

ABSTRACT

Provided are an electrogas arc welding method and an electrogas arc welding apparatus that can efficiently discharge slag.

A welding wire 5 in use is a flux-cored wire that has a flux filled in a steel outer sheath, and has the composition that contains C, Si, Mn, Mo, Ti, and SiO₂ in specific amounts, and Al, S, P, TiO₂, and Al₂O₃ in limited specific amounts or less, with the balance being Fe and inevitable impurities while satisfying the equation (A) below. The sliding copper shoe 2 has a trench at its surface in contact with a groove, the trench having a curvature. When a is a width of the groove, a trench width W is in a range of (1.1 × a) to (2.5 × a) mm; the trench depth D is in a range of 0.5 to 5.5 mm; and a ratio (W/D) of the trench width W to the trench depth D is in a range of 5.0 to 80.0. An electrogas arc welding is performed with a feed speed of the welding wire 5 set constant by controlling a speed of raising a welding torch 4 based on welding current such that a protruding length of the welding wire 5 is set constant.

$$1.0 \leq ([\text{SiO}_2] + 2.1 \times [\text{Si}]) / ([\text{Al}_2\text{O}_3] + 1.9 \times [\text{Al}] + [\text{TiO}_2] + 1.7 \times [\text{Ti}]) \quad (\text{A})$$