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GI sections for mine support

DIN 21541

Grubenausbau; GI-Profile

Supersedes September 1988 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 GI sections with a height from 100 to 140 mm which have not undergone any machining, used for mine or tunnel support.

2 Dimensions and designation

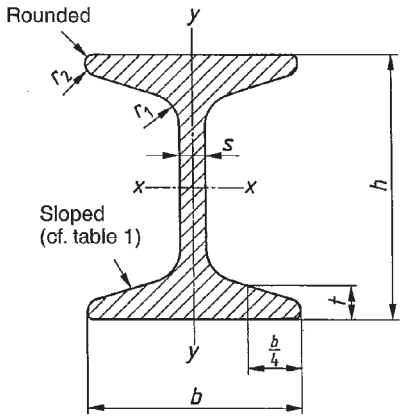

Figure 1

Designation of a GI section made from 31 Mn 4 steel (material number 1.0520), with a height, h, of 120 mm, supplied in the quenched and tempered condition (symbol V as specified in DIN 21544 or appended number 05 as specified in DIN 17007 Part 2):

Section DIN 21541 – GI 120 – 31 Mn 4 V

or

Section DIN 21541 – GI 120 – 1.0520.05

Table 1

Section symbol	h	Limit deviations	b	Limit deviations	s	Limit deviations	t	Limit deviations	r_1	r_2	Slope, as a percentage	Cross-sectional area, in cm²	Mass, in kg/m	Static parameters $x-x$ I_x cm⁴	W_x cm³	i_x cm	Static parameters $y-y$ I_y cm⁴	W_y cm³	i_y cm
GI 100	100	±2,0	80	±2,0	9	±0,5	12,5	0 −1,0	13	4	30	26,4	20,7	403	81	3,91	80,5	20,1	1,75
GI 110	110		84		10	±0,6	14,0		14	5	33	31,1	24,5	570	103	4,28	103	24,5	1,82
GI 120	120		92		11		15,5		15	6		37,6	29,5	816	136	4,66	150	32,6	2,00
GI 130	130		100	±2,5	12	±0,7	17,0	0 −1,5	16	7		44,6	35,0	1130	175	5,05	211	42,3	2,10
GI 140	140		110				19,0		17	8		53,0	41,6	1586	227	5,47	315	57,3	2,44

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).

Continued on pages 2 and 3.