

## Universal Beams

## SAFE LOADS FOR GRADE 43 STEEL

Section size	Mass per metre	Safe distributed loads in kilonewtons for spans in metres and deflection coefficients													Critical span Lc m
		2.00 112.0	2.50 71.68	3.00 49.78	3.50 36.57	4.00 28.00	4.50 22.12	5.00 17.92	5.50 14.81	6.00 12.44	7.00 9.143	8.00 7.000	9.00 5.531	10.00 4.480	
mm	kg	112.0	71.68	49.78	36.57	28.00	22.12	17.92	14.81	12.44	9.143	7.000	5.531	4.480	m
203 x 133	25	<i>153</i>	<i>122</i>	<i>102</i>	87	77	68	61	56	51					2.80
	30	<b>184</b>	<i>147</i>	<i>123</i>	<i>105</i>	92	82	74	67	61	53				3.03
254 x 102	22	<i>149</i>	<i>119</i>	<i>99</i>	<i>85</i>	<i>74</i>	66	60	54	50	43	37			1.75
	25	<i>175</i>	<i>140</i>	<i>117</i>	<i>100</i>	<i>88</i>	78	70	64	58	50	37			1.87
	28	<i>203</i>	<i>163</i>	<i>135</i>	<i>116</i>	<i>102</i>	90	81	74	68	58	51			2.01
254 x 146	31	<b>233</b>	<i>186</i>	<i>155</i>	<i>133</i>	<i>117</i>	104	93	85	78	67	58			2.96
	37	<b>286</b>	<b>229</b>	<i>191</i>	<i>164</i>	<i>143</i>	127	115	104	95	82	72			3.22
	43	<b>333</b>	<b>267</b>	<i>222</i>	<i>191</i>	<i>167</i>	148	133	121	111	95	83			3.41
305 x 102	25	<b>190</b>	<i>152</i>	<i>127</i>	<i>109</i>	<i>95</i>	<i>84</i>	<i>76</i>	69	63	54	47	42	38	1.64
	28	<b>232</b>	<i>185</i>	<i>154</i>	<i>132</i>	<i>116</i>	<i>103</i>	<i>93</i>	84	77	66	58	51	46	1.79
	33	<b>274</b>	<i>219</i>	<i>183</i>	<i>156</i>	<i>137</i>	<i>122</i>	<i>110</i>	100	91	78	68	61	55	1.90
305 x 127	37	<b>311</b>	<i>249</i>	<i>207</i>	<i>178</i>	<i>156</i>	<i>138</i>	<i>124</i>	<i>113</i>	104	89	78	69	62	2.37
	42	<b>351</b>	<i>280</i>	<i>234</i>	<i>200</i>	<i>175</i>	<i>156</i>	<i>140</i>	<i>127</i>	117	100	88	78	70	2.45
	48	<b>404</b>	<i>323</i>	<i>269</i>	<i>231</i>	<i>202</i>	<i>180</i>	<i>162</i>	<i>147</i>	135	115	101	90	81	2.59
305 x 165	40	<b>370</b>	<b>296</b>	<b>247</b>	<b>212</b>	<i>185</i>	<i>165</i>	<i>148</i>	135	123	106	93	82	74	3.38
	46	<b>412†</b>	<b>342</b>	<b>285</b>	<b>244</b>	<i>214</i>	<i>190</i>	<i>171</i>	155	143	122	107	95	86	3.53
	54	<b>479†</b>	<b>398</b>	<b>331</b>	<b>284</b>	<i>249</i>	<i>221</i>	<i>199</i>	181	166	142	124	110	99	3.69
356 x 127	33	<b>311</b>	<b>248</b>	<b>207</b>	<i>177</i>	<i>155</i>	<i>138</i>	<i>124</i>	<i>113</i>	104	89	78	69	62	2.18
	39	<b>377</b>	<b>302</b>	<b>252</b>	<i>216</i>	<i>189</i>	<i>168</i>	<i>151</i>	<i>137</i>	126	108	94	84	75	2.33
356 x 171	45	<b>453</b>	<b>363</b>	<b>302</b>	<b>259</b>	<i>227</i>	<i>201</i>	<i>181</i>	<i>165</i>	151	130	113	101	91	3.23
	51	<b>519†</b>	<b>420</b>	<b>350</b>	<b>300</b>	<i>263</i>	<i>234</i>	<i>210</i>	<i>191</i>	<i>175</i>	150	131	117	105	3.38
	57	<b>574†</b>	<b>473</b>	<b>394</b>	<b>338</b>	<i>296</i>	<i>263</i>	<i>237</i>	<i>215</i>	<i>197</i>	169	148	131	118	3.50
	67	<b>662†</b>	<b>567</b>	<b>472</b>	<b>405</b>	<i>354</i>	<i>315</i>	<i>283</i>	<i>258</i>	<i>236</i>	202	177	157	142	3.72
406 x 140	39	<b>414</b>	<b>331</b>	<b>276</b>	<b>236</b>	<b>207</b>	<i>184</i>	<i>165</i>	<i>150</i>	<i>138</i>	118	103	92	83	2.41
	46	<b>513</b>	<b>411</b>	<b>342</b>	<b>293</b>	<b>257</b>	<i>228</i>	<i>205</i>	<i>187</i>	<i>171</i>	147	128	114	103	2.58
406 x 178	54	<b>611</b>	<b>489</b>	<b>407</b>	<b>349</b>	<b>305</b>	<i>271</i>	<i>244</i>	<i>222</i>	<i>204</i>	174	153	136	122	3.28
	60	<b>634†</b>	<b>559</b>	<b>466</b>	<b>399</b>	<b>349</b>	<i>310</i>	<i>279</i>	<i>254</i>	<i>233</i>	200	175	155	140	3.45
	67	<b>721†</b>	<b>627</b>	<b>523</b>	<b>448</b>	<b>392</b>	<i>348</i>	<i>314</i>	<i>285</i>	<i>261</i>	224	196	174	157	3.54
	74	<b>801†</b>	<b>699</b>	<b>583</b>	<b>499</b>	<b>437</b>	<i>388</i>	<i>350</i>	<i>318</i>	<i>291</i>	250	218	194	175	3.65
457 x 152	52	<b>626</b>	<b>501</b>	<b>418</b>	<b>358</b>	<b>313</b>	<i>278</i>	<i>251</i>	<i>228</i>	<i>209</i>	<i>179</i>	157	139	125	2.62
	60	<b>728†</b>	<b>591</b>	<b>493</b>	<b>422</b>	<b>370</b>	<i>329</i>	<i>296</i>	<i>269</i>	<i>246</i>	<i>211</i>	185	164	148	2.78
	67	<b>825</b>	<b>660</b>	<b>550</b>	<b>471</b>	<b>413</b>	<i>367</i>	<i>330</i>	<i>300</i>	<i>275</i>	<i>236</i>	206	183	165	2.81
	74	<b>913†</b>	<b>742</b>	<b>619</b>	<b>530</b>	<b>464</b>	<i>412</i>	<i>371</i>	<i>337</i>	<i>309</i>	<i>265</i>	282	206	186	2.92
	82	<b>995†</b>	<b>822</b>	<b>685</b>	<b>587</b>	<b>514</b>	<i>457</i>	<i>411</i>	<i>374</i>	<i>343</i>	<i>294</i>	257	228	206	3.03
457 x 191	67	<b>771†</b>	<b>684</b>	<b>570</b>	<b>489</b>	<b>428</b>	<i>380</i>	<i>342</i>	<i>311</i>	<i>285</i>	<i>244</i>	214	190	171	3.53
	74	<b>832†</b>	<b>771</b>	<b>643</b>	<b>551</b>	<b>482</b>	<i>429</i>	<i>386</i>	<i>351</i>	<i>321</i>	<i>276</i>	241	214	193	3.65
	82	<b>911†</b>	<b>851</b>	<b>709</b>	<b>608</b>	<b>532</b>	<i>473</i>	<i>426</i>	<i>387</i>	<i>355</i>	<i>304</i>	266	236	213	3.74
	89	<b>983†</b>	<b>935</b>	<b>779</b>	<b>668</b>	<b>584</b>	<i>519</i>	<i>467</i>	<i>425</i>	<i>389</i>	<i>334</i>	292	260	234	3.86
	98	<b>1066†</b>	<b>1033</b>	<b>861</b>	<b>738</b>	<b>645</b>	<i>574</i>	<i>516</i>	<i>469</i>	<i>430</i>	<i>369</i>	323	287	258	4.00

Loads printed in italic type do not cause overloading of the unstiffened web, and do not cause deflection exceeding span/360.

Loads printed in ordinary type should be checked for deflection See page 21 to 24.

† Load is based on allowable shear of web and is less than allowable load in bending. See also footnotes to page 25.

# Universal Beams

## SAFE LOADS FOR GRADE 43 STEEL

Section size	Mass per metre	Safe distributed loads in kilonewtons for spans in metres and deflection coefficients													Critical span L <sub>c</sub> m
		4.00 28.00	5.00 17.92	6.00 12.44	7.00 9.143	8.00 7.000	9.00 5.531	10.00 4.480	11.00 3.702	12.00 3.111	13.00 2.651	14.00 2.286	15.00 1.991	16.00 1.750	
533 x 210	82	<b>593</b>	475	396	339	297	264	237	216	198	183	170	158	148	3.70
	92	<b>685</b>	548	457	391	343	304	274	249	228	211	196	183	171	3.88
	101	<b>758</b>	607	506	433	379	337	303	276	253	233	217	202	190	3.99
	109	<b>816</b>	653	544	467	408	363	327	297	272	251	233	218	204	4.07
	122	<b>924</b>	739	616	528	462	411	369	336	308	284	264	246	231	4.24
610 x 229	101	<b>830</b>	<b>664</b>	553	474	415	369	332	302	277	255	237	221	207	4.01
	113	<b>950</b>	<b>760</b>	633	543	475	422	380	345	317	292	271	253	238	4.18
	125	<b>1063</b>	<b>851</b>	709	608	532	473	425	387	354	327	304	284	266	4.33
	140	<b>1197</b>	<b>957</b>	798	684	598	532	479	435	399	368	342	319	299	4.48
610 x 305	149	<b>1350</b>	<b>1080</b>	<b>900</b>	771	675	600	540	491	450	415	386	360	337	6.10
	179	<b>1621</b>	<b>1297</b>	<b>1080</b>	926	810	720	648	589	540	499	463	432	405	6.40
	238	<b>2164</b>	<b>1732</b>	1443	1237	1082	962	866	787	721	666	618	577	541	7.03
686 x 254	125	<b>1149</b>	<b>919</b>	<b>766</b>	656	574	511	459	418	383	353	328	306	287	4.41
	140	<b>1316</b>	<b>1053</b>	<b>877</b>	752	658	585	526	479	439	405	376	351	329	4.60
	152	<b>1443</b>	<b>1154</b>	<b>962</b>	824	721	641	577	525	481	444	412	385	361	4.73
	170	<b>1621</b>	<b>1297</b>	1080	926	810	720	648	589	540	499	463	432	405	4.88
762 x 267	147	<b>1479</b>	<b>1184</b>	<b>986</b>	845	740	658	592	538	493	455	423	395	370	4.52
	173	<b>1777</b>	<b>1422</b>	<b>1185</b>	1015	889	790	711	646	592	547	508	474	444	4.77
	197	<b>2057</b>	<b>1646</b>	<b>1371</b>	1176	1029	914	823	748	686	633	588	549	514	5.01
838 x 292	176	<b>1945</b>	<b>1556</b>	<b>1297</b>	1111	973	864	778	707	648	598	556	519	486	4.94
	194	<b>2194</b>	<b>1755</b>	<b>1463</b>	1254	1097	975	878	798	731	675	627	585	548	5.14
	226	<b>2635</b>	<b>2108</b>	<b>1757</b>	1506	1318	1171	1054	958	879	811	753	703	659	5.45
914 x 305	201	<b>2379</b>	<b>1903</b>	<b>1586</b>	1360	1190	1057	952	865	793	732	680	634	595	5.07
	224	<b>2725</b>	<b>2180</b>	<b>1817</b>	1557	1363	1211	1090	991	908	839	779	727	681	5.32
	253	<b>3137</b>	<b>2510</b>	<b>2092</b>	1793	1569	1394	1255	1141	1046	965	896	837	784	5.55
	289	<b>3594</b>	<b>2875</b>	<b>2396</b>	2054	1797	1597	1438	1307	1198	1106	1027	958	899	5.75
914 x 419	343		<b>3536†</b>	<b>3019</b>	<b>2588</b>	<b>2264</b>	2013	1811	1647	1509	1393	1294	1208	1132	8.39
	388		<b>3958†</b>	<b>3436</b>	<b>2945</b>	<b>2577</b>	2290	2061	1874	1718	1586	1472	1374	1288	8.73
686 x 254	125	<b>1146</b>	<b>917</b>	<b>764</b>	655	573	509	458	417	382	353	327	306	286	4.20
	140	<b>1313</b>	<b>1050</b>	<b>875</b>	750	657	584	525	477	438	404	375	350	328	4.43
	152	<b>1440</b>	<b>1152</b>	<b>960</b>	823	720	640	576	524	480	443	411	384	360	4.57
	170	<b>1618</b>	<b>1294</b>	1078	924	809	719	647	588	539	498	462	431	404	4.73
762 x 267	147	<b>1475</b>	<b>1180</b>	<b>984</b>	843	738	656	590	537	492	454	422	393	369	4.33
	173	<b>1773</b>	<b>1419</b>	<b>1182</b>	1013	887	788	709	645	591	546	507	473	443	4.61
	197	<b>2054</b>	<b>1643</b>	<b>1369</b>	1173	1027	913	821	747	685	632	587	548	513	4.86
838 x 292	176	<b>1940</b>	<b>1552</b>	<b>1293</b>	1109	970	862	776	705	647	597	554	517	485	4.72
	194	<b>2189</b>	<b>1751</b>	<b>1459</b>	1251	1094	973	876	796	730	674	625	584	547	4.94
	226	<b>2630</b>	<b>2104</b>	<b>1754</b>	1503	1315	1169	1052	957	877	809	752	701	658	5.29
914 x 305	201	<b>2373</b>	<b>1899</b>	<b>1582</b>	1356	1187	1055	949	863	791	730	678	633	593	4.86
	224	<b>2720</b>	<b>2176</b>	<b>1813</b>	1554	1360	1209	1088	989	907	837	777	725	680	5.14
	253	<b>3132</b>	<b>2505</b>	<b>2088</b>	1789	1566	1392	1253	1139	1044	964	895	835	783	5.39
	289	<b>3588</b>	<b>2871</b>	<b>2392</b>	2051	1794	1595	1435	1305	1196	1104	1025	957	897	5.60
914 x 419	343		<b>3536†</b>	<b>3012</b>	<b>2582</b>	<b>2259</b>	2008	1807	1643	1506	1390	1291	1205	1130	8.08
	388		<b>3958†</b>	<b>3429</b>	<b>2939</b>	<b>2572</b>	2286	2057	1870	1714	1583	1470	1372	1286	8.44

For explanation of table see page 21.

The loads listed are based on a bending stress of 165 N/mm<sup>2</sup> and assume adequate lateral support. Without such support the span must not exceed L<sub>c</sub> unless the compressive stress is reduced in accordance with clause 19a of BS 449.

Loads printed in bold type may cause overloading of the unstiffened web, the capacity of which should be checked. See page 24. See also footnotes to page 25.