

KRONOPOL I-BEAM

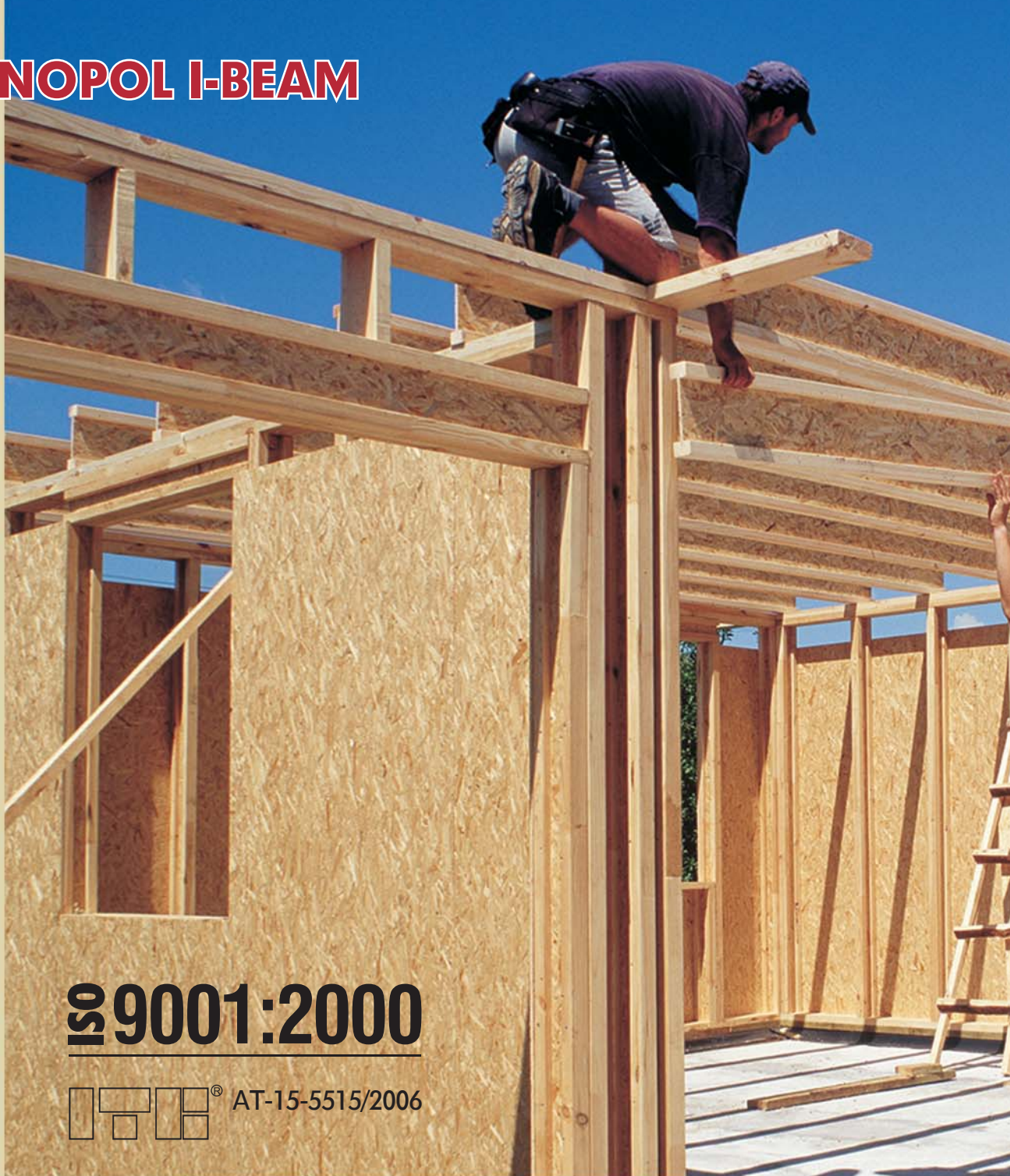
KRONOPOL I-BEAM



kronopol
Swiss Krono Group

KRONOPOL I-BEAM

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ISO 9001:2000

 AT-15-5515/2006



Today's trends in residential housing are based on large open spaces. Therefore, there appeared a need for products that will fulfill the new requirements, products that are strong and stable with large spans.

An innovative solution in modern construction is offered by **Kronopol I-Beam**.

Exceptional parameters of the beams are obtained thanks to specific properties of the I-beam cross section and high quality component materials - flanges made of glued wood and a web made of OSB 3. The beam's component materials are pressed on special presses with the use of waterproof glues, thanks to which they obtain the highest rigidity and guaranteed format stability.



This precisely developed product finally ends the problem of squeaking and twisting of the wooden beams.

Floors/ceilings made of Kronopol I-beams have much better thermal insulating properties when compared to traditional concrete floor/ceilings.

Thanks to the possibility of eliminating thermal leakage "bridges" (fragments of a structure which conduct heat better than its remaining elements) both the investment and running costs of the buildings are reduced.

The wide flange of the beam makes the assembly easy, and the possibility of making openings in the web simplifies the installation of various systems.

The I-beam is ideal for roof, floor/ceiling and wall construction, its load bearing capacity makes it possible to bear heavier loads along wide spans. Thanks to its small weight – the beam installation is unproblematic, there is no need for a crane, and it requires less time than in the case of heavy reinforced concrete beams or solid wooden beams.

The stiffness of the material is its great advantage, which guarantees maintaining the building size. Thanks to its stability and strength the I-beam may be used in construction of large open spaces.



Scope of use

Wall studs in framework structures.

Ceiling/floor and roof beams in framework and traditional construction.

For the construction of energy-saving houses.



KRONOPOL I-BEAM



Kronopol I-Beam is, next to Kronopol OSB and a diffusion open Kronotec MDF, the main construction material of the KRONOPOL System – a modern wood frame construction system

Kronopol I-Beams hold a Technical Approval ITB AT-15-5515/2006 as well as the Hygienic Attestation.

Benefits of the I-beam

- high load bearing strength
- possibility of covering large spans
- small own weight while maintaining high construction properties
- size stability, guaranteeing high precision of the constructed elements of the building
- possibility of laying systems in ceiling/floor, wall and roof elements
- ease of assembly
- reduction of the thermal leakage bridges
- approved for use in construction according to ITB Technical Approval



natural,
renewable
material



high load
bearing
capacity



small own
weight



for structures
with high
insulating
properties



easy processing



STANDARD PROGRAM

BS-D FLOOR/CEILING BEAMS (Technical Approval ITB AT-15-5515/2003)

TYPE	Beam's depth (height)/length	Top and bottom flange size	Number of pieces in a packaging
BS-D 200	200mm / 4.20, 5.40, 7.20m	89/38 mm	17
BS-D 240	241mm / 4.20, 5.40, 7.20m	89/38 mm	17
BS-D 300	302mm / 4.20, 5.40, 7.20m	89/38 mm	17
BS-D 350	356mm / 4.20, 5.40, 7.20m	89/38 mm	17
BS-D 400	406mm / 4.20, 5.40, 7.20m	89/38 mm	17

BK-D RAFTER BEAMS (Technical Approval ITB AT-15-5515/2003)

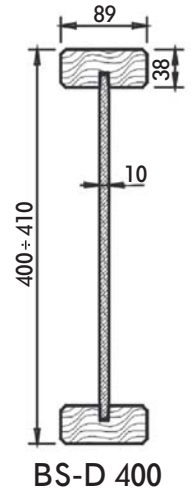
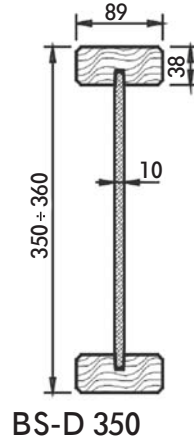
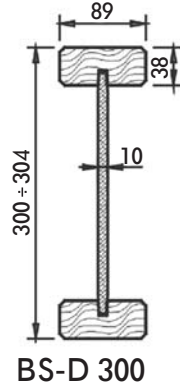
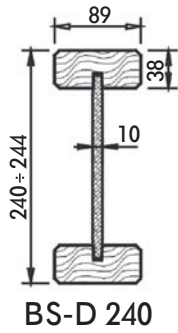
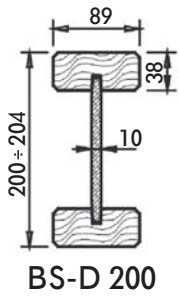
TYPE	Beam's depth (height)/length	Top and bottom flange size	Number of pieces in a packaging
BK-D 200	200mm / 7.50, 9.00 m	58/38 mm	25
BK-D 240	241mm / 7.50, 9.00 m	58/38 mm	25
BK-D 300	302mm / 7.50, 9.00 m	58/38 mm	25
BK-D 350	356mm / 7.50, 9.00 m	58/38 mm	25
BK-D 400	406mm / 7.50, 9.00 m	58/38 mm	25

SP-D WALL STUDS (Technical Approval ITB AT-15-5515/2003)

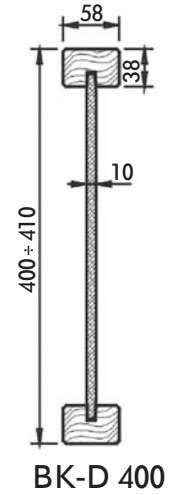
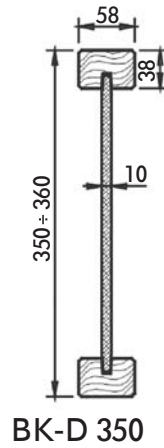
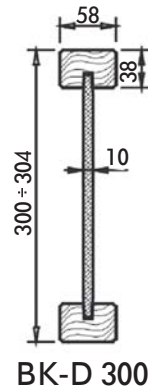
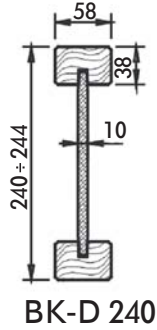
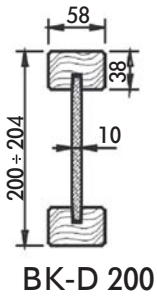
TYPE	Beam's depth (height)/length	Top and bottom flange size	Number of pieces in a packaging
SP-D 160	160mm / 2.70m	45/45 mm	31
SP-D 180	180mm / 2.70m	45/45 mm	31
SP-D 200	200mm / 2.70m	45/45 mm	31
SP-D 240	240mm / 2.70m	45/45 mm	31



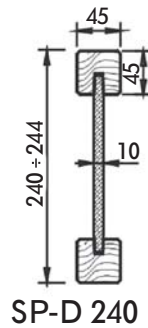
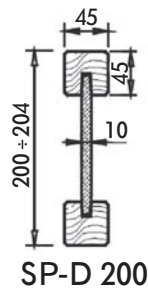
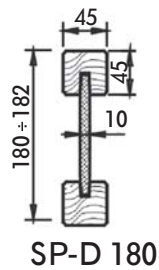
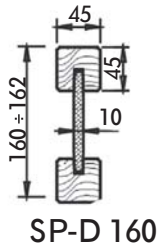
Floor/ceiling Kronopol BS-D I-Beams TYP BS-D



Rafter Kronopol BK-D I-Beams TYP BK-D



Wall studs Kronopol SP-D I-Beams TYP SP-D





CEILING BEAMS BS-D

TECHNICAL PARAMETERS - NOTE!

The following Tables are only of an informative nature and they cannot be used as the basis for developing the constructional design. According to the Building Law – constructional elements should be calculated and confirmed individually by an authorized professional. The following Tables can only be used for estimation purposes.

BS-D floor/ceiling beams' bearing capacities

TYPE	H [mm]	M [kNm]	V [kN]	A_{zd} [cm ²]	I_{zd} [cm ⁴]
BS-D 200	200.00	5.16	5.92	69.84	4459.77
BS-D 240	241.00	6.46	7.42	71.21	6994.08
BS-D 300	302.00	8.45	9.70	73.24	11875.76
BS-D 350	356.00	10.24	11.75	75.04	17333.15
BS-D 400	406.00	11.93	13.93	76.71	23361.27

M [kNm]-bending moment V [kN]-shearing force A_{zd} [cm²]-beam's cross section surface area I_{zd} [cm⁴]-beam's moment of inertia

BS-D 200 BEAM

q [kN/m ²]	0.50			1.00			1.50		
p [kN/m ²]	1.50	2.00	2.50	1.50	2.00	2.50	1.50	2.00	2.50
Beams' spacing [m]	Allowable spans in support axis [m]								
0.400	5.07	4.72	4.44	4.58	4.33	4.12	4.23	4.04	3.87
0.500	4.68	4.35	4.09	4.23	3.99	3.79	3.90	3.72	3.56
0.625	4.32	4.01	3.76	3.89	3.67	3.49	3.59	3.42	3.27

NOTE: q, p – characteristic load, steady and changeable respectively in kN/m².

BS-D 240 BEAM

q [kN/m ²]	0.50			1.00			1.50		
p [kN/m ²]	1.50	2.00	2.50	1.50	2.00	2.50	1.50	2.00	2.50
Beams' spacing [m]	Allowable spans in support axis [m]								
0.400	5.88	5.46	5.13	5.31	5.01	4.77	4.90	4.67	4.48
0.500	5.42	5.03	4.73	4.89	4.61	4.39	4.51	4.30	4.12
0.625	5.00	4.63	4.35	4.50	4.24	4.03	4.15	3.95	3.78

NOTE: q, p – characteristic load, steady and changeable respectively in kN/m².

BS-D300 BEAM

q [kN/m ²]	0.50			1.00			1.50		
p [kN/m ²]	1.50	2.00	2.50	1.50	2.00	2.50	1.50	2.00	2.50
Beams' spacing [m]	Allowable spans in support axis [m]								
0.400	6.98	6.48	6.09	6.30	5.94	5.65	5.81	5.54	5.31
0.500	6.43	5.97	5.61	5.80	5.47	5.20	5.34	5.09	4.87
0.625	5.93	5.49	5.15	5.34	5.03	4.77	4.91	4.67	4.47

NOTE: q, p – characteristic load, steady and changeable respectively in kN/m².

BS-D350 BEAM

q [kN/m ²]	0.50			1.00			1.50		
p [kN/m ²]	1.50	2.00	2.50	1.50	2.00	2.50	1.50	2.00	2.50
Beams' spacing [m]	Allowable spans in support axis [m]								
0.400	7.89	7.32	6.88	7.12	6.71	6.38	6.56	6.25	5.99
0.500	7.27	6.74	6.33	6.55	6.17	5.86	6.03	5.74	5.50
0.625	6.69	6.20	5.76	6.02	5.67	5.38	5.54	5.27	5.04

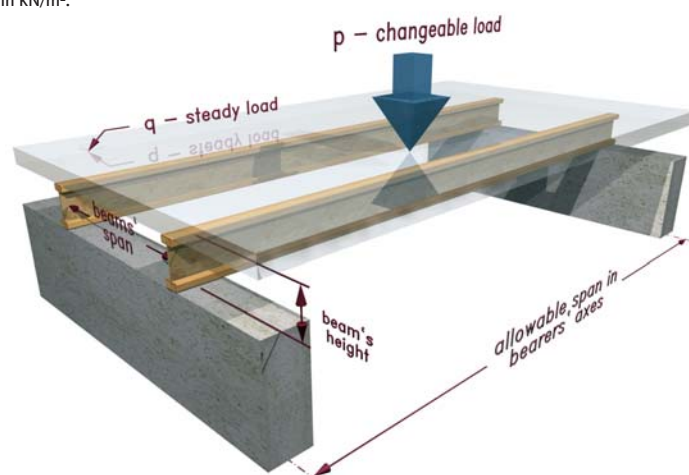
NOTE: q, p – characteristic load, steady and changeable respectively in kN/m².

BS-D400 BEAM

q [kN/m ²]	0.50			1.00			1.50		
p [kN/m ²]	1.50	2.00	2.50	1.50	2.00	2.50	1.50	2.00	2.50
Beams' spacing [m]	Allowable spans in support axis [m]								
0.400	8.69	8.06	7.57	7.83	7.38	7.02	7.21	6.87	6.58
0.500	8.00	7.42	6.95	7.20	6.79	6.44	6.63	6.31	6.04
0.625	7.36	6.82	6.22	6.62	6.23	5.81	6.08	5.79	5.47

NOTE: q, p – characteristic load, steady and changeable respectively in kN/m².

Allowable spans of BS-D floor/ceiling beams in [m]



BK-D rafter beams' bearing capacities

TYPE	H [mm]	M [kNm]	V [kN]	A_{zd} [cm ²]	I_{zd} [cm ⁴]
BK-D 200	200.00	3.33	6.00	46.28	2885.64
BK-D 240	241.00	4.19	7.54	47.65	4538.52
BK-D 300	302.00	5.50	9.91	49.68	7742.32
BK-D 350	356.00	6.70	12.06	51.48	11348.60
BK-D 400	406.00	7.83	14.11	53.15	15356.45

H [mm]-beam's depth (height) M [kNm]-bending moment V [kN]-shearing force A_{zd} [cm²]-beam's cross section surface are I_{zd} [cm⁴]-beam's moment of inertia

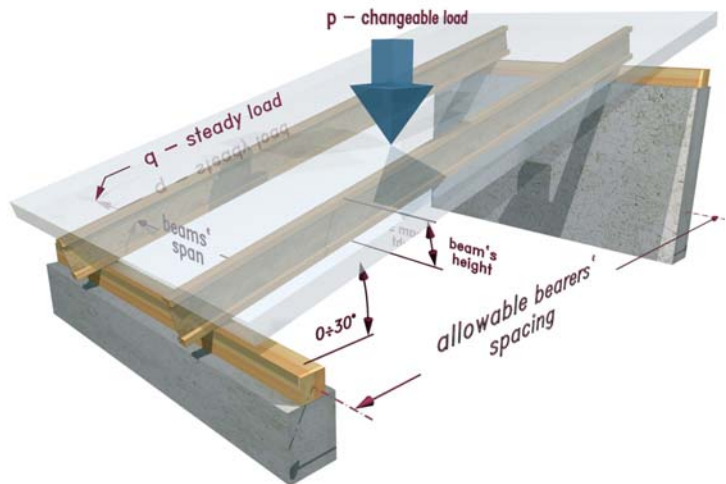
BK-D 200 BEAM

q [kN/m ²]	0.58			1.15			1.73		
p [kN/m ²]	0.95	1.15	1.35	0.95	1.15	1.35	0.95	1.15	1.35
Beams' spacing [m]	Allowable spans in support axis [m]								
0.500	4.33	4.16	4.02	3.76	3.66	3.56	3.39	3.31	3.25
0.625	3.99	3.83	3.70	3.46	3.36	3.27	3.11	3.04	2.98
0.750	3.73	3.58	3.45	3.22	3.13	3.05	2.90	2.83	2.77

Note: q' – steady load per m² of the cross section, p – changeable load in kN/m².

BK-D rafter beams Roof slope up to 30°

Note!
The calculations assume
the winds for the first zone.



BK-D RAFTER BEAMS





BK-D 240 BEAM

q [kN/m ²]	0.58			1.15			1.73		
p [kN/m ²]	0.95	1.15	1.35	0.95	1.15	1.35	0.95	1.15	1.35
Beams' spacing [m]	Allowable spans in support axis [m]								
0.500	5.02	4.82	4.65	4.35	4.23	4.12	3.92	3.83	3.76
0.625	4.62	4.44	4.28	4.00	3.89	3.79	3.59	3.52	3.44
0.750	4.31	4.14	3.99	3.73	3.62	3.53	3.35	3.27	3.20

Note: q' – steady load per m² of the cross section, p – changeable load in kN/m².

BK-D 300 BEAM

q [kN/m ²]	0.58			1.15			1.73		
p [kN/m ²]	0.95	1.15	1.35	0.95	1.15	1.35	0.95	1.15	1.35
Beams' spacing [m]	Allowable spans in support axis [m]								
0.500	5.96	5.73	5.53	5.16	5.02	4.89	4.65	4.54	4.45
0.625	5.48	5.27	5.08	4.74	4.61	4.49	4.26	4.17	4.08
0.750	5.12	4.92	4.74	4.42	4.29	4.18	3.96	3.87	3.79

Note: q' – steady load per m² of the cross section, p – changeable load in kN/m².

BK-D 350 BEAM

q [kN/m ²]	0.58			1.15			1.73		
p [kN/m ²]	0.95	1.15	1.35	0.95	1.15	1.35	0.95	1.15	1.35
Beams' spacing [m]	Allowable spans in support axis [m]								
0.500	6.74	6.48	6.25	5.83	5.68	5.52	5.24	5.13	5.02
0.625	6.20	5.95	5.74	5.35	5.20	5.06	4.80	4.70	4.60
0.750	5.78	5.55	5.29	4.99	4.84	4.71	4.47	4.37	4.27

Note: q' – steady load per m² of the cross section, p – changeable load in kN/m².

BK-D 400 BEAM

q [kN/m ²]	0.50			1.00			1.50		
p [kN/m ²]	1.50	2.00	2.50	1.50	2.00	2.50	1.50	2.00	2.50
Beams' spacing [m]	Allowable spans in support axis [m]								
0.500	7.43	7.14	6.88	6.42	6.24	6.08	5.77	5.64	5.52
0.625	6.83	6.55	6.27	5.89	5.72	5.57	5.28	5.16	5.05
0.750	6.37	6.06	5.72	5.48	5.32	5.10	4.91	4.80	4.64

Note: q' – steady load per m² of the cross section, p – changeable load in kN/m².

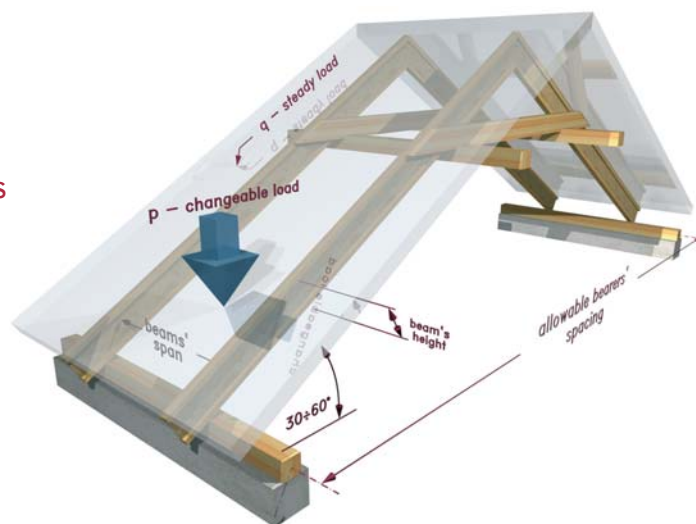


BK-D RAFTER BEAMS

Roof slope from 30° to 60°

Note!

The calculations assume wind's stress for the first zone.



BK-D 200 BEAM

q [kN/m ²]	0.50			1.00			1.50		
p [kN/m ²]	0.7	0.90	1.1	0.7	0.90	1.1	0.7	0.90	1.1
Beams' spacing [m]	Allowable horizontal support spacing [m]								
0.500	10.28	9.94	9.64	9.21	8.75	8.44	8.31	7.89	7.65
0.625	9.53	9.13	8.50	7.93	7.41	7.15	7.09	6.68	6.48
0.750	8.72	8.03	7.42	6.87	6.37	6.14	6.14	6.14	5.57

Note: q' – steady load per m² of the cross section, p – changeable load in kN/m².

BK-D 240 BEAM

q [kN/m ²]	0.50			1.00			1.50		
p [kN/m ²]	0.7	0.90	1.1	0.7	0.90	1.1	0.7	0.90	1.1
Beams' spacing [m]	Allowable horizontal support spacing [m]								
0.500	11.94	11.55	11.20	10.70	10.33	9.96	9.74	9.31	9.04
0.625	11.07	10.70	10.04	9.45	8.92	8.60	8.45	8.04	7.80
0.750	10.24	9.53	8.90	8.34	7.84	7.55	7.46	7.46	6.85

Note: q' – steady load per m² of the cross section, p – changeable load in kN/m².

BK-D 300 BEAM

q [kN/m ²]	0.50			1.00			1.50		
p [kN/m ²]	0.7	0.90	1.1	0.7	0.90	1.1	0.7	0.90	1.1
Beams' spacing [m]	Allowable horizontal support spacing [m]								
0.625	13.21	12.53	11.80	11.15	10.58	10.19	9.97	9.53	9.25
0.750	12.02	11.23	10.54	9.93	9.38	9.04	8.88	8.46	8.20
1.000	10.07	9.35	8.71	8.14	7.63	7.36	7.28	7.28	6.67

Note: q' – steady load per m² of the cross section, p – changeable load in kN/m².

BK-D 350 BEAM

q [kN/m ²]	0.50			1.00			1.50		
p [kN/m ²]	0.7	0.90	1.1	0.7	0.90	1.1	0.7	0.90	1.1
Beams' spacing [m]	Allowable horizontal support spacing [m]								
0.750	13.37	12.51	11.77	11.10	10.51	10.13	9.93	9.47	9.19
1.000	11.24	10.46	9.78	9.16	8.62	8.30	8.19	7.76	7.53
1.250	9.74	9.01	8.36	7.77	7.24	6.98	6.95	6.95	6.33

Note: q' – steady load per m² of the cross section, p – changeable load in kN/m².

BK-D 400 BEAM

q [kN/m ²]	0.50			1.00			1.50		
p [kN/m ²]	0.7	0.90	1.1	0.7	0.90	1.1	0.7	0.90	1.1
Beams' spacing [m]	Allowable horizontal support spacing [m]								
0.750	15.02	14.15	13.40	12.73	12.15	11.71	11.39	10.95	10.62
1.000	12.81	12.04	11.37	10.78	10.25	9.88	9.64	9.24	8.97
1.250	11.29	10.58	9.96	9.41	8.93	8.60	8.42	8.42	7.80

Note: q' – steady load per m² of the cross section, p – changeable load in kN/m².



KRONOPOL I-BEAM

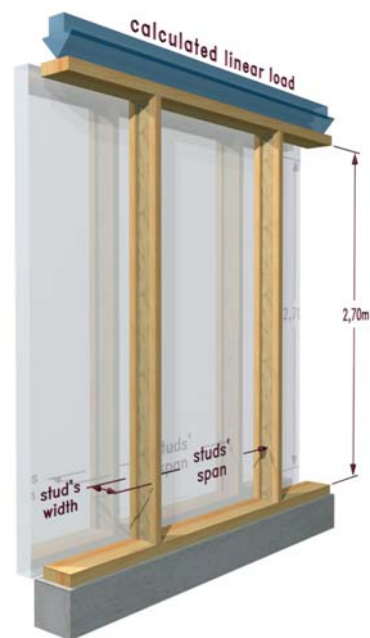


SP-D wall studs



SP-D wall studs linear bearing load calculated in kN/m

Note!
The Tables include total calculated load per 1 running meter of the wall.



Bearing capacities of SP-D wall support studs

TYPE	H [mm]	M [kNm]	V [kN]	N [kN]	A _{zd} [cm ²]	I _{zd} [cm ⁴]	
SP-D 160	160.00	2.21	4.35	57.90	40.90	1366.80	
SP-D 180	180.00	2.57	5.06	58.84	41.57	1862.66	
SP-D 200	200.00	2.93	5.79	59.78	42.24	2441.66	
SP-D 240	240.00	3.69	7.28	61.67	43.57	3854.42	

H [mm]-beam's depth (height) M [kNm]-bending moment, V [kN]-shearing force N [kN]- compression force, A_{zd} [cm²]-beam's cross section surface area
I_{zd} [cm⁴]-beam's moment of inertia, I_{zd} [cm]-adius of the beam's moment of inertia

interior walls

STUD	SP-D 160	SP-D 180	SP-D 200	SP-D 240
Studs' spacing m	q obl kN/m	q obl kN/m	q obl kN/m	q obl kN/m
0.418	112.33	122.68	129.88	140.31
0.600	75.32	82.70	87.89	95.45
0.625	71.92	79.02	84.03	91.32

exterior walls

STUD	SP-D 160	SP-D 180	SP-D 200	SP-D 240
Studs' spacing m	q obl kN/m	q obl kN/m	q obl kN/m	q obl kN/m
0.418	100.95	112.11	120.18	132.07
0.600	63.95	72.13	78.18	87.20
0.625	60.55	68.46	74.32	83.08

Please note:

Any application of the I beams must follow the Installation Guide and /or Project Engineer recommendations

* Figures calculated and prepared by:



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