25.020

REQUIREMENTS FOR WELDED JOINTS (Alloy)
according to Lloyds Register of Shipping rules

material: **Steel grade A**
(yield strength 235 N/mm², tensile strength 400..490 N/mm²)

Dimensions of fillets welds
f = weld factor (mm) a = throat thickness of fillet weld (mm)
d = distance between welds (mm) t = thinnest plate of joint (mm)
s = fillet weld length (mm) C = continuous

Item	Dunste plaat van de verbinding t											
	3			4			5			6		
	a	s	d	a	s	d	a	s	d	a	s	d
General application:												
Watertight or oil tight plate boundaries	2.5	C	C	2.5	C	C	2.5	C	C	2.5	C	C
Non-tight plate boundaries	3.	75	450	3.	75	433	3.	75	346	3.	75	288
Longitudinals,frames,beams and other secondary												
members to shell, deck or bulkhead plating: general	3.	75	450	3.	75	450	3.	75	450	3.	75	375
in tanks	2.5	C	C	2.5	C	C	2.5	C	C	2.5	C	C
in way of end connections	2.5	C	C	2.5	C	C	2.5	C	C	2.5	C	C
Panel stiffeners	3.	75	450	3.	75	450	3.	75	450	3.	75	375
Overlap welds generally	2.5	75	231	2.5	75	174	2.5	75	139	2.5	75	116
Bottom construction:												
Non-tight centre girder to: keel	3.	75	278	3.	75	208	3.	75	167	3.	75	139
inner bottom	3.	75	357	3.	75	268	3.	75	214	3.	75	179
Non-tight boundaries of floors, girders and brackets												
in way of 0,2xspan at ends	3.	75	357	3.	75	268	3.	75	214	3.	75	179
in way of brackets at lower end of main frame	3.	C	C	3.	C	C	3.	C	C	3.	C	C
Inner bottom longitudinals or face flats to floors	3.	75	450	3.	75	433	3.	75	346	3.	75	288
connection of floors to inner bottom where bulkhead supported												
on tank top.	2.5	C	C	2.5	C	C	2.5	C	C	2.6	C	C
Hull framing:												
Webs of web frames and stringers to: shell	3.	75	450	3.	75	352	3.	75	281	3.	75	234
face plate	3.	75	450	3.	75	433	3.	75	346	3.	75	288
Decks and supporting structure:												
Weather deck plating to shell	2.5	C	C	2.5	C	C	2.5	C	C	2.6	C	C
Other decks to shell and bulkheads	2.5	C	C	2.5	C	C	2.5	C	C	2.5	C	C
Webs of cantilevers to deck and to shell in way of root bracket	2.5	C	C	2.5	C	C	2.5	C	C	2.6	C	C
Webs of cantilevers to face plate	3.	75	357	3.	75	268	3.	75	214	3.	75	179
Girder webs to deck clear of end brackets	3.	75	450	3.	75	450	3.	75	450	3.	75	375
Girder webs to deck in way of end brackets	2.5	C	C	2.5	C	C	2.5	C	C	2.5	C	C
Web of girder to face flat	3.	75	450	3.	75	450	3.	75	450	3.	75	375

Pillars: fabricated	3.	75	450	3.	75	450	3.	75	450	3.	75	375
end connections	3.	FP	FP	4.	FP	FP	5.	FP	FP	6.	FP	FP
end connections tubular: full penetration	3.	FP	FP	4.	FP	FP	5.	FP	FP	6.	FP	FP
Girder web connections and brackets in way of pillar heads and heels	2.5	C	C	2.5	C	C	2.5	C	C	2.5	C	C
Bulkheads and tank construction												
Plane and corrugated watertight bulkhead boundary at bottom bilge, inner bottom,deck and connection to shell plate (where fitted)	3.	75	170	3.	75	128	3.	75	102	3.	75	85
Secondary members where acting as pillars	3.	75	450	3.	75	433	3.	75	346	3.	75	288
Non-watertight pillar bulkhead boundaries	3.	75	450	3.	75	433	3.	75	346	3.	75	288
Perforated flats and wash bulkhead boundaries	3.	75	450	3.	75	450	3.	75	450	3.	75	375
Deep tank horizontal boundaries at vertical corrugations: full penetration												
Structure in machinery space												
Centre girder to keel and inner bottom	3.	75	278	3.	75	208	3.	75	167	3.	75	139
Floors to centre girder in way of engine thrust bearer	3.	75	278	3.	75	208	3.	75	167	3.	75	139
Floors and girders to shell and inner bottom	3.	75	357	3.	75	268	3.	75	214	3.	75	179
Main engine foundation girders:												
to top plate :deep penetration												
to hull structure: deep penetration												
Floors to main engine foundation girders	3.	75	278	3.	75	208	3.	75	167	3.	75	139
Brackets to main engine foundation girders	3.	75	357	3.	75	268	3.	75	214	3.	75	179
Transverse and longitudinal framing to shell	3.	75	450	3.	75	433	3.	75	346	3.	75	288
Superstructures and deckhouses												
Connection of external bulkheads to deck 1st & 2nd tier erections	3.	75	221	3.	75	165	3.	75	132	3.	75	110
elsewhere	3.	75	357	3.	75	268	3.	75	214	3.	75	179
Internal bulkheads	3.	75	450	3.	75	433	3.	75	346	3.	75	288
Miscellaneous fittings and equipment												
Rings for manhole type covers, to deck or bulkhead	2.5	C	C	2.5	C	C	2.5	C	C	2.5	C	C
Frames of shell and weathertight bulkhead doors	2.5	C	C	2.5	C	C	2.5	C	C	2.5	C	C
Stiffening of doors	3.	75	357	3.	75	268	3.	75	214	3.	75	179
Ventilator, air pipes etc. coamings to deck: Load Line Position 1 & 2	2.5	C	C	2.5	C	C	2.5	C	C	2.5	C	C
elsewhere	3.	75	357	3.	75	268	3.	75	214	3.	75	179
Scuppers and discharges to deck	2.5	C	C	2.5	C	C	2.5	C	C	2.6	C	C
Masts, crane pedestals etc. to deck	2.5	C	C	2.5	C	C	2.5	C	C	2.6	C	C
Deck machinery seats to deck	2.5	C	C	2.5	C	C	2.5	C	C	2.5	C	C
Mooring equipment seats	2.5	C	C	2.5	C	C	2.5	C	C	2.5	C	C
Bulwark stays to deck	2.5	C	C	2.5	C	C	2.5	C	C	2.5	C	C
Bulwark attachment to deck	2.5	C	C	2.5	C	C	2.5	C	C	2.5	C	C
Guardrails, stanchions etc. to deck	3.	75	221	3.	75	165	3.	75	132	3.	75	110
Bilge keel ground bars to shell continuous fillet weld, a=>4 mm		n.v.t.		4.	C	C	4.	C	C	4.	C	C

Bilge keels to ground bar	a=>3 mm	3.	75	357	3.	75	268	3.	75	214	3.	75	179

Dimensions of fillets welds

f = weld factor (mm) a = throat thickness of fillet weld (mm)
d = distance between welds (mm) t = thinnest plate of joint (mm)
s = fillet weld length (mm) C = continuous

Dunste plaat van de verbinding t											las factor
8			10			12			15			
a	s	d	a	s	d	a	s	d	a	s	d	
2.8	C	C	3.5	C	C	4.2	C	C	5.3	C	C	0.34
3.	80	231	3.5	100	269	4.2	120	323	5.3	150	404	0.13
3.	80	300	3.5	100	350	4.2	120	420	5.3	150	525	0.10
2.8	C	C	3.5	C	C	4.2	C	C	5.3	C	C	0.13
2.8	C	C	3.5	C	C	4.2	C	C	5.3	C	C	0.21
3.	80	300	3.5	100	350	4.2	120	420	5.3	150	525	0.10
2.5	C	C	2.7	C	C	3.2	C	C	4.1	C	C	0.27
3.	80	111	3.5	100	130	4.2	120	156	5.3	150	194	0.27
3.	80	143	3.5	100	167	4.2	120	200	5.3	150	250	0.21
3.	80	143	3.5	100	167	4.2	120	200	5.3	150	250	0.21
3.	C	C	3.5	C	C	4.2	C	C	5.3	C	C	0.27
3.	80	231	3.5	100	269	4.2	120	323	5.3	150	404	0.13
3.5	C	C	4.4	C	C	5.3	C	C	6.6	C	C	0.44
3.	80	188	3.5	100	219	4.2	120	263	5.3	150	328	0.16
3.	80	231	3.5	100	269	4.2	120	323	5.3	150	404	0.13
3.5	C	C	4.4	C	C	5.3	C	C	6.6	C	C	0.44
2.5	C	C	2.5	C	C	2.5	C	C	3.2	C	C	0.21
3.5	C	C	4.4	C	C	5.3	C	C	6.6	C	C	0.44
3.	80	143	3.5	100	167	4.2	120	200	5.3	150	250	0.21
3.	80	300	3.5	100	350	4.2	120	420	5.3	150	525	0.10
2.5	C	C	2.5	C	C	2.5	C	C	3.2	C	C	0.21
3.	80	300	3.5	100	350	4.2	120	420	5.3	150	525	0.10

3.	80	300	3.5	100	350	4.2	120	420	5.3	150	525	0.10
8.	FP	FP	10.	FP	FP	12.	FP	FP	15.	FP	FP	0.34
8.	FP	FP	10.	FP	FP	12.	FP	FP	15.	FP	FP	
2.5	C	C	2.5	C	C	2.5	C	C	3.2	C	C	0.21
3.	80	68	3.5	100	80	4.2	120	95	5.3	150	119	0.44
3.	80	231	3.5	100	269	4.2	120	323	5.3	150	404	0.13
3.	80	231	3.5	100	269	4.2	120	323	5.3	150	404	0.13
3.	80	300	3.5	100	350	4.2	120	420	5.3	150	525	0.10
3.	80	111	3.5	100	130	4.2	120	156	5.3	150	194	0.27
3.	80	111	3.5	100	130	4.2	120	156	5.3	150	194	0.27
3.	80	143	3.5	100	167	4.2	120	200	5.3	150	250	0.21
3.	80	111	3.5	100	130	4.2	120	156	5.3	150	194	0.27
3.	80	143	3.5	100	167	4.2	120	200	5.3	150	250	0.21
3.	80	231	3.5	100	269	4.2	120	323	5.3	150	404	0.13
3.	80	88	3.5	100	103	4.2	120	124	5.3	150	154	0.34
3.	80	143	3.5	100	167	4.2	120	200	5.3	150	250	0.21
3.	80	231	3.5	100	269	4.2	120	323	5.3	150	404	0.13
2.7	C	C	3.4	C	C	4.1	C	C	5.1	C	C	0.34
2.7	C	C	3.4	C	C	4.1	C	C	5.1	C	C	0.34
3.	80	143	3.5	100	167	4.2	120	200	5.3	150	250	0.21
2.7	C	C	3.4	C	C	4.1	C	C	5.1	C	C	0.34
3.	80	143	3.5	100	167	4.2	120	200	5.3	150	250	0.21
3.5	C	C	4.4	C	C	5.3	C	C	6.6	C	C	0.44
3.5	C	C	4.4	C	C	5.3	C	C	6.6	C	C	0.44
2.5	C	C	2.5	C	C	2.5	C	C	3.2	C	C	0.21
2.5	C	C	2.5	C	C	2.5	C	C	3.2	C	C	0.21
2.5	C	C	2.5	C	C	2.5	C	C	3.2	C	C	0.21
2.7	C	C	3.4	C	C	4.1	C	C	5.1	C	C	0.34
3.	80	88	3.5	100	103	4.2	120	124	5.3	150	154	0.34
4.	C	C	4.	C	C	4.2	C	C	5.3	C	C	0.34

3.	80	143	3.5	100	167	4.2	120	200	5.3	150	250	0.21