FAMILIARC™ DW-A50

(AWS A5.20 E71T-1M)

FAMILIARC™ DW-A50: the best choice for Ar+CO_2 gas mixture shielding in all-position welding of mild steel and 490MPa high strength steel.

European and American Practice Triggered the Birth of FAMILIARC™ DW-A50

The traditional use of Ar+CO_2 gas mixture shielding in Europe and the United States triggered the development of FAMILIARC™ DW-A50. Fabricators there have preferred the use of 75-85%Ar+25-15%CO_2 gas mixtures in gas metal arc welding in order to minimize the generation of spatter. These demands spurred Kobe Steel to develop a flux-cored wire, FAMILIARC™ DW-A50, specifically suited for Ar+CO_2 gas mixture shielding.

What Makes FAMILIARC™ DW-A50 a First-Class, Titania-Base, Flux-Cored wire?

The outstanding features of FAMILIARC™ DW-A50 when used with Ar+CO_2 gas mixture shielding are:

(1) A wide range of proper welding currents, as shown in Fig. 1, which enables the selection of a versatile current suitable for all-position welding without position-by-position re-adjustment.

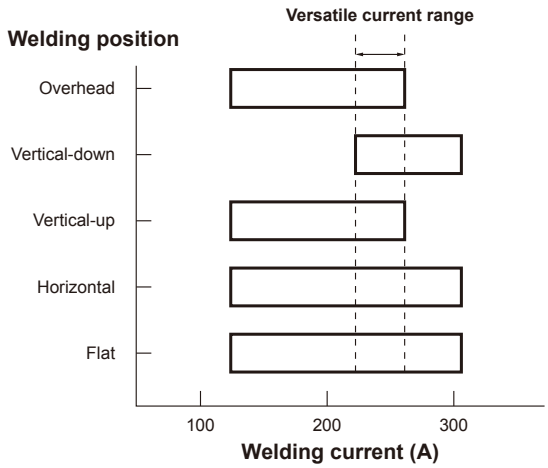


Fig. 1 — Proper welding current ranges and a versatile current range for all-position welding (FAMILIARC™ DW-A50, 1.2 mmØ)

(2) Higher deposition efficiency (87-90%) and deposition rates due to a higher yield of deposited metal with less spatter-loss. Fig. 2 shows typical deposition rates of FAMILIARC™ DW-A50.

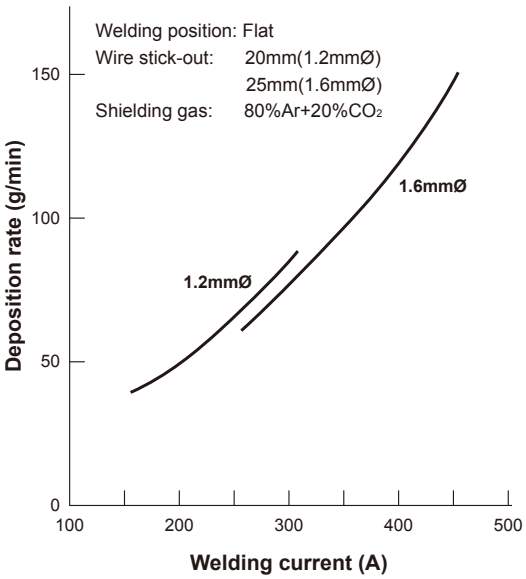
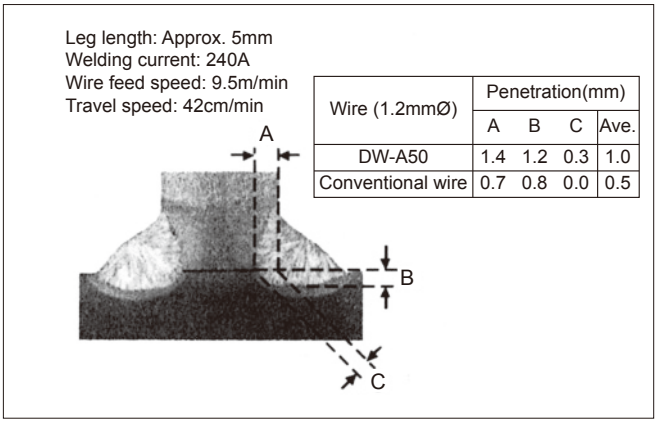


Fig. 2 — Typical deposition rates of FAMILIARC™ DW-A50 as a function of welding currents

(3) Superb usability with gentle arcing, less spatter generation, uniform bead appearance, and easy-to-remove slag.

(4) Less welding fume generation than that of conventional titania-base flux-cored wire

(5) Deeper penetration — Fig. 3.



Wire (1.2mmØ)	Penetration(mm)			
	A	B	C	Ave.
DW-A50	1.4	1.2	0.3	1.0
Conventional wire	0.7	0.8	0.0	0.5

Fig. 3 — Penetration test results of FAMILIARC™ DW-A50 in horizontal fillet welding with 80%Ar+20%CO_2 gas shielding

FAMILIARC™ DW-A50 Shines in a Variety of Applications

The application of FAMILIARC™ DW-A50 is almost limitless as long as the base metals are mild steel and 490MPa high strength steel, and the shielding gases are Ar+CO_2 gas mixtures. Nowadays FAMILIARC™ DW-A50 is used in various applications in such industries as shipbuilding, construction, machinery fabrication, and civil engineering, particularly in Europe and the United States.

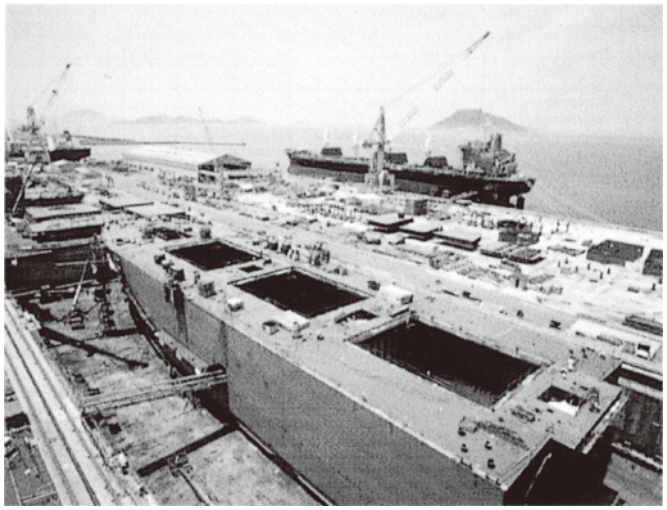


Fig. 4 — FAMILIARC™ DW-A50 contributes to highly efficient welding in the shipbuilding industry

How to Use FAMILIARC™ DW-A50

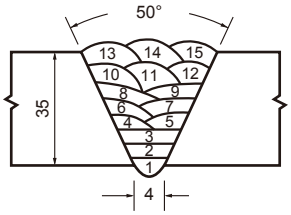
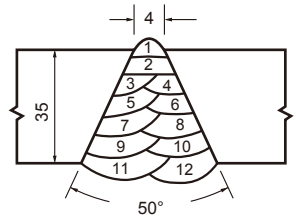
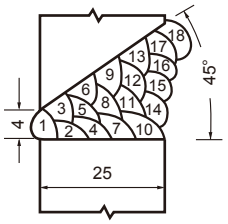
The integrity of welds depends greatly on how the welding consumables are used. In order to get the best welding results, care should be taken in the following ways.

(1) In flat butt welding the back-step technique should be used so as to get a deeper weld penetration. In horizontal and overhead position welding the straight-run technique should be used for better bead appearance.

(2) In vertical-down fillet welding the straight-run technique should be used at a faster welding speed in order to get a deeper weld penetration and to avoid slag inclusions.

(3) In horizontal fillet welding of primer-coated steel plates the welding speed should be lower than that for bare steel plates in order to prevent the porosity.

(4) In one-side welding of the root passes lower amperage and voltage should be used so as to avoid hot cracking. In case one-side welding is interrupted — the weld crater is remaining in the root of the-groove — the crater should be gouged off before being joined with a new bead. Gouging will remove the cracks and the shrinkage cavity that may have left in the bead's crater. Fig. 5 shows examples of welding procedures including those for one-side welding of the root passes.

Welding position	Plate thickness(mm), Joint preparation, and pass details	Welding parameters
Flat		Amp. and volt : 1st pass: 200A × 23V 2nd to cover pass: 280A × 29V Heat input : 1st pass: 15.2 kJ/cm 2nd to cover pass: Ave. 22.6 kJ/cm
Vertical-up		Amp. and volt : 1st pass: 200A × 24V 2nd to cover pass: 230A × 26V Heat input : 1st pass: 29.6 kJ/cm 2nd to cover pass: Ave. 27.7 kJ/cm
Horizontal		Amp. and volt : 1st pass: 200A × 23V 2nd to cover pass: 280A × 29V Heat input : 1st pass: 20.1 kJ/cm 2nd to cover pass: Ave. 14.7 kJ/cm

Note: (1) Wire size: 1.2 mmØ
(2) Shielding gas: 80%Ar+20%CO_2, 25 l/min
(3) Wire stick-out: 20-25 mm
(4) Power source polarity: DC-EP
(5) Type of base metal: ABS Gr. A32D
(6) Preheat temp: Room temp.
(7) Interpass temp: 100-150°C
(8) Backing material: FBB-3

Fig. 5 — Examples of welding procedures including those of one-side welding for the root passes using the FBB process