Declaration of Performance

According to Article 29 of the Regulation (EU) Nr. 305/2011
(Construction Products Regulation).

Walraven RapidSTRUT® Fixing Rail

DoP No. 24/0617 - RapidSTRUT® Fixing Rail

1. **Unique identification code of the product-type:**
   Walraven RapidSTRUT® Fixing Rail:
   6505224, 6505324, 6505624, 6505222, 6505322, 6505622, 6505225, 6505325, 6505625, 65018227, 65018327, 65018627, 6505244, 6505344, 6505644, 6505242, 6505342, 6505642, 65018242, 65018342, 65018642, 6505245, 6505345, 6505645, 65018247, 65018347, 65018647, 6505640, 65018640, 65058252, 65058352, 65058652, 6505365, 6505665, 65018367, 65018667, 6505385, 6505685, 65018387, 65018687

2. **Type, batch or serial number or any other element allowing identification of the construction product as required pursuant to Article 11(4):**
   traceability code is imprinted in the fixing rail

3. **Intended use or uses of the construction product, in accordance with the applicable harmonised technical specification, as foreseen by the manufacturer:**
   Supporting technical building equipment according to EAD 280016-00-0602

4. **Name, registered trade name or registered trade mark and contact address of the manufacturer as required pursuant to Article 11(5):**
   J. van Walraven Holding B.V., Industrieweg 5, 3641 RK Mijdrecht, The Netherlands

5. **Where applicable, name and contact address of the authorised representative whose mandate covers the tasks specified in Article 12(2): n/a**
   n/a

6. **System or systems of assessment and verification of constancy of performance of the construction product as set out in Annex V:**
   System 3

7. **In case of the declaration of performance concerning a construction product covered by a harmonised standard:**
   n/a

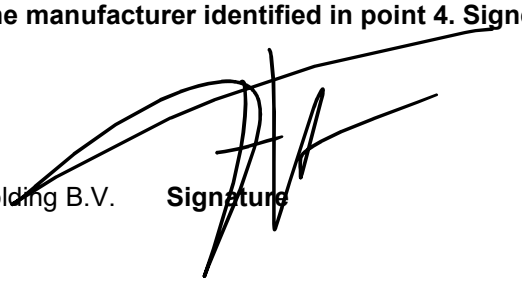
8. **In case of the declaration of performance concerning a construction product for which a European Technical Assessment has been issued:**
   ETA Danmark issued ETA 24/0617 on the basis of EAD 280016-00-0602, Materialprüfanstalt Leipzig (MFPA) performed third party tasks under System 3 and issued document GS 6.1/21-015-1.

9. Declared performance:

Essential Characteristic	Declared Performance	Harmonized Technical Specification
Characteristics at ambient temperature	See ETA 24/0617, Annex B1-B3	EAD 280016-00-0602
Resistance and deformation under fire exposure	See ETA 24/0617, Annex C1-C7	
Reaction to fire	A1	

10. The performance of the product identified in points 1 and 2 is in conformity with the declared performance in point 9. This declaration of performance is issued under the sole responsibility of the manufacturer identified in point 4. Signed for and on behalf of the manufacturer by:

Frank Nijdam
Co-CEO
J. van Walraven Holding B.V.



Signature **Date 09-09-2024**

Requirement for the performance rating / specification of intended use

- Walraven RapidStrut® installation channels 21|L PG, 21|M PG, 21|H PG, 41|L PG, 41|M PG, 41|H PG, 41|H PG unperforated, 62|H PG, 82|H PG , 21|H BUP, 41|M BUP, 41|H BUP, 41|H BUP unperforated, DS-5 BUP, 62|H BUP, 82|H BUP, are used to transfer loads from components of the technical building equipment such as lines and equipment for sprinkler, water, heating, cooling, ventilation, electrical - and other installations.
  The load-bearing performances specified for the Walraven RapidStrut® installation channels apply to the conditions described in Section 2 of this European Technical Assessment.

- Walraven RapidStrut® installation channels 41|H PG and 41|H BUP are used at ambient temperature and when exposed to fire.
  Walraven RapidStrut® installation channels 21|L PG, 21|M PG, 21|H PG, 41|L PG, 41|M PG, 41|H PG unperforated, 62|H PG, 82|H PG, 21|H BUP, 41|M BUP, 41|H BUP unperforated, DS-5 BUP, 62|H BUP, 82|H BUP are only used at ambient temperature.

- The information on the resistances and deformations at ambient temperature and under the influence of fire apply to static and centric loads. The times given in connection with the resistance and deformation values under the effect of fire refer to the boundary conditions of the standard temperature time-curve (ETK) according to EN 1363-1:2020.

- Walraven RapidStrut® installation channels mounted directly on the ceiling are designed with the channel profile open downwards. Components with proven fire protection technology arranged underneath are fastened with Walraven RapidStrut® G2 sliding nuts. For applications exposed to fire, the installation channels are anchored to the ground using Walraven RapidStrut® U washers in conjunction with suitable fasteners.

- In the case of suspended installation channel systems, the installation channels are designed to be open at the top or bottom. Components with proven fire protection technology arranged on the underside or on the top of suspended installation channel systems must be fastened with Walraven RapidStrut® U washers, nuts and threaded rods arranged force-locked on both sides. Alternatively, the version with Walraven RapidStrut® G2 sliding nuts is possible. The design of the node between the installation channel and the threaded rod for the suspension of the system is carried out with Walraven RapidStrut® U washers, nuts and threaded rods on both sides, which are connected force-locked.

- Threaded rods and other add-on parts (except for Walraven RapidStrut® G2 sliding nuts) may only be routed through uncut slots in the back of the installation channel.

- The fastening elements for anchoring in the substrate must be suitable and have a fire protection certificate.

- Before installation, it must be ensured that the components to be included, the components of the installation system, the anchoring of the installation channels to the substrate and the substrate itself are suitable for absorbing the stated resistance values of the installation channels and the installation system and have a fire protection certificate.

- The installation must be carried out by appropriately trained personnel under the supervision of the site manager.

- The manufacturer's general installation instructions must be observed.

Walraven installation channels of System Walraven RapidStrut®	**Annex B1**
Requirement for the performance rating / specification of intended use	

Table B2: Properties of the cross section of channels

Description	Symbol	Unit	Rail 21-L	Rail 21-M	Rail 21-H	Rail 41-L	Rail 41-M	Rail 41-H
Cross-sectional area	A	mm^2	146,70	186,05	220,79	209,10	266,98	319,29
	A_{geom}	mm^2	146,70	186,05	220,79	209,10	266,98	319,29
Shear areas	A_y	mm^2	28,18	37,96	47,62	25,47	34,43	43,16
	A_z	mm^2	40,27	53,65	65,02	97,33	132,01	162,46
Centroid position	$y_{S,0}$	mm	20,65	20,65	20,65	20,65	20,65	20,65
	$z_{S,0}$	mm	11,66	11,75	11,86	21,76	21,92	22,10
Moments of intertia	I_y	mm^4	9188,22	11065,77	12444,23	47355,77	58905,56	68528,36
	I_z	mm^4	38206,27	47699,87	55695,25	62223,90	78537,30	92816,58
Inclination of principal axes	A	°	0,00	0,00	0,00	0,00	0,00	0,00
Polar moments of inertia	I_p	mm^4	47394,49	58765,64	68139,48	109579,68	137442,85	161344,94
	$I_{p,M}$	mm^4	115337,92	139077,42	156531,67	483176,34	595286,08	685394,87
Radii of gyration	i_y	mm	7,91	7,71	7,51	15,05	14,85	14,65
	i_z	mm	16,14	16,01	15,88	17,25	17,15	17,05
Polar radii of gyration	i_p	mm	17,97	17,77	17,57	22,89	22,69	22,48
	$i_{p,M}$	mm	28,04	27,34	26,63	48,07	47,22	46,33
Warping radius of gyration	$i_{\omega,M}$	mm	6,99	6,79	6,58	7,57	7,41	7,25
Cross-section weight	G	kg/m	1,15	1,46	1,73	1,64	2,10	2,51
Cross-section perimeter	U	mm	214,54	206,71	200,65	297,70	287,63	281,25
Torsional constant	I_t	mm^4	77,99	165,09	307,35	116,16	260,89	515,89
Secondary torsional constant	$I_{t,s}$	mm^4	24895,79	32413,20	38511,50	58816,95	77476,64	92625,00
Location of the shear center	$y_{M,0}$	mm	20,65	20,65	20,65	20,65	20,65	20,65
	$z_{M,0}$	mm	33,18	32,53	31,87	64,03	63,33	62,61
	y_M	mm	0,00	0,00	0,00	0,00	0,00	0,00
	z_M	mm	21,52	20,78	20,01	42,27	41,41	40,51
Warping constants	$I_{\omega,S}$	mm^6	2,334E+07	2,701E+07	2,910E+07	1,389E+08	1,675E+08	1,886E+08
	$I_{\omega,M}$	mm^6	5,641E+06	6,408E+06	6,782E+06	2,771E+07	3,272E+07	3,607E+07
Auxiliary value for warp rotation	$r_{\omega,M}$		0,000	0,000	0,000	0,000	0,000	0,000
Section moduli	$W_{y,max}$	mm^3	952,81	1159,19	1317,92	2423,11	3039,57	3568,50
	$W_{y,min}$	mm^3	-788,24	-941,46	-1049,46	-2176,61	-2687,24	-3101,34
	$W_{z,max}$	mm^3	1850,18	2309,92	2697,11	3013,26	3803,26	4494,75
	$W_{z,min}$	mm^3	-1850,18	-2309,92	-2697,11	-3013,26	-3803,26	-4494,75
Warping section moduli	$W_{\omega,M,max}$	mm^4	15253,41	18585,82	21157,51	35259,72	43676,65	50610,22
	$W_{\omega,M,min}$	mm^4	-15265,82	-18602,63	-21175,86	-35277,04	-43701,28	-50636,26
Torsional section modulus	W_t	mm^3	51,99	82,55	122,94	77,44	130,44	206,35
Stability parameters	r_u	mm	-5,00	-5,59	-6,23	-2,31	-2,72	-3,15
	$r_{M,v}$	mm	-48,04	-47,15	-46,25	-86,85	-85,54	-84,18
Reduction factor	λ_M	1/mm	0,00	0,00	0,00	0,00	0,00	0,00

Walraven installation channels of System Walraven RapidStrut®

Properties of the cross section of channels

Annex B2

Table B3: Properties of the cross section of channels – continued

Description	Symbol	Unit	Rail DS-5	Rail 62-H	Rail 82-H
Cross-sectional area	A	mm^2	321,84	422,79	522,79
	A_{geom}	mm^2	321,84	422,79	522,79
Shear areas	A_y	mm^2	28,37	38,16	33,96
	A_z	mm^2	153,99	264,16	359,59
Centroid position	$y_{s,0}$	mm	20,65	20,65	20,65
	$z_{s,0}$	mm	27,17	32,59	42,66
Moments of intertia	I_y	mm^4	98480,94	194225,76	401350,94
	I_z	mm^4	96838,28	131823,75	169511,84
Inclination of principal axes	A	°	0,00	0,00	0,00
Polar moments of inertia	I_p	mm^4	195319,22	326049,52	570862,78
	$I_{p,M}$	mm^4	765307,11	1,917E+06	4,036E+06
Radii of gyration	I_y	mm	17,49	21,43	27,71
	i_z	mm	17,35	17,66	18,01
Polar radii of gyration	i_p	mm	24,63	27,77	33,04
	$i_{p,M}$	mm	48,76	67,34	87,87
Warping radius of gyration	$i_{\omega,M}$	mm	8,35	7,17	6,99
Cross-section weight	G	kg/m	2,53	3,32	4,10
Cross-section perimeter	U	mm	346,47	364,05	444,05
Torsional constant	I_t	mm^4	265,59	731,51	939,84
Secondary torsional constant	$I_{t,s}$	mm^4	89421,17	144468,54	190121,66
Location of the shear center	$y_{M,0}$	mm	20,65	20,65	20,65
	$z_{M,0}$	mm	69,25	93,93	124,08
	y_M	mm	0,00	0,00	0,00
	z_M	mm	42,08	61,35	81,42
Warping constants	$I_{\omega,S}$	mm^6	2,250E+08	5,952E+08	1,323E+09
	$I_{\omega,M}$	mm^6	5,333E+07	9,851E+07	1,975E+08
Auxiliary value for warp rotation	$r_{\omega,M}$		0,000	0,000	0,004
Section moduli	$W_{y,max}$	mm^3	4132,18	6603,38	10201,94
	$W_{y,min}$	mm^3	-3625,11	-5960,23	-9408,28
	$W_{z,max}$	mm^3	4689,50	6383,72	8208,81
	$W_{z,min}$	mm^3	-4689,51	-6383,72	-8208,81
Warping section moduli	$W_{\omega,M,max}$	mm^4	58927,24	87554,18	129327,75
	$W_{\omega,M,min}$	mm^4	-58964,89	-87585,88	-1,294E+05
Torsional section modulus	W_t	mm^3	132,80	292,60	375,94
Stability parameters	R_u	mm	-4,30	-2,21	-1,74
	$r_{M,v}$	mm	-88,47	-124,90	-164,57
Reduction factor	λ_M	1/mm	0,00	0,00	0,00

Walraven installation channels of System Walraven RapidStrut®

Properties of the cross section of channels

Annex B3

Table C1.1: Determination of the stress at ε = 2% for RapidStrut 41-H

Temperature	Stress
[°C]	[N/mm2]
800.0	21.66
842.0	16.48
850.0	15.49
900.0	14.02
945.0	12.51
950.0	12.35
1000.0	11.46
1006.0	11.39
1049.0	10.88
1050.0	10.87

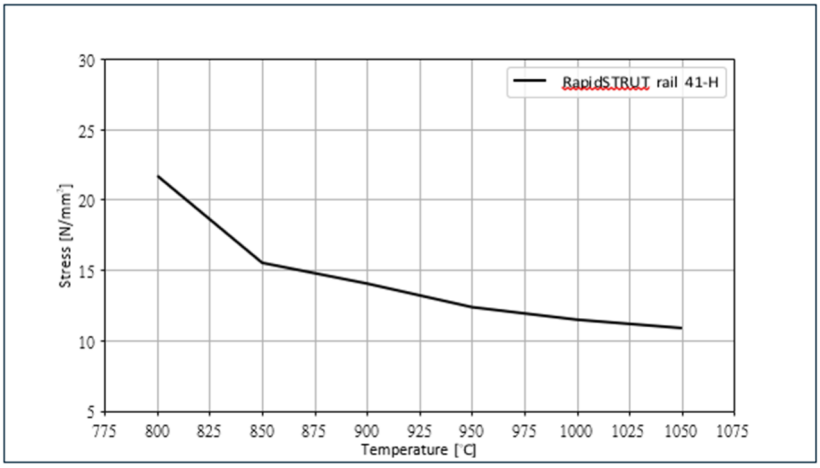
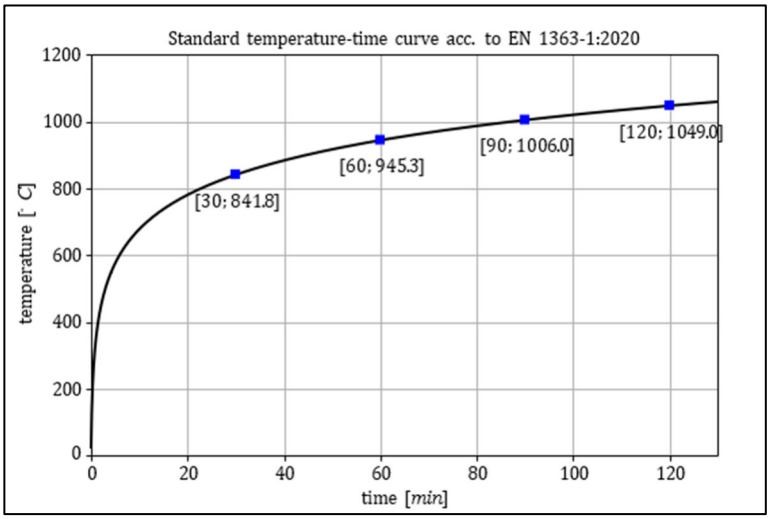


Table C1.2: Temperatures at 30, 60, 90 and 120 minutes

Time	Temperature
[min]	[°C]
30	841.8
60	945.3
90	1006
120	1049

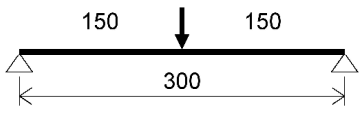
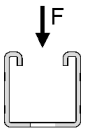
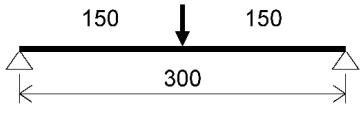
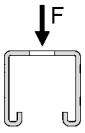
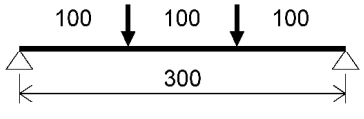
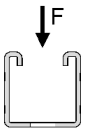
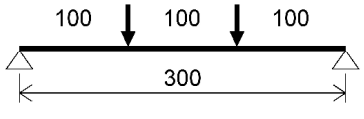
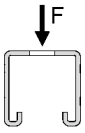


Walraven installation channels of System Walraven RapidStrut®

Performance characteristics in case of fire for RapidStrut® 41-H

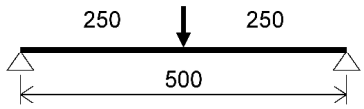
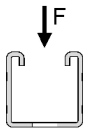
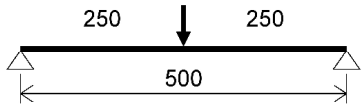
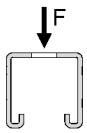
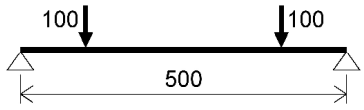
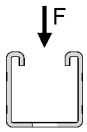
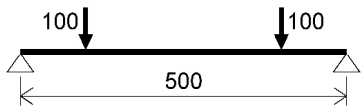
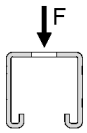
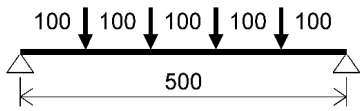
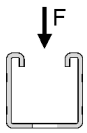
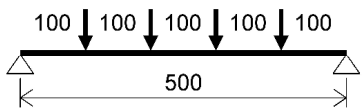
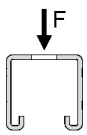
Annex C1

Table C2: Performance characteristics in case of fire for RapidStrut® 41-H

System [Dimensions in mm]	Load direction	V	σ_B	F	$\delta_{tmax,B}$	$t_{max,B}$	δ_{30}	δ_{60}	δ_{90}	δ_{120}
		-	[MPa]	[N]	[mm]	[min]	[mm]	[mm]	[mm]	[mm]
		0,5	5	200.50	10.76	120.00	0.43	3.58	6.46	10.76
		0,5	10	404.66	13.41	120.00	1.65	5.83	8.99	13.41
		0,5	15	608.82	17.31	120.00	3.14	8.62	12.41	17.31
		0,5	20	812.98	26.95	120.00	5.57	13.62	19.55	26.95
		0,5	25	1017.14	54.70	120.00	9.29	21.90	32.82	54.70
		0,5	30	1221.30	93.93	120.00	15.16	36.35	57.99	93.93
		0,5	5	200.50	10.78	120.00	0.44	3.61	6.48	10.78
		0,5	10	404.66	13.47	120.00	1.68	5.90	9.06	13.47
		0,5	15	608.82	17.76	120.00	3.26	8.91	12.78	17.76
		0,5	20	812.98	28.31	120.00	5.88	14.32	20.51	28.31
		0,5	25	1017.14	55.59	120.00	10.01	23.47	34.45	55.59
		0,5	30	1221.30	90.22	120.00	16.67	37.59	57.03	90.22
		0,67	5	150.37	11.20	120.00	0.62	4.00	6.89	11.20
		0,67	10	303.49	14.57	120.00	2.20	6.80	10.11	14.57
		0,67	15	456.61	22.56	120.00	4.43	11.43	16.38	22.56
		0,67	20	609.73	44.05	120.00	8.45	20.24	29.79	44.05
		0,67	25	762.85	91.28	120.00	15.47	35.41	52.16	91.28
		0,67	30	915.97	117.07	120.00	28.29	54.46	87.42	117.07
		0,67	5	150.37	11.27	120.00	0.65	4.07	6.96	11.27
		0,67	10	303.49	14.72	120.00	2.27	6.93	10.25	14.72
		0,67	15	456.61	23.11	120.00	4.66	11.87	16.90	23.11
		0,67	20	609.73	43.43	120.00	8.95	21.15	30.55	43.43
		0,67	25	762.85	75.73	120.00	16.48	36.57	51.66	75.73
		0,67	30	915.97	95.08	120.00	30.01	54.45	73.14	95.08

Walraven installation channels of System Walraven RapidStrut®	**Annex C2**
Performance characteristics in case of fire for RapidStrut® 41-H	

Table C3: Performance characteristics in case of fire for RapidStrut® 41-H

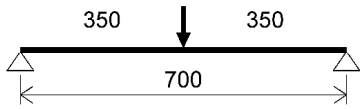
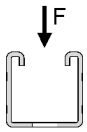
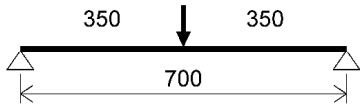
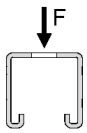
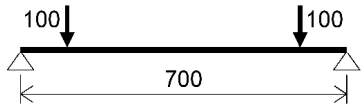
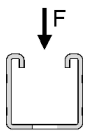
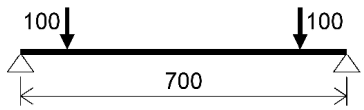
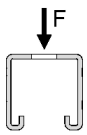
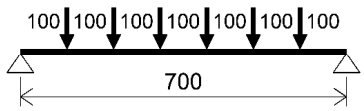
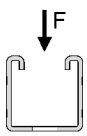
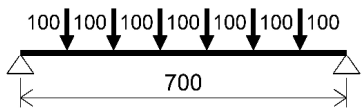
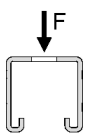
System [Dimensions in mm]	Load direction	V	σ_B	F	$\delta_{tmax,B}$	$t_{max,B}$	δ_{30}	δ_{60}	δ_{90}	δ_{120}
		-	[MPa]	[N]	[mm]	[min]	[mm]	[mm]	[mm]	[mm]
		0,5	5	116.39	12.70	120.00	1.09	5.33	8.30	12.70
		0,5	10	238.89	19.39	120.00	4.22	11.06	14.75	19.39
		0,5	15	361.38	30.44	120.00	8.11	18.71	24.30	30.44
		0,5	20	483.88	58.20	120.00	14.69	32.76	44.56	58.20
		0,5	25	606.37	111.52	120.00	25.57	55.74	77.81	111.52
		0,5	30	728.87	150.49	120.00	43.13	85.22	116.14	150.49
		0,5	5	116.39	12.74	120.00	1.11	5.37	8.34	12.74
		0,5	10	238.89	19.48	120.00	4.27	11.16	14.84	19.48
		0,5	15	361.38	30.66	120.00	8.27	18.95	24.50	30.66
		0,5	20	483.88	56.43	120.00	15.03	32.67	43.85	56.43
		0,5	25	606.37	101.55	120.00	25.86	54.30	73.48	101.55
		0,5	30	728.87	141.91	120.00	42.37	79.47	104.68	141.91
		0,8	5	145.49	15.07	120.00	2.15	7.51	10.60	15.07
		0,8	10	298.61	25.40	120.00	7.04	15.92	20.40	25.40
		0,8	15	451.73	77.25	120.00	14.82	32.29	45.98	77.25
		0,8	20	604.85	142.69	120.00	29.90	78.83	116.02	142.69
		0,8	25	757.97	163.91	120.00	75.29	119.11	144.42	163.91
		0,8	30	911.09	177.47	120.00	111.94	139.62	160.70	177.47
		0,8	5	145.49	14.97	120.00	2.07	7.43	10.51	14.97
		0,8	10	298.61	25.28	120.00	6.97	15.89	20.33	25.28
		0,8	15	451.73	51.30	120.00	14.68	31.66	41.33	51.30
		0,8	20	604.85	84.15	120.00	28.42	54.43	69.60	84.15
		0,8	25	757.97	110.16	120.00	47.86	78.07	94.65	110.16
		0,8	30	911.09	128.29	120.00	67.85	95.42	112.43	128.29
		0,67	5	48.50	13.99	120.00	1.64	6.52	9.55	13.99
		0,67	10	99.54	22.80	120.00	5.79	13.84	17.98	22.80
		0,67	15	150.58	42.78	120.00	11.60	25.79	33.94	42.78
		0,67	20	201.62	80.08	120.00	22.16	46.35	62.49	80.08
		0,67	25	252.66	123.92	120.00	38.96	72.84	95.01	123.92
		0,67	30	303.70	162.21	120.00	61.28	96.36	122.71	162.21
		0,67	5	48.50	14.07	120.00	1.67	6.60	9.63	14.07
		0,67	10	99.54	22.93	120.00	5.88	14.00	18.13	22.93
		0,67	15	150.58	42.72	120.00	11.87	26.23	34.20	42.72
		0,67	20	201.62	77.50	120.00	22.69	46.83	61.88	77.50
		0,67	25	252.66	114.56	120.00	39.70	72.48	91.92	114.56
		0,67	30	303.70	139.89	120.00	61.76	94.02	114.72	139.89

Walraven installation channels of System Walraven RapidStrut®

Performance characteristics in case of fire for RapidStrut® 41-H

Annex C3

Table C4: Performance characteristics in case of fire for RapidStrut® 41-H

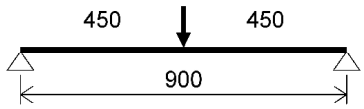
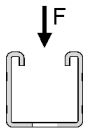
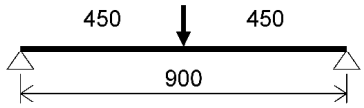
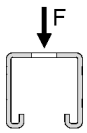
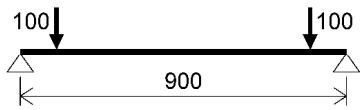
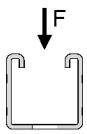
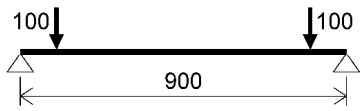
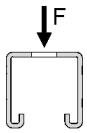
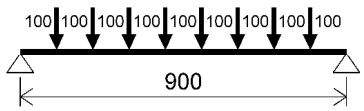
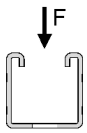
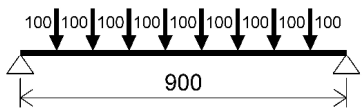
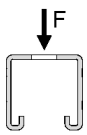
System [Dimensions in mm]	Load direction	V	σ_B	F	$\delta_{tmax,B}$	$t_{max,B}$	δ_{30}	δ_{60}	δ_{90}	δ_{120}
		-	[MPa]	[N]	[mm]	[min]	[mm]	[mm]	[mm]	[mm]
		0,5	5	78.95	15.79	120.00	2.15	8.11	11.24	15.79
		0,5	10	166.44	28.76	120.00	8.22	19.23	23.75	28.76
		0,5	15	253.94	50.90	120.00	16.02	34.49	42.82	50.90
		0,5	20	341.44	99.33	120.00	29.15	60.32	78.93	99.33
		0,5	25	428.94	176.62	120.00	49.87	98.89	134.53	176.62
		0,5	30	516.43	217.69	120.00	81.25	145.15	183.19	217.69
		0,5	5	78.95	15.84	120.00	2.17	8.15	11.28	15.84
		0,5	10	166.44	28.73	120.00	8.27	19.24	23.74	28.73
		0,5	15	253.94	50.27	120.00	16.01	34.19	42.30	50.27
		0,5	20	341.44	94.26	120.00	28.96	59.20	76.52	94.26
		0,5	25	428.94	152.92	120.00	49.16	93.79	120.14	152.92
		0,5	30	516.43	200.39	120.00	76.98	127.65	158.63	200.39
		0,86	5	138.16	20.59	120.00	4.28	12.52	15.90	20.59
		0,86	10	291.28	41.37	120.00	14.13	29.27	35.49	41.37
		0,86	15	444.40	128.76	120.00	31.44	85.14	108.74	128.76
		0,86	20	597.52	169.28	120.00	87.75	125.07	148.60	169.28
		0,86	25	750.64	194.29	120.00	117.92	150.13	173.93	194.29
		0,86	30	903.76	207.69	120.00	138.33	168.78	190.66	207.69
		0,86	5	138.16	20.39	120.00	4.14	12.35	15.70	20.39
		0,86	10	291.28	40.67	120.00	13.95	29.02	35.05	40.67
		0,86	15	444.40	81.88	120.00	29.05	56.80	70.00	81.88
		0,86	20	597.52	122.59	120.00	52.88	87.62	106.35	122.59
		0,86	25	750.64	148.24	120.00	79.27	112.86	131.75	148.24
		0,86	30	903.76	166.00	120.00	100.30	132.01	150.60	166.00
		0,67	5	23.03	18.26	120.00	3.21	10.38	13.63	18.26
		0,67	10	48.55	35.12	120.00	11.24	24.38	29.78	35.12
		0,67	15	74.07	69.83	120.00	22.34	46.09	58.11	69.83
		0,67	20	99.59	119.46	120.00	41.53	77.76	99.10	119.46
		0,67	25	125.11	163.80	120.00	67.92	111.14	137.36	163.80
		0,67	30	150.63	199.88	120.00	95.49	138.37	167.64	199.88
		0,67	5	23.03	18.38	120.00	3.25	10.50	13.75	18.38
		0,67	10	48.55	35.32	120.00	11.39	24.67	30.01	35.32
		0,67	15	74.07	69.67	120.00	22.76	46.89	58.53	69.67
		0,67	20	99.59	117.47	120.00	42.43	78.71	98.76	117.47
		0,67	25	125.11	156.93	120.00	69.26	111.35	134.63	156.93
		0,67	30	150.63	187.33	120.00	96.78	137.15	161.96	187.33

Walraven installation channels of System Walraven RapidStrut®

Performance characteristics in case of fire for RapidStrut® 41-H

Annex C4

Table C5: Performance characteristics in case of fire for RapidStrut® 41-H

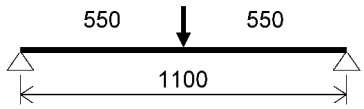
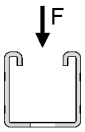
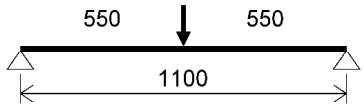
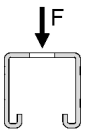
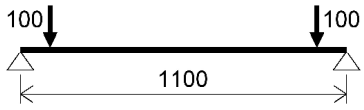
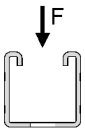
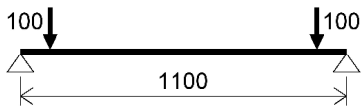
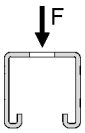
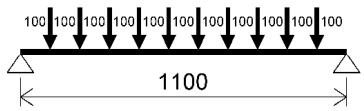
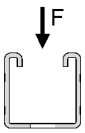
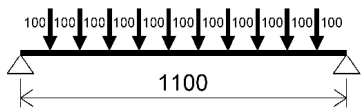
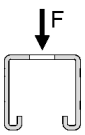
System [Dimensions in mm]	Load direction	V	σ_B	F	$\delta_{tmax,B}$	$t_{max,B}$	δ_{30}	δ_{60}	δ_{90}	δ_{120}
		-	[MPa]	[N]	[mm]	[min]	[mm]	[mm]	[mm]	[mm]
		0,5	5	57.06	20.13	120.00	3.64	12.00	15.36	20.13
		0,5	10	125.11	41.48	120.00	13.73	30.34	35.98	41.48
		0,5	15	193.17	76.18	120.00	26.64	54.57	65.99	76.18
		0,5	20	261.22	148.92	120.00	47.75	93.41	119.83	148.92
		0,5	25	329.27	239.60	120.00	79.38	151.40	198.79	239.60
		0,5	30	397.33	281.59	120.00	127.16	207.52	247.81	281.59
		0,5	5	57.06	20.14	120.00	3.66	12.02	15.37	20.14
		0,5	10	125.11	41.26	120.00	13.71	30.18	35.79	41.26
		0,5	15	193.17	75.43	120.00	26.40	54.16	65.38	75.43
		0,5	20	261.22	137.18	120.00	47.31	91.67	115.02	137.18
		0,5	25	329.27	202.55	120.00	77.91	136.71	168.69	202.55
		0,5	30	397.33	256.05	120.00	115.15	177.51	213.64	256.05
		0,89	5	128.39	27.74	120.00	6.99	19.00	22.75	27.74
		0,89	10	281.51	75.01	120.00	23.50	49.28	62.12	75.01
		0,89	15	434.63	158.93	120.00	72.37	120.21	141.41	158.93
		0,89	20	587.75	197.82	120.00	118.93	156.14	179.11	197.82
		0,89	25	740.87	221.54	120.00	146.36	180.63	203.53	221.54
		0,89	30	893.99	237.92	120.00	165.03	197.94	220.62	237.92
		0,89	5	128.39	27.35	120.00	6.78	18.68	22.37	27.35
		0,89	10	281.51	60.21	120.00	23.05	45.79	53.76	60.21
		0,89	15	434.63	112.79	120.00	46.84	84.17	99.84	112.79
		0,89	20	587.75	159.91	120.00	79.61	121.48	142.76	159.91
		0,89	25	740.87	188.92	120.00	110.23	148.21	170.81	188.92
		0,89	30	893.99	208.70	120.00	133.74	168.68	190.79	208.70
		0,67	5	12.84	24.09	120.00	5.37	15.65	19.20	24.09
		0,67	10	28.15	51.41	120.00	18.55	38.33	45.36	51.41
		0,67	15	43.46	100.58	120.00	36.43	70.80	86.53	100.58
		0,67	20	58.77	159.95	120.00	65.04	111.44	137.12	159.95
		0,67	25	74.09	203.54	120.00	99.05	148.45	177.83	203.54
		0,67	30	89.40	239.54	120.00	129.77	178.72	210.42	239.54
		0,67	5	12.84	24.27	120.00	5.43	15.83	19.38	24.27
		0,67	10	28.15	51.75	120.00	18.78	38.83	45.76	51.75
		0,67	15	43.46	100.99	120.00	37.16	72.29	87.57	100.99
		0,67	20	58.77	159.37	120.00	66.66	113.51	137.88	159.37
		0,67	25	74.09	200.45	120.00	101.57	150.32	177.32	200.45
		0,67	30	89.40	233.18	120.00	132.46	179.87	208.27	233.18

Walraven installation channels of System Walraven RapidStrut®

Performance characteristics in case of fire for RapidStrut® 41-H

Annex C5

Table C6: Performance characteristics in case of fire for RapidStrut® 41-H

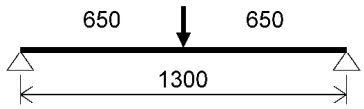
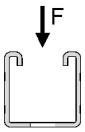
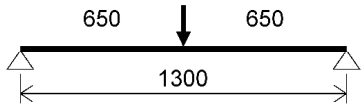
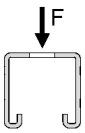
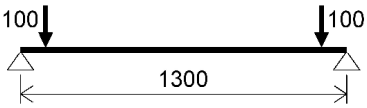
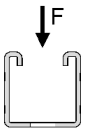
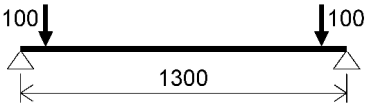
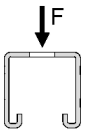
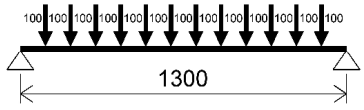
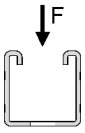
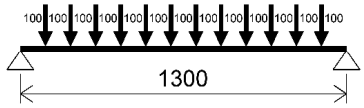
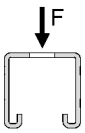
System [Dimensions in mm]	Load direction	V	σ_B	F	$\delta_{tmax,B}$	$t_{max,B}$	δ_{30}	δ_{60}	δ_{90}	δ_{120}
		-	[MPa]	[N]	[mm]	[min]	[mm]	[mm]	[mm]	[mm]
		0,5	5	42.25	25.90	120.00	5.63	17.20	20.85	25.90
		0,5	10	97.93	57.43	120.00	20.80	44.28	51.31	57.43
		0,5	15	153.61	106.75	120.00	39.86	79.00	94.06	106.75
		0,5	20	209.29	219.49	120.00	70.37	134.84	176.44	219.49
		0,5	25	264.97	305.44	120.00	116.09	214.78	265.07	305.44
		0,5	30	320.65	351.56	120.00	187.44	272.44	316.36	351.56
		0,5	5	42.25	25.81	120.00	5.62	17.13	20.76	25.81
		0,5	10	97.93	57.14	120.00	20.68	44.06	51.06	57.14
		0,5	15	153.61	105.72	120.00	39.50	78.58	93.36	105.72
		0,5	20	209.29	184.01	120.00	69.76	128.70	157.79	184.01
		0,5	25	264.97	256.57	120.00	111.23	182.95	220.45	256.57
		0,5	30	320.65	317.01	120.00	156.90	230.32	271.99	317.01
		0,91	5	116.17	36.51	120.00	10.22	26.90	31.15	36.51
		0,91	10	269.29	119.74	120.00	36.37	87.76	106.89	119.74
		0,91	15	422.41	190.43	120.00	104.59	149.35	172.18	190.43
		0,91	20	575.53	232.27	120.00	144.89	186.70	212.33	232.27
		0,91	25	728.65	256.54	120.00	174.22	212.29	237.45	256.54
		0,91	30	881.77	271.93	120.00	195.40	230.08	254.01	271.93
		0,91	5	116.17	35.62	120.00	9.87	26.19	30.29	35.62
		0,91	10	269.29	83.05	120.00	34.09	65.53	75.70	83.05
		0,91	15	422.41	144.32	120.00	67.01	112.59	130.40	144.32
		0,91	20	575.53	197.39	120.00	107.63	155.43	179.03	197.39
		0,91	25	728.65	230.26	120.00	141.21	185.23	210.76	230.26
		0,91	30	881.77	252.63	120.00	167.44	207.27	233.15	252.63
		0,67	5	7.74	31.56	120.00	8.18	22.39	26.33	31.56
		0,67	10	17.95	71.39	120.00	27.74	55.46	64.48	71.39
		0,67	15	28.16	133.20	120.00	53.50	98.24	117.30	133.20
		0,67	20	38.37	200.57	120.00	91.31	146.20	175.66	200.57
		0,67	25	48.58	247.06	120.00	130.92	185.70	219.08	247.06
		0,67	30	58.78	283.44	120.00	164.67	218.49	253.87	283.44
		0,67	5	7.74	31.82	120.00	8.26	22.66	26.60	31.82
		0,67	10	17.95	71.98	120.00	28.10	56.31	65.17	71.98
		0,67	15	28.16	134.46	120.00	54.69	100.70	119.21	134.46
		0,67	20	38.37	201.34	120.00	93.86	149.58	177.79	201.34
		0,67	25	48.58	246.48	120.00	134.72	189.12	220.38	246.48
		0,67	30	58.78	280.54	120.00	168.88	221.68	254.11	280.54

Walraven installation channels of System Walraven RapidStrut®

Performance characteristics in case of fire for RapidStrut® 41-H

Annex C6

Table C7: Performance characteristics in case of fire for RapidStrut® 41-H

System [Dimensions in mm]	Load direction	V	σ_B	F	$\delta_{tmax,B}$	$t_{max,B}$	δ_{30}	δ_{60}	δ_{90}	δ_{120}
		-	[MPa]	[N]	[mm]	[min]	[mm]	[mm]	[mm]	[mm]
		0,5	5	31.24	33.21	120.00	8.21	23.79	27.80	33.21
		0,5	10	78.35	76.65	120.00	29.43	61.09	69.81	76.65
		0,5	15	125.46	141.81	120.00	55.62	107.41	126.46	141.81
		0,5	20	172.58	286.58	120.00	96.75	186.36	243.11	286.58
		0,5	25	219.69	367.56	120.00	162.29	276.22	327.28	367.56
		0,5	30	266.81	419.31	120.00	249.68	335.39	382.40	419.31
		0,5	5	31.24	33.01	120.00	8.16	23.63	27.62	33.01
		0,5	10	78.35	76.44	120.00	29.25	60.92	69.62	76.44
		0,5	15	125.46	140.16	120.00	55.31	106.99	125.51	140.16
		0,5	20	172.58	233.24	120.00	95.89	168.96	203.44	233.24
		0,5	25	219.69	310.45	120.00	147.67	230.63	273.09	310.45
		0,5	30	266.81	375.49	120.00	200.28	284.07	330.50	375.49
		0,92	5	101.52	47.16	120.00	13.86	36.41	41.33	47.16
		0,92	10	254.64	144.84	120.00	56.27	116.29	133.27	144.84
		0,92	15	407.76	221.38	120.00	125.83	175.57	201.23	221.38
		0,92	20	560.88	267.59	120.00	168.64	217.41	246.05	267.59
		0,92	25	714.00	292.24	120.00	201.23	244.49	272.02	292.24
		0,92	30	867.12	307.16	120.00	223.74	262.39	288.27	307.16
		0,92	5	101.52	44.93	120.00	13.30	34.63	39.19	44.93
		0,92	10	254.64	108.43	120.00	46.82	87.59	100.10	108.43
		0,92	15	407.76	176.98	120.00	88.82	141.94	161.98	176.98
		0,92	20	560.88	236.02	120.00	136.53	189.90	216.08	236.02
		0,92	25	714.00	272.91	120.00	173.09	223.09	251.59	272.91
		0,92	30	867.12	298.11	120.00	201.71	247.57	276.70	298.11
		0,67	5	4.83	40.80	120.00	11.71	30.73	35.17	40.80
		0,67	10	12.13	94.75	120.00	38.85	75.52	86.82	94.75
		0,67	15	19.42	166.91	120.00	73.22	127.40	149.45	166.91
		0,67	20	26.71	240.14	120.00	119.19	181.03	213.60	240.14
		0,67	25	34.00	290.67	120.00	162.85	222.91	260.27	290.67
		0,67	30	41.29	328.58	120.00	199.37	257.55	296.91	328.58
		0,67	5	4.83	41.17	120.00	11.81	31.13	35.55	41.17
		0,67	10	12.13	95.77	120.00	39.39	76.88	87.96	95.77
		0,67	15	19.42	169.32	120.00	75.05	131.00	152.49	169.32
		0,67	20	26.71	242.74	120.00	122.91	185.95	217.40	242.74
		0,67	25	34.00	292.51	120.00	168.11	228.17	263.73	292.51
		0,67	30	41.29	329.25	120.00	205.30	262.85	299.61	329.25

Walraven installation channels of System Walraven RapidStrut®

Performance characteristics in case of fire for RapidStrut® 41-H

Annex C7