shall be rejected.

8 Form supplied

8.1 Sections shall be supplied in the lengths specified in table 3.

Table 3

Type of length	Lengths	
	Length ordered	Limit deviations
Specified length	6 000 to 15 000	± 50
Exact length	Up to 15 000	Between ± 50 and ± 5, preferably ± 25, ± 10 and ± 5

8.2 Ordering

100 t of beaded ('No') GI sections made from 31 Mn 4 steel (material number 1.0520), with a height, *h*, of 120 mm, supplied in the hot rolled condition (symbol U as specified in DIN 21544 or appended number 00 as specified in DIN 17007 Part 2) shall be ordered as:

100 t sections DIN 21552 - GI 120 No - 31 Mn 4 U
or
100 t sections DIN 21552 - GI 120 No - 1.0520.00

Standards referred to

DIN 17007 Part 2	Material numbers; main group 1: steel
DIN 21544	Steel used in mine support; technical delivery conditions

Other relevant standards

DIN 21538 Part 2	Rigid connectors, sink supports and fasteners for mining sections and other workings; testing
DIN 21539	Steel components for mining sections and other workings; marking
DIN 21541	GI sections for mine support
DIN 21545	Testing of steel used in mine support
DIN 21547	Round head bolts with oval shoulder used in mine support
ISO 1101:1983	Technical drawings; geometrical tolerancing; tolerancing of form, orientation, location and run-out; generalities, definitions, symbols and indications on drawings

Previous edition

DIN 21552: 12.90.

Amendments

In comparison with the December 1990 edition, the requirements specified for mass have been corrected.

International Patent Classification

E 02 D 17/04
G 01 B 21/00