HadleySFS Section Properties

In accordance with BS EN 1993-1-3:2006 + UK National Annex.

Section properties are given for HadleySFS lipped cee channels of steel grade S450GD+Z275 to BS EN 10346. Values are given for gross properties and based on the effective width methods for local and distortional buckling only. Global buckling resistances are subject to member length and available restraint, requiring calculation in accordance with Section 6.2 of BS EN 1993-1-3:2006 using the values provided.

Section	Dimensions				Gross Section Properties									Axial Compression			Major Axis Bending			Minor Axis Bending (Web in Compression)			Minor Axis Bending (Web in Tension)		
Property	Web	Flange	Lip	Nom. thick-ness	Second moment of area about y-y	Second moment of area about z-z	Radius of gyration about y-y	Radius of gyration about z-z	Warping constant	Torsion constant	Polar radius of gyration	Shear centre y co-ordinate	Eqn. (6.35)	Effective area	Design resistance of cross-section	Shift of z-z centroidal axis	Effective second moment of area about y-y	Effective section modulus about y-y	Design resistance of cross-section about y-y	Effective second moment of area about z-z	Effective section modulus about z-z	Design resistance of cross-section about z-z	Effective second moment of area about z-z	Effective section modulus about z-z	Design resistance of cross-section about z-z
Symbol	h	b	c	t_{nom}	I_{yy}	I_{zz}	i_y	i_z	I_w	I_t	i_0	y_o	β	$A_{eff,c}$	$N_{c,Rd}$	e_{Nz}	$I_{y,eff}$	$W_{y,eff}$	$M_{cy,Rd}$	$I_{z,eff}$	$W_{z,eff}$	$M_{cz,Rd}$	$I_{z,eff}$	$W_{z,eff}$	$M_{cz,Rd}$
Units	mm	mm	mm	mm	cm⁴	cm⁴	cm	cm	cm⁶	mm⁴	cm	mm	-	cm²	kN	mm	cm⁴	cm³	kNm	cm⁴	cm³	kNm	cm⁴	cm³	kNm
070F5012	70	50	12	1.2	18.14	7.55	2.92	1.89	88.48	98.44	5.59	43.75	0.39	1.37	61.62	-1.70	15.56	4.09	1.84	6.26	2.31	1.04	7.55	2.49	1.12
070F5015	70	50	12	1.5	22.29	9.23	2.91	1.87	107.73	195.03	5.55	43.39	0.39	2.02	91.05	-1.28	20.49	5.64	2.54	8.17	2.92	1.31	9.23	3.06	1.38
070F5020	70	50	12	2.0	28.74	11.80	2.89	1.85	136.77	466.83	5.49	42.81	0.39	3.08	138.62	-1.18	27.47	7.82	3.52	11.26	3.87	1.74	11.80	3.94	1.77
100F5012	100	50	12	1.2	40.84	8.58	4.07	1.86	181.08	114.05	5.96	39.34	0.56	1.35	60.93	-0.49	34.60	6.30	2.84	6.41	2.34	1.05	8.58	2.61	1.17
100F5015	100	50	12	1.5	50.41	10.50	4.05	1.85	221.44	226.15	5.92	39.00	0.57	2.02	90.73	0.12	46.00	8.80	3.96	8.42	2.96	1.33	10.50	3.21	1.45
100F5020	100	50	12	2.0	65.47	13.47	4.03	1.83	283.23	542.13	5.86	38.43	0.57	3.15	141.69	0.19	62.10	12.23	5.51	11.76	3.96	1.78	13.47	4.15	1.87
100F7512	100	75	18	1.2	56.62	25.99	4.21	2.85	640.57	146.31	8.43	67.17	0.36	1.49	67.13	-3.23	41.04	6.83	3.07	19.51	5.11	2.30	23.86	5.10	2.30
100F7515	100	75	18	1.5	70.13	32.09	4.20	2.84	788.38	290.47	8.39	66.82	0.37	2.24	100.77	-3.55	56.68	10.06	4.53	25.71	6.51	2.93	31.03	6.78	3.05
100F7520	100	75	18	2.0	91.64	41.72	4.18	2.82	1019.39	697.74	8.32	66.23	0.37	3.79	170.74	-2.43	81.60	15.38	6.92	36.32	8.81	3.96	41.72	9.29	4.18
100F7525	100	75	18	2.5	111.91	50.69	4.16	2.80	1231.99	1369.60	8.26	65.64	0.37	5.41	243.43	-1.99	105.05	20.59	9.26	46.87	11.02	4.96	50.69	11.35	5.11
120F5012	120	50	12	1.2	62.62	9.19	4.80	1.84	266.71	124.46	6.33	36.93	0.66	1.36	61.23	0.50	51.46	7.63	3.43	6.52	2.37	1.07	9.19	2.69	1.21
120F5015	120	50	12	1.5	76.86	11.18	4.78	1.82	326.73	246.90	6.29	36.60	0.66	2.00	90.11	0.88	69.86	11.11	5.00	8.52	2.98	1.34	11.18	3.29	1.48
120F5020	120	50	12	2.0	100.14	14.35	4.76	1.80	419.15	592.32	6.24	36.05	0.67	3.16	142.40	0.98	94.64	15.47	6.96	11.97	3.99	1.80	14.35	4.25	1.91
120F7512	120	75	18	1.2	85.31	27.75	4.99	2.85	909.02	156.71	8.60	63.93	0.45	1.49	67.09	-1.91	60.59	8.28	3.73	19.66	5.13	2.31	25.44	5.23	2.35
120F7515	120	75	18	1.5	105.82	34.29	4.98	2.83	1120.60	311.21	8.56	63.58	0.45	2.25	101.06	-2.21	84.68	12.43	5.59	25.98	6.55	2.95	33.13	6.96	3.13
120F7520	120	75	18	2.0	138.63	44.62	4.96	2.81	1452.93	747.93	8.50	63.00	0.45	3.80	170.92	-1.45	123.30	19.34	8.70	36.88	8.87	3.99	44.62	9.54	4.29
120F7525	120	75	18	2.5	169.74	54.26	4.94	2.79	1760.83	1468.84	8.43	62.41	0.45	5.44	244.98	-0.98	158.65	25.77	11.60	47.84	11.13	5.01	54.26	11.66	5.25
150F5012	150	50	12	1.2	105.25	9.86	5.85	1.79	434.31	140.06	7.00	33.89	0.77	1.36	61.07	1.68	82.71	9.52	4.29	6.57	2.38	1.07	9.86	2.75	1.24
150F5015	150	50	12	1.5	129.57	12.01	5.84	1.78	533.00	278.02	6.97	33.57	0.77	1.98	88.99	1.77	112.99	13.90	6.25	8.63	3.01	1.35	12.01	3.37	1.52
150F5020	150	50	12	2.0	169.42	15.44	5.81	1.76	685.81	667.62	6.91	33.04	0.77	3.17	142.61	1.97	159.49	20.78	9.35	12.18	4.03	1.81	15.44	4.37	1.96
150F7512	150	75	18	1.2	141.45	30.00	6.13	2.82	1428.59	172.32	9.01	59.69	0.56	1.49	66.92	-0.17	97.51	10.48	4.71	19.82	5.16	2.32	27.03	5.26	2.37
150F7515	150	75	18	1.5	175.76	37.09	6.11	2.81	1764.13	342.33	8.97	59.35	0.56	2.25	101.04	-0.52	135.89	15.57	7.00	26.26	6.59	2.96	35.81	7.16	3.22
150F7520	150	75	18	2.0	230.90	48.32	6.09	2.79	2293.91	823.23	8.91	58.78	0.56	3.78	169.91	-0.18	205.10	25.72	11.57	37.45	8.95	4.03	48.32	9.82	4.42
150F7525	150	75	18	2.5	283.53	58.82	6.07	2.76	2788.12	1617.71	8.85	58.22	0.57	5.46	245.57	0.40	263.69	34.09	15.34	48.83	11.24	5.06	58.82	12.02	5.41
200F7512	200	75	18	1.2	273.91	32.98	7.94	2.75	2635.23	198.34	9.98	53.91	0.71	1.48	66.54	2.15	179.84	14.15	6.37	19.99	5.18	2.33	29.04	5.30	2.38
200F7515	200	75	18	1.5	340.98	40.80	7.92	2.74	3259.92	394.20	9.95	53.58	0.71	2.24	100.71	1.78	252.13	21.05	9.47	26.56	6.63	2.98	39.35	7.41	3.33
200F7520	200	75	18	2.0	449.38	53.21	7.90	2.72	4251.45	948.72	9.89	53.04	0.71	3.70	166.48	1.46	383.94	34.97	15.73	38.06	9.03	4.06	53.21	10.17	4.58
200F7525	200	75	18	2.5	553.60	64.87	7.87	2.69	5182.79	1865.83	9.84	52.50	0.72	5.43	244.52	2.26	511.96	49.42	22.24	49.85	11.37	5.12	64.87	12.46	5.61
255F7512	255	75	18	1.2	483.30	35.48	9.84	2.67	4500.13	226.95	11.31	48.85	0.81	1.47	66.13	4.11	301.37	18.24	8.21	20.11	5.20	2.34	30.64	5.32	2.39
255F7515	255	75	18	1.5	602.49	43.91	9.83	2.65	5573.23	451.26	11.28	48.54	0.81	2.23	100.25	3.71	424.50	27.11	12.20	26.77	6.66	3.00	42.32	7.60	3.42
255F7520	255	75	18	2.0	795.94	57.33	9.80	2.63	7282.16	1086.76	11.23	48.03	0.82	3.68	165.79	3.39	644.45	44.37	19.97	38.48	9.09	4.09	57.33	10.43	4.69
255F7525	255	75	18	2.5	982.93	69.95	9.78	2.61	8894.31	2138.76	11.18	47.51	0.82	5.38	242.26	3.78	871.56	63.71	28.67	50.56	11.47	5.16	69.95	12.79	5.76
305F7520	305	75	18	2.0	1220.94	60.27	11.48	2.55	10896.15	1212.26	12.57	44.30	0.88	3.67	164.96	4.75	942.39	52.78	23.75	38.74	9.12	4.11	60.27	10.61	4.77
305F7525	305	75	18	2.5	1510.26	73.58	11.45	2.53	13322.92	2386.87	12.52	43.81	0.88	5.33	239.87	4.80	1285.96	76.32	34.35	51.01	11.53	5.19	73.58	13.02	5.86

HADLEY SFS

Version	Date	Prepared	App' HCT #1	App' HCT #1	Notes
1.0	22/08/2025	SH	SH	JS	Original