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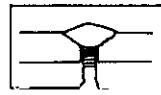
High Strength 0.1% and 0.2% C-10% Mn Steels with

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## 2.2 Experimental Methods

### 2.2.1 Fundamental experiments



Submerged-arc  
weld bead

Base plate and test  
specimens after welding

(F)

(h)

1

2

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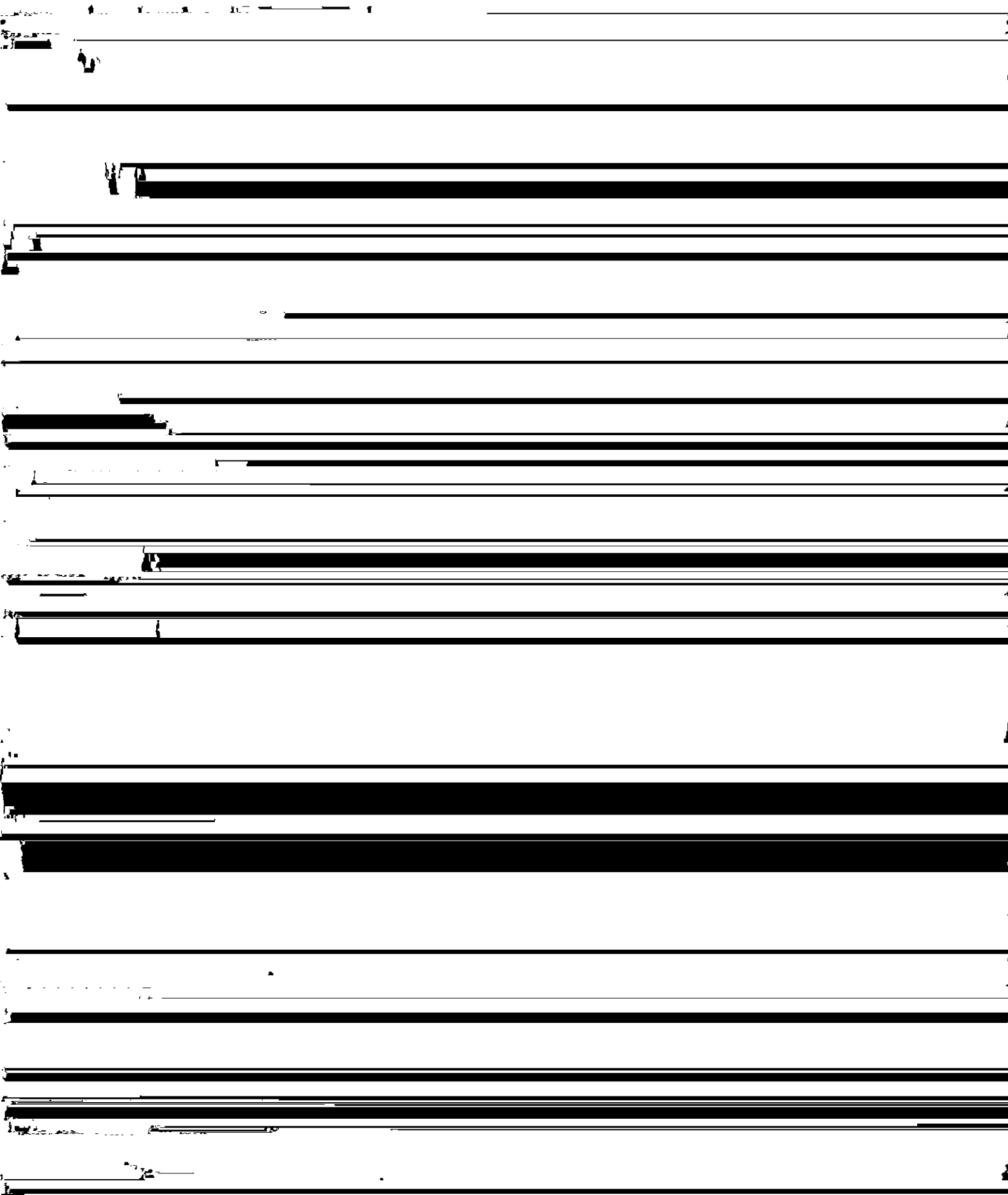
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bond together, showing smooth grain-boundary fracture



ture of M-C type and form precipitation-free zones combination of a reduction in impurity elements such

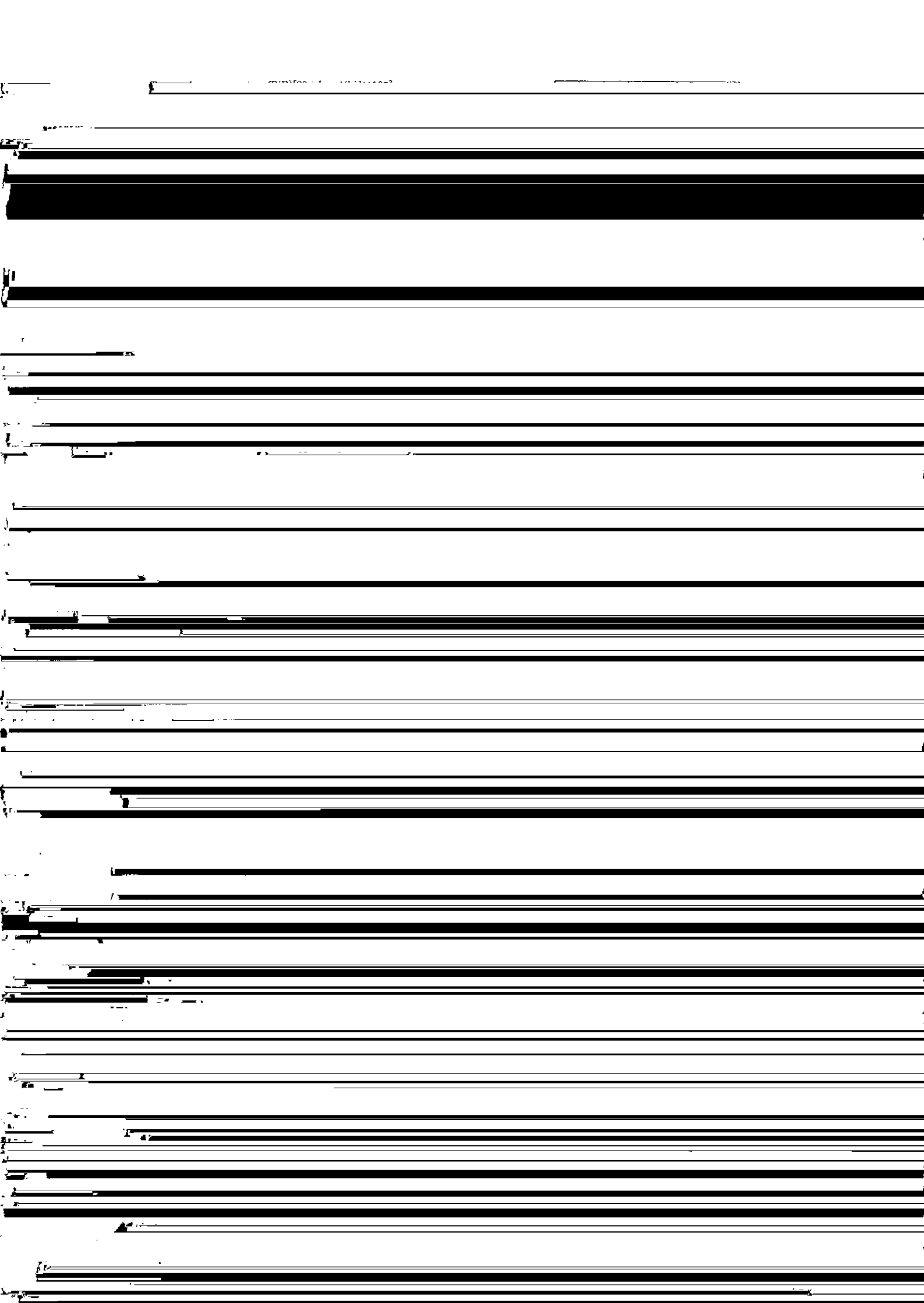






Table 5. Chemical compositions of weld metals.

Weld metal	Chemical composition, %					
	C	Mn	P	S	Si	Cr
Weld metal 1	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 2	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 3	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 4	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 5	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 6	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 7	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 8	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 9	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 10	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 11	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 12	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 13	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 14	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 15	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 16	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 17	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 18	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 19	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 20	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 21	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 22	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 23	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 24	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 25	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 26	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 27	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 28	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 29	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 30	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 31	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 32	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 33	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 34	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 35	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 36	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 37	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 38	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 39	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 40	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 41	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 42	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 43	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 44	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 45	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 46	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 47	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 48	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 49	0.05	0.02	0.005	0.002	0.01	0.01
Weld metal 50	0.05	0.02	0.005	0.002	0.01	0.01

Notes: C, Carbon; Mn, Manganese; P, Phosphorus; S, Sulfur; Si, Silicon; Cr, Chromium.

Weld metal 1: 0.05% C, 0.02% Mn, 0.005% P, 0.002% S, 0.01% Si, 0.01% Cr.

Weld metal 2: 0.05% C, 0.02% Mn, 0.005% P, 0.002% S, 0.01% Si, 0.01% Cr.

Weld metal 3: 0.05% C, 0.02% Mn, 0.005% P, 0.002% S, 0.01% Si, 0.01% Cr.

Weld metal 4: 0.05% C, 0.02% Mn, 0.005% P, 0.002% S, 0.01% Si, 0.01% Cr.

Weld metal 5: 0.05% C, 0.02% Mn, 0.005% P, 0.002% S, 0.01% Si, 0.01% Cr.

Weld metal 6: 0.05% C, 0.02% Mn, 0.005% P, 0.002% S, 0.01% Si, 0.01% Cr.

Weld metal 7: 0.05% C, 0.02% Mn, 0.005% P, 0.002% S, 0.01% Si, 0.01% Cr.

10<sup>1</sup>

Test temp.:  
482°C (900°F)

Strain rate:

PWHT	$\epsilon_{iR}$	$\epsilon_{pR}$	$\epsilon_{rR}$
650°C, 16 h	○	□	△
690°C, 24.5 h	●	■	▲

