



FILLET AND FULL PENETRATION WELD STRENGTHS TO BS5950
(THE LIMIT STATE METHOD ie. FACTORED APPLIED LOADS)

STRENGTH OF FILLET WELDS
CAPACITIES WITH GRADE E43 ELECTRODES TO BS639

Leg Length	Throat Thickness	GRADE 43 STEEL	GRADE 50 STEEL
		Capacity at 215 N/mm ²	Capacity at 255 N/mm ²
mm	mm	kN/mm	kN/mm
3	2.1	0.452	0.535
4	2.8	0.602	0.714
5	3.5	0.753	0.893
6	4.2	0.903	1.07
8	5.6	1.20	1.43
10	7.0	1.51	1.79
12	8.4	1.81	2.14
15	10.5	2.26	2.68
18	12.6	2.71	3.21
20	14.0	3.01	3.57
22	15.4	3.31	3.93
25	17.5	3.76	4.46

STRENGTH OF FULL PENETRATION BUTT WELDS
CAPACITIES WITH GRADE E43 ELECTRODES TO BS639

Thickness	GRADE 43 STEEL		GRADE 50 STEEL	
	Shear at 0.6xpy	Tension or Compression at py	Shear at 0.6xpy	Tension or Compression at py
mm	kN/mm	kN/mm	kN/mm	kN/mm
6	0.99	1.65	1.28	2.13
8	1.32	2.20	1.70	2.84
10	1.65	2.75	2.13	3.55
12	1.98	3.30	2.56	4.26
15	2.48	4.13	3.20	5.33
18	2.86	4.77	3.67	6.12
20	3.18	5.30	4.08	6.80
22	3.50	5.83	4.49	7.48
25	3.98	6.63	5.10	8.50
28	4.45	7.42	5.71	9.52
30	4.77	7.95	6.12	10.20
35	5.57	9.28	7.14	11.90
40	6.36	10.60	8.16	13.60
45	6.62	11.00	9.18	15.30