

TEMP: 220 ± 10C			PHASE 1				PHASE 2		PHASE 3	PHASE 4				PHASE 5			
Pipe Details (e _n = Wall Thickness) Max e _n = 130mm			Equalising				Preheating		Changeover Time	Joining (See Note <i>a</i>)			Minimum Cool Time Under Pressure (See Note <i>b</i>)			Finished Weld Bead	
																Min	
			Equalising Pressure BAR			Bead Height (Minimum)			Buildup Time	Joining Pressure BAR			Up to 15°C	15°C to 25°C	25°C to 40°C	Min	
D _n	SDR	e _n	Min	Tgt	Max	mm	BAR	Time	Max	Max	Min	Tgt	Max				mm
90	41	2.2	1	1	1	0.5	0.05	0m 45s	5s	5s	1	1	1	0h 4m	0h 5m	0h 7m	4
	33	2.7	1	1	1	0.5	0.06	0m 45s	5s	5s	1	1	1	0h 4m	0h 5m	0h 7m	4
	26	3.5	1	1	1	0.5	0.08	0m 45s	5s	5s	1	1	1	0h 4m	0h 5m	0h 7m	5
	21	4.3	1	1	2	0.5	0.10	0m 45s	5s	5s	1	1	2	0h 4m	0h 5m	0h 7m	5
	17	5.3	2	2	2	1.0	0.12	0m 51s	5.3s	5.3s	2	2	2	0h 4m	0h 6m	0h 7m	6
	13.6	6.6	2	2	2	1.0	0.14	1m 10s	6s	6s	2	2	2	0h 6m	0h 7m	0h 9m	6
	11	8.2	2	3	3	1.5	0.17	1m 21s	6.5s	6.5s	2	3	3	0h 7m	0h 8m	0h 11m	7
	9	10.0	3	3	3	1.5	0.21	1m 43s	7.4s	7.4s	3	3	3	0h 8m	0h 10m	0h 13m	8
7.4	12.2	3	4	4	2.0	0.24	2m 0s	8s	8s	3	4	4	0h 10m	0h 12m	0h 16m	9	
110	41	2.7	1	1	1	0.5	0.08	0m 45s	5s	5s	1	1	1	0h 4m	0h 5m	0h 7m	4
	33	3.3	1	1	2	0.5	0.09	0m 45s	5s	5s	1	1	2	0h 4m	0h 5m	0h 7m	5
	26	4.2	2	2	2	0.5	0.12	0m 45s	5s	5s	2	2	2	0h 4m	0h 5m	0h 7m	5
	21	5.2	2	2	2	1.0	0.14	0m 51s	5.3s	5.3s	2	2	2	0h 4m	0h 6m	0h 7m	6
	17	6.5	2	3	3	1.0	0.17	1m 4s	5.8s	5.8s	2	3	3	0h 5m	0h 7m	0h 8m	6
	13.6	8.1	3	3	3	1.5	0.21	1m 21s	6.5s	6.5s	3	3	3	0h 7m	0h 8m	0h 11m	7
	11	10.0	4	4	4	1.5	0.26	1m 43s	7.4s	7.4s	4	4	4	0h 8m	0h 10m	0h 13m	8
	9	12.2	4	5	5	2.0	0.30	2m 0s	8s	8s	4	5	5	0h 10m	0h 12m	0h 16m	9
7.4	14.9	5	5	6	2.0	0.36	2m 27s	8.8s	9.2s	5	5	6	0h 11m	0h 14m	0h 19m	10	
125	41	3.0	1	1	2	0.5	0.10	0m 45s	5s	5s	1	1	2	0h 4m	0h 5m	0h 7m	5
	33	3.8	2	2	2	0.5	0.12	0m 45s	5s	5s	2	2	2	0h 4m	0h 5m	0h 7m	5
	26	4.8	2	2	2	1.0	0.15	0m 45s	5s	5s	2	2	2	0h 4m	0h 5m	0h 7m	5
	21	6.0	3	3	3	1.0	0.18	0m 58s	5.5s	5.5s	3	3	3	0h 5m	0h 6m	0h 8m	6
	17	7.4	3	3	4	1.5	0.22	1m 10s	6s	6s	3	3	4	0h 6m	0h 8m	0h 10m	7
	13.6	9.2	4	4	4	1.5	0.27	1m 32s	6.9s	6.9s	4	4	4	0h 7m	0h 9m	0h 12m	8
	11	11.4	5	5	5	1.5	0.33	1m 55s	7.8s	7.8s	5	5	5	0h 9m	0h 11m	0h 14m	9
	9	13.9	6	6	6	2.0	0.39	2m 16s	8.5s	8.7s	6	6	6	0h 11m	0h 13m	0h 17m	10
7.4	16.9	6	7	7	2.0	0.46	2m 49s	9.4s	10.1s	6	7	7	0h 12m	0h 16m	0h 21m	11	

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Pipe Details (e _n = Wall Thickness) Max e _n = 130mm			Equalising				Preheating		Changeover Time	Joining (See Note <i>a</i>)				Minimum Cool Time Under Pressure (See Note <i>b</i>)			Finished Weld Bead
										Buildup Time		Joining Pressure BAR		Up to 15°C	15°C to 25°C	25°C to 40°C	Min
D _n	SDR	e _n	Min	Tgt	Max	mm	BAR	Time	Max	Max	Min	Tgt	Max				mm
140	41	3.4	2	2	2	0.5	0.12	0m 45s	5s	5s	2	2	2	0h 4m	0h 5m	0h 7m	5
	33	4.2	2	2	2	0.5	0.15	0m 45s	5s	5s	2	2	2	0h 4m	0h 5m	0h 7m	5
	26	5.4	3	3	3	1.0	0.19	0m 51s	5.3s	5.3s	3	3	3	0h 4m	0h 6m	0h 7m	6
	21	6.7	3	3	4	1.0	0.23	1m 10s	6s	6s	3	3	4	0h 6m	0h 7m	0h 9m	6
	17	8.2	4	4	4	1.5	0.28	1m 21s	6.5s	6.5s	4	4	4	0h 7m	0h 8m	0h 11m	7
	13.6	10.3	5	5	5	1.5	0.34	1m 43s	7.4s	7.4s	5	5	5	0h 8m	0h 10m	0h 13m	8
	11	12.7	6	6	7	2.0	0.41	2m 5s	8.2s	8.3s	6	6	7	0h 10m	0h 13m	0h 16m	9
	9	15.6	7	7	8	2.0	0.49	2m 38s	9.1s	9.7s	7	7	8	0h 12m	0h 15m	0h 20m	11
	7.4	18.9	8	9	9	2.0	0.58	3m 10s	10s	11s	8	9	9	0h 14m	0h 18m	0h 23m	12
160	41	3.9	2	2	3	0.5	0.16	0m 45s	5s	5s	2	2	3	0h 4m	0h 5m	0h 7m	5
	33	4.8	3	3	3	1.0	0.19	0m 45s	5s	5s	3	3	3	0h 4m	0h 5m	0h 7m	5
	26	6.2	3	4	4	1.0	0.24	1m 4s	5.8s	5.8s	3	4	4	0h 5m	0h 7m	0h 8m	6
	21	7.6	4	4	5	1.5	0.30	1m 16s	6.3s	6.3s	4	4	5	0h 6m	0h 8m	0h 10m	7
	17	9.4	5	5	6	1.5	0.36	1m 32s	6.9s	6.9s	5	5	6	0h 7m	0h 9m	0h 12m	8
	13.6	11.8	6	7	7	1.5	0.44	2m 0s	8s	8s	6	7	7	0h 9m	0h 12m	0h 15m	9
	11	14.5	8	8	9	2.0	0.53	2m 27s	8.8s	9.2s	8	8	9	0h 11m	0h 14m	0h 19m	10
	9	17.8	9	10	10	2.0	0.64	2m 59s	9.7s	10.6s	9	10	10	0h 13m	0h 17m	0h 22m	12
	7.4	21.6	11	11	12	2.5	0.75	3m 37s	10.8s	12.2s	11	11	12	0h 16m	0h 20m	0h 27m	14
180	41	4.4	3	3	3	0.5	0.20	0m 45s	5s	5s	3	3	3	0h 4m	0h 5m	0h 7m	5
	33	5.5	3	4	4	1.0	0.24	0m 51s	5.3s	5.3s	3	4	4	0h 4m	0h 6m	0h 7m	6
	26	6.9	4	5	5	1.0	0.30	1m 10s	6s	6s	4	5	5	0h 6m	0h 7m	0h 9m	6
	21	8.6	5	6	6	1.5	0.37	1m 27s	6.7s	6.7s	5	6	6	0h 7m	0h 9m	0h 11m	7
	17	10.6	6	7	7	1.5	0.45	1m 49s	7.6s	7.6s	6	7	7	0h 9m	0h 11m	0h 14m	8
	13.6	13.2	8	8	9	2.0	0.56	2m 11s	8.4s	8.5s	8	8	9	0h 10m	0h 13m	0h 17m	10
	11	16.4	9	10	11	2.0	0.67	2m 43s	9.3s	9.9s	9	10	11	0h 12m	0h 16m	0h 20m	11
	9	20.0	11	12	13	2.5	0.81	3m 21s	10.4s	11.5s	11	12	13	0h 15m	0h 19m	0h 25m	13
	7.4	24.3	13	14	15	2.5	0.95	4m 4s	11.6s	13.4s	13	14	15	0h 18m	0h 22m	0h 30m	15

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										Buildup Time		Joining Pressure BAR		Up to 15°C	15°C to 25°C	25°C to 40°C	Min
D _n	SDR	e _n	Min	Tgt	Max	mm	BAR	Time	Max	Max	Min	Tgt	Max				mm
200	41	4.9	3	4	4	1.0	0.24	0m 45s	5s	5s	3	4	4	0h 4m	0h 5m	0h 7m	5
	33	6.1	4	5	5	1.0	0.30	1m 4s	5.8s	5.8s	4	5	5	0h 5m	0h 7m	0h 8m	6
	26	7.7	5	6	6	1.5	0.38	1m 16s	6.3s	6.3s	5	6	6	0h 6m	0h 8m	0h 10m	7
	21	9.5	6	7	7	1.5	0.46	1m 38s	7.2s	7.2s	6	7	7	0h 8m	0h 10m	0h 13m	8
	17	11.8	8	8	9	1.5	0.56	2m 0s	8s	8s	8	8	9	0h 9m	0h 12m	0h 15m	9
	13.6	14.7	10	10	11	2.0	0.69	2m 27s	8.8s	9.2s	10	10	11	0h 11m	0h 14m	0h 19m	10
	11	18.2	12	13	13	2.0	0.83	3m 5s	9.9s	10.8s	12	13	13	0h 13m	0h 17m	0h 23m	12
	9	22.2	14	15	16	2.5	0.99	3m 42s	11s	12.4s	14	15	16	0h 16m	0h 21m	0h 28m	14
	7.4	27.0	16	18	19	3.0	1.17	4m 31s	12.4s	14.5s	16	18	19	0h 20m	0h 25m	0h 33m	17
225	41	5.5	4	5	5	1.0	0.31	0m 51s	5.3s	5.3s	4	5	5	0h 4m	0h 6m	0h 7m	6
	33	6.8	5	6	6	1.0	0.38	1m 10s	6s	6s	5	6	6	0h 6m	0h 7m	0h 9m	6
	26	8.7	7	7	8	1.5	0.47	1m 27s	6.7s	6.7s	7	7	8	0h 7m	0h 9m	0h 11m	7
	21	10.7	8	9	9	1.5	0.58	1m 49s	7.6s	7.6s	8	9	9	0h 9m	0h 11m	0h 14m	8
	17	13.2	10	11	11	2.0	0.71	2m 11s	8.4s	8.5s	10	11	11	0h 10m	0h 13m	0h 17m	10
	13.6	16.5	12	13	14	2.0	0.87	2m 49s	9.4s	10.1s	12	13	14	0h 12m	0h 16m	0h 21m	11
	11	20.5	15	16	17	2.5	1.05	3m 21s	10.4s	11.5s	15	16	17	0h 15m	0h 19m	0h 25m	13
	9	25.0	18	19	20	2.5	1.26	4m 15s	11.9s	13.8s	18	19	20	0h 18m	0h 23m	0h 31m	16
	7.4	30.4	21	22	24	3.0	1.48	5m 2s	13.6s	16s	21	22	24	0h 22m	0h 28m	0h 37m	18
250	41	6.1	5	6	6	1.0	0.38	1m 4s	5.8s	5.8s	5	6	6	0h 5m	0h 7m	0h 8m	6
	33	7.6	7	7	7	1.5	0.46	1m 16s	6.3s	6.3s	7	7	7	0h 6m	0h 8m	0h 10m	7
	26	9.6	8	9	9	1.5	0.58	1m 38s	7.2s	7.2s	8	9	9	0h 8m	0h 10m	0h 13m	8
	21	11.9	10	11	11	1.5	0.71	2m 0s	8s	8s	10	11	11	0h 9m	0h 12m	0h 15m	9
	17	14.7	12	13	14	2.0	0.87	2m 27s	8.8s	9.2s	12	13	14	0h 11m	0h 14m	0h 19m	10
	13.6	18.4	15	16	17	2.0	1.07	3m 5s	9.9s	10.8s	15	16	17	0h 13m	0h 17m	0h 23m	12
	11	22.7	18	19	21	2.5	1.30	3m 48s	11.1s	12.7s	18	19	21	0h 17m	0h 21m	0h 28m	14
	9	27.8	22	23	25	3.0	1.55	4m 36s	12.6s	14.8s	22	23	25	0h 20m	0h 25m	0h 34m	17
	7.4	33.8	26	28	29	3.0	1.83	5m 39s	14.9s	17.6s	26	28	29	0h 25m	0h 31m	0h 41m	20

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			Equalising Pressure BAR			Bead Height (Minimum)				Buildup Time	Joining Pressure BAR		Up to 15°C	15°C to 25°C	25°C to 40°C	Min	
D _n	SDR	e _n	Min	Tgt	Max	mm	BAR	Time	Max	Max	Min	Tgt	Max				mm
280	41	6.8	7	7	8	1.0	0.47	1m 10s	6s	6s	7	7	8	0h 6m	0h 7m	0h 9m	6
	33	8.5	8	9	9	1.5	0.58	1m 21s	6.5s	6.5s	8	9	9	0h 7m	0h 8m	0h 11m	7
	26	10.8	10	11	12	1.5	0.73	1m 49s	7.6s	7.6s	10	11	12	0h 9m	0h 11m	0h 14m	8
	21	13.3	13	13	14	2.0	0.89	2m 11s	8.4s	8.5s	13	13	14	0h 10m	0h 13m	0h 17m	10
	17	16.5	15	16	17	2.0	1.09	2m 43s	9.3s	9.9s	15	16	17	0h 12m	0h 16m	0h 20m	11
	13.6	20.6	19	20	21	2.5	1.34	3m 26s	10.5s	11.7s	19	20	21	0h 15m	0h 19m	0h 26m	13
	11	25.5	23	24	26	2.5	1.63	4m 15s	11.9s	13.8s	23	24	26	0h 18m	0h 23m	0h 31m	16
	9	31.1	27	29	31	3.0	1.94	5m 12s	14s	16.4s	27	29	31	0h 23m	0h 29m	0h 38m	19
7.4	37.8	32	34	37	3.5	2.30	6m 15s	16.2s	19.3s	32	34	37	0h 27m	0h 35m	0h 46m	22	
315	41	7.7	8	9	10	1.5	0.60	1m 16s	6.3s	6.3s	8	9	10	0h 6m	0h 8m	0h 10m	7
	33	9.5	10	11	12	1.5	0.73	1m 38s	7.2s	7.2s	10	11	12	0h 8m	0h 10m	0h 13m	8
	26	12.1	13	14	15	2.0	0.92	2m 0s	8s	8s	13	14	15	0h 10m	0h 12m	0h 16m	9
	21	15.0	16	17	18	2.0	1.13	2m 32s	9s	9.4s	16	17	18	0h 12m	0h 15m	0h 19m	11
	17	18.5	19	21	22	2.0	1.38	3m 10s	10s	11s	19	21	22	0h 14m	0h 18m	0h 23m	12
	13.6	23.2	24	25	27	2.5	1.70	3m 53s	11.3s	12.9s	24	25	27	0h 17m	0h 22m	0h 29m	15
	11	28.6	29	31	33	3.0	2.06	4m 46s	13s	15.2s	29	31	33	0h 21m	0h 26m	0h 35m	17
	9	35.0	34	37	39	3.0	2.46	5m 54s	15.5s	18.3s	34	37	39	0h 26m	0h 32m	0h 43m	21
7.4	42.6	41	44	47	3.5	2.91	7m 7s	17.8s	21.7s	41	44	47	0h 31m	0h 39m	0h 52m	24	