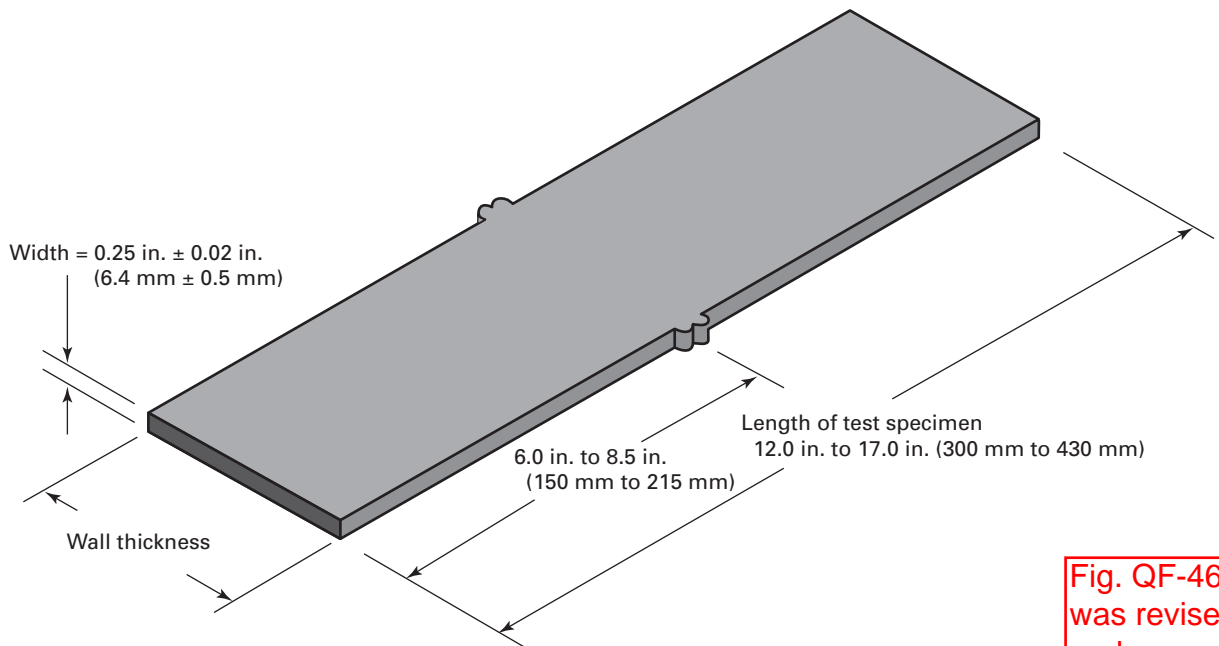
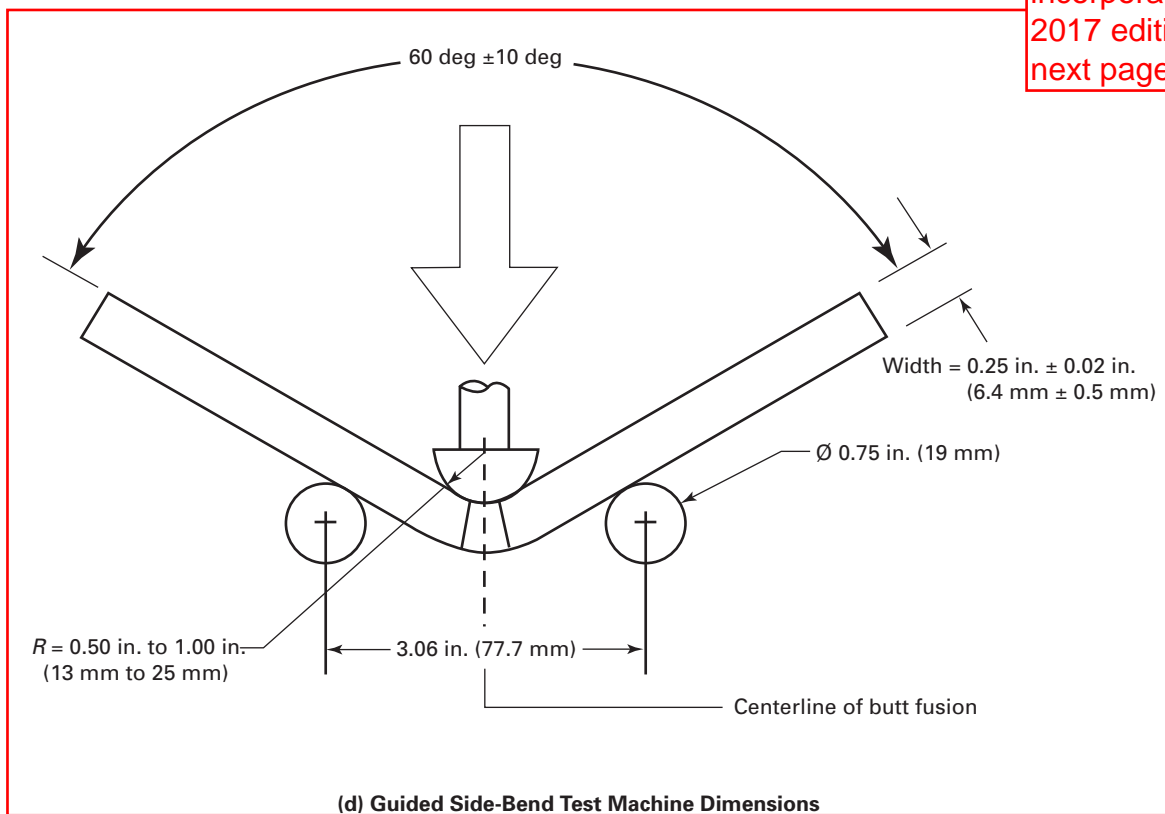


Figure QF-463
Bend Test Specimen Removal, Configuration, and Testing (Cont'd)



(c) Guided Side-Bend Test Specimen

Fig. QF-463(d) was revised under record# 13-467 and should have been incorporated in 2017 edition, see next pages



(d) Guided Side-Bend Test Machine Dimensions

Figure QF-463
Bend Test Specimen Removal, Configuration, and Testing (Cont'd)

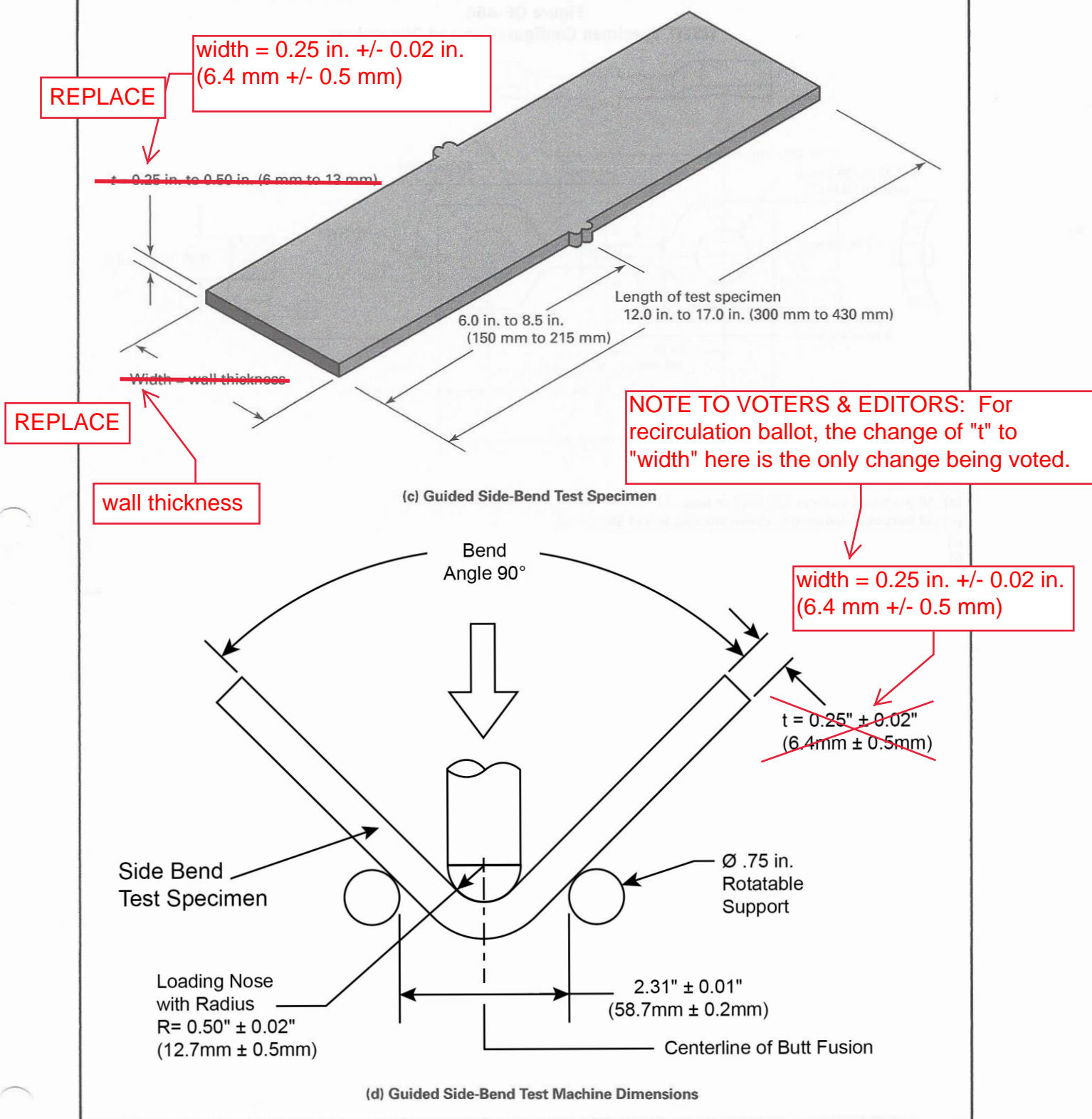
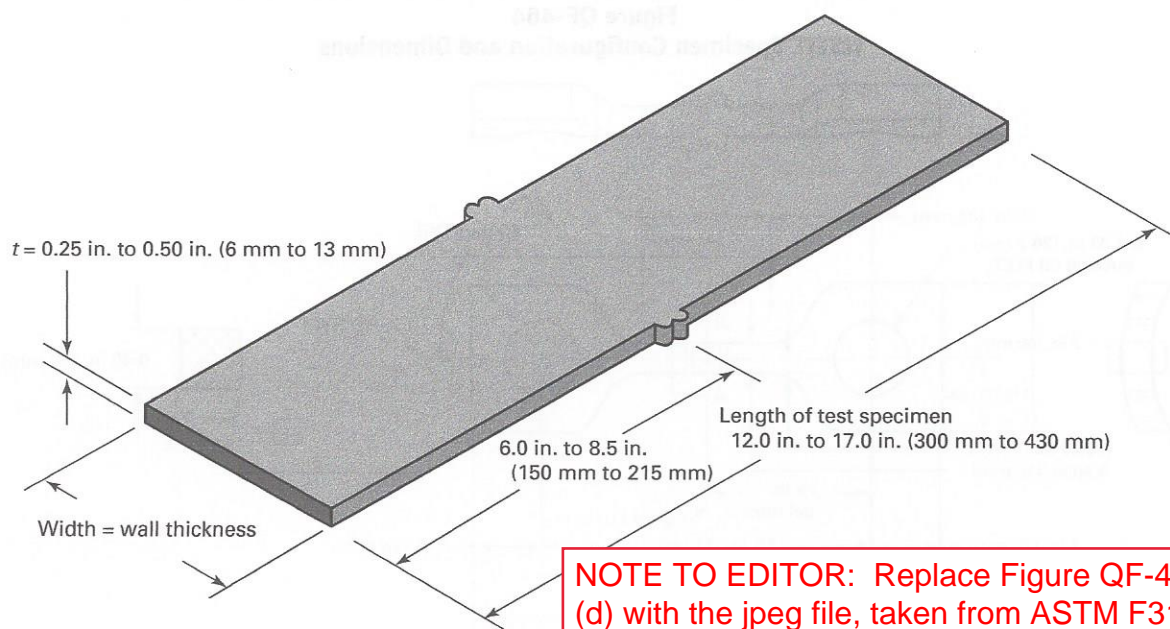
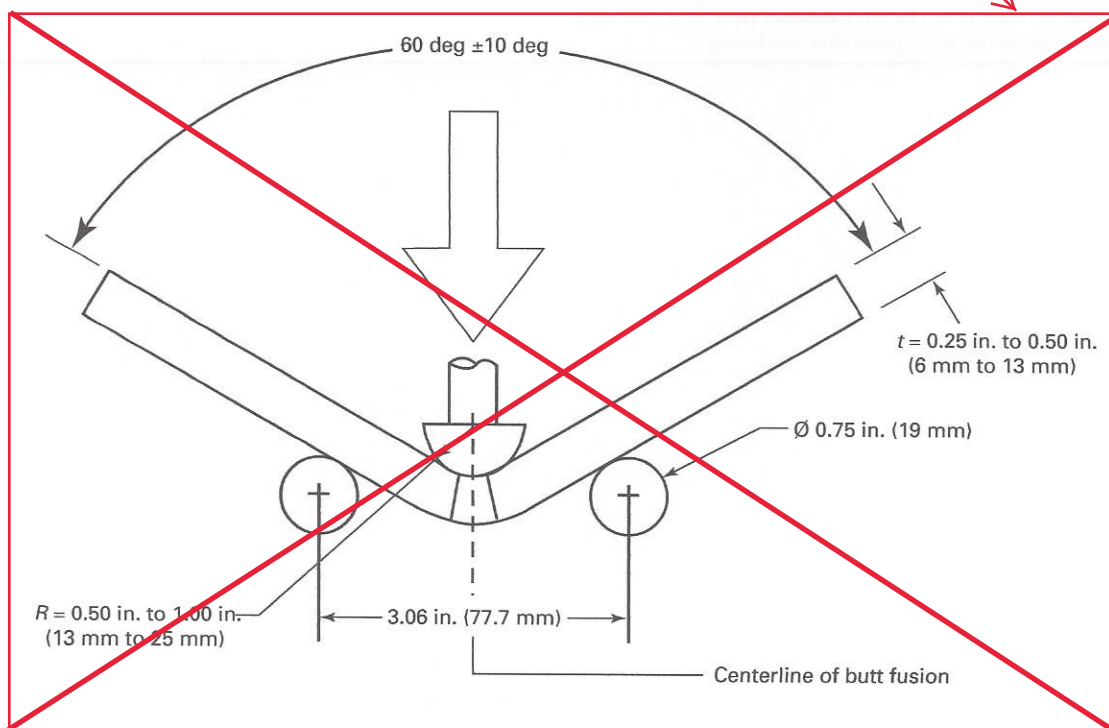


Figure QF-463
Bend Test Specimen Removal, Configuration, and Testing (Cont'd)



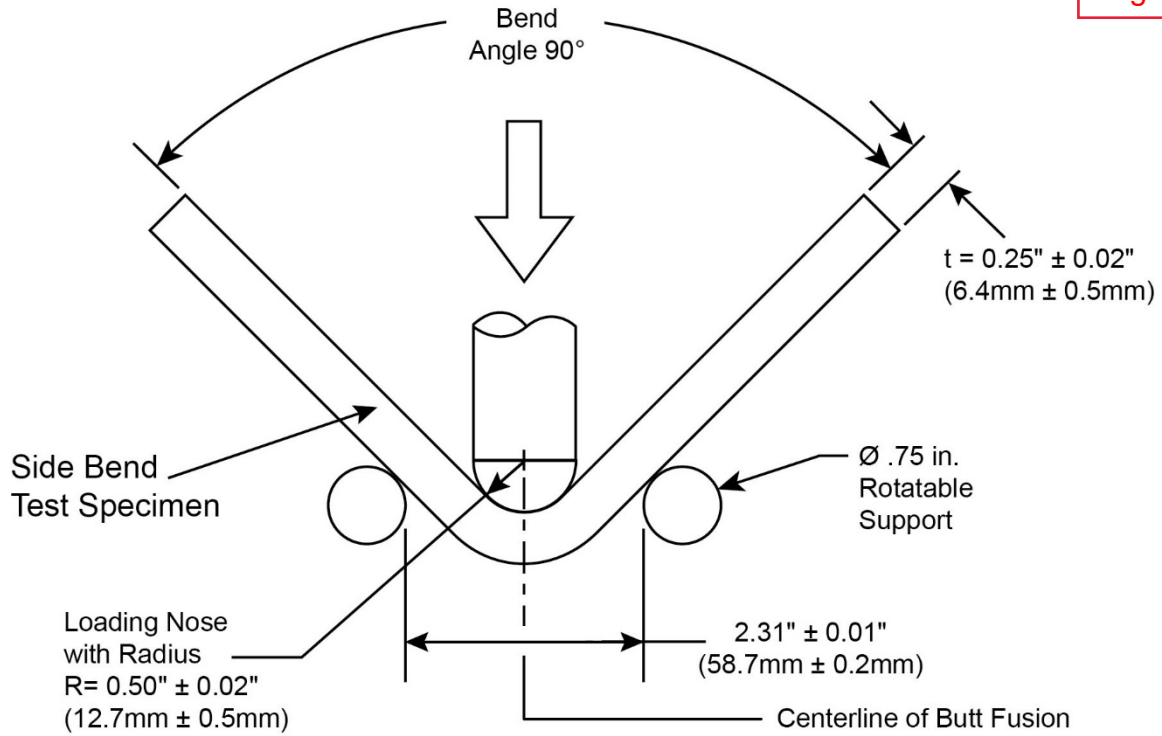
NOTE TO EDITOR: Replace Figure QF-463, illustration (d) with the jpeg file, taken from ASTM F3183, shown on page 4 of this handout.

(c) Guided Side-Bend Test Specimen



(d) Guided Side-Bend Test Machine Dimensions





QF-482(b) SUGGESTED FORMAT FOR ELECTROFUSION FUSING PROCEDURE SPECIFICATION (FPS or MEFPS)
 (See QF-201.3, Section IX, ASME Boiler and Pressure Vessel Code)

Company Name _____ By _____

Fusing Procedure Specification No. _____ Date _____

Revision No. _____ Date _____

 FPS qualification ☐ By testing ☐ MEFPS ☐ If qualified by testing, supporting PQR No.(s) _____

Joints (QF-402)
Details

Joint Design _____

Pipe End Cut max. out-of-square _____

Maximum Fit-up Gap _____

Max. Axial Misalignment _____

Max. out-of-roundness _____

Sketches, production drawings, joint symbols, or written description should show the general arrangement of the parts to be fused.

Where applicable, the details of the joint groove may be specified.

Materials (QF-403)

Fitting Specification _____ Classification _____ to Pipe Specification _____ Classification _____

Fitting Manufacturer _____ Pipe Size (diameter) _____ Pipe Wall Thickness _____

Thermal Conditions (QF-405)

Minimum material & fusing temperature _____ °F (°C) Maximum material and fusing temperature _____ °F (°C)

Nominal fusion time at minimum temp _____ Nominal fusion time at maximum temp _____

Minimum cool down time at min. temp _____ Minimum cool down time at max. temp _____

Fusion Voltage _____

Other _____

Equipment (QF-406)

Minimum Power Supply _____ (KVA) Processor Manufacturer _____ Model _____

Power Cord: Material _____ Max. length _____ ft (m) Min. Gage _____ Min. Amps _____

 Saddle Clamp Type _____ ☐ N/A

Other _____

Technique (QF-407)

Pre-scrape cleaning fluid _____ Post-scrape cleaning agent _____

Scraping Device _____ Pipe marker type _____

Other _____

QF-480 FORMS

FORM QF-482(a) Suggested Format for Butt-Fusing Procedure Specifications (FPS or SFPS)
(See QF-201.3, Section IX, ASME Boiler and Pressure Vessel Code)

Company Name _____ By _____
 Fusing Procedure Specification No. _____ Date _____
 Revision No. _____ Date _____
 FPS Qualification ☐ By testing ☐ SFPS If qualified by testing, supporting PQR No.(s) _____
 Fusing Process Type _____

Joints (QF-402)**Details**

Joint Type _____
 Pipe End Preparation _____
 Miter Joint Angle _____
 Pipe Surface Alignment _____

Sketches, production drawings, weld symbols, or written description should show the general arrangement of the parts to be fused. Where applicable, the details of the joint groove may be specified.

Sketches may be attached to illustrate joint design.

Materials (QF-403)

Specification _____ Classification _____ to Specification _____ Classification _____
 Pipe Size (Diameter) _____ Pipe Wall Thickness _____ Cross-Sectional Area _____
 Other _____

Position (QF-404)

Pipe Position _____
 Other _____

Thermal Conditions (QF-405)

Heater Surface Temperature Range _____
 Fusing Interfacial Pressure Range _____
 Drag Pressure Range _____ Butt-Fusing Pressure Range _____
 Melt Bead Size Range _____ Heater Plate Removal Time Range _____
 Cool-Down Time at Butt-Fusing Pressure Range _____

Equipment (QF-406)

Fusing Machine Manufacturer _____
 Data Acquisition Used ☐ Yes ☐ No Data Acquisition Machine Manufacturer _____
 Hydraulic Extension Hose Length _____

Technique (QF-407)

Location ☐ Fabrication Shop ☐ Field

(07/15)

TABLE 1
CHEMICAL COMPOSITION REQUIREMENTS FOR SOLID ELECTRODES

Electrode Classification	UNS Number ⁽³⁾	wt. percent ^{(1) (2)}						
		C	Mn	Si	S	P	Cu ⁽⁴⁾	Ti
Low-Manganese Electrodes								
EL8	K01008	0.10	0.25/0.60	0.07	0.030	0.030	0.35	—
EL8K	K01009	0.10	0.25/0.60	0.10/0.25	0.030	0.030	0.35	—
EL12	K01012	0.04/0.14	0.25/0.60	0.10	0.030	0.030	0.35	—
Medium-Manganese Electrodes								
EM11K	K01111	0.07/0.15	1.00/1.50	0.65/0.85	0.030	0.025	0.35	—
EM12	K01112	0.06/0.15	0.80/1.25	0.10	0.030	0.030	0.35	—
EM12K	K01113	0.05/0.15	0.80/1.25	0.10/0.35	0.030	0.030	0.35	—
EM13K	K01313	0.06/0.16	0.90/1.40	0.35/0.75	0.030	0.030	0.35	—
EM14K	K01314	0.06/0.19	0.90/1.40	0.35/0.75	0.025	0.025	0.35	0.03/0.17
EM15K	K01515	0.10/0.20	0.80/1.25	0.10/0.35	0.030	0.030	0.35	—
High-Manganese Electrodes								
EH10K	K01210	0.07/0.15	1.30/1.70	0.05/0.25	0.025	0.025	0.35	—
EH11K	K11140	0.07/0.15	1.40/1.85	0.80/1.15	0.030	0.030	0.35	—
EH12K	K01213	0.06/0.15	1.50/2.00	0.25/0.65	0.025	0.025	0.35	—
EH14	K11585	0.10/0.20	1.70/2.20	0.10	0.030	0.030	0.35	—
EG				Not Specified				

Replace with
0.20/0.65

ANSI/AWS A5.17/A5.17M-97 (R2007)

Table 1
Chemical Composition Requirements for Solid Electrodes

		wt. percent ^{a,b}						
Electrode Classification	UNS Number ^c	C	Mn	Si	S	P	Cu ^d	Ti
Low-Manganese Electrodes								
EL8	K01008	0.10	0.25–0.60	0.07	0.030	0.030	0.35	—
EL8K	K01009	0.10	0.25–0.60	0.10–0.25	0.030	0.030	0.35	—
EL12	K01012	0.04–0.14	0.25–0.60	0.10	0.030	0.030	0.35	—
Medium-Manganese Electrodes								
EM11K	K01111	0.07–0.15	1.00–1.50	0.65–0.85	0.030	0.025	0.35	—
EM12	K01112	0.06–0.15	0.80–1.25	0.10	0.030	0.030	0.35	—
EM12K	K01113	0.05–0.15	0.80–1.25	0.10–0.35	0.030	0.030	0.35	—
EM13K	K01313	0.06–0.16	0.90–1.40	0.35–0.75	0.030	0.030	0.35	—
EM14K	K01314	0.06–0.19	0.90–1.40	0.35–0.75	0.025	0.025	0.35	0.03–0.17
EM15K	K01515	0.10–0.20	0.80–1.25	0.10–0.35	0.030	0.030	0.35	—
High-Manganese Electrodes								
EH10K	K01210	0.07–0.15	1.30–1.70	0.05–0.25	0.025	0.025	0.35	—
EH11K	K11140	0.06–0.15	1.40–1.85	0.80–1.15	0.030	0.030	0.35	—
EH12K	K01213	0.06–0.15	1.50–2.00	0.20–0.65	0.025	0.025	0.35	—
EH14	K11585	0.10–0.20	1.70–2.20	0.10	0.030	0.030	0.35	—
EG	Not Specified							