

ABSTRACT

To provide a flux for submerged arc welding that has good welding workability and can reduce the moisture-absorption amount of the flux and the diffusion hydrogen content in a weld metal, even in the use of either an alternating current or a direct current welding power source.

The flux for submerged arc welding is set at the composition including: MgO: 25 to 35% by mass; F in terms of CaF₂: 15 to 35% by mass; Al₂O₃: 10 to 25% by mass; SiO₂: 10 to 20% by mass; a total of at least one or more of Na in terms of Na₂O, K in terms of K₂O and Li in terms of Li₂O: 0.5 to 6.5% by mass; Fe in terms of FeO: 0.5 to 5% by mass; TiO₂: 1 to 5% by mass; CaO: 6% by mass or less (including 0% by mass); Mn in terms of MnO: less than 2.0% by mass (including 0% by mass); water-soluble SiO₂: 1.0% by mass or less (including 0% by mass); water-soluble Na₂O: 1.0% by mass or less (including 0% by mass); and water-soluble K₂O: 0.8% by mass or less (including 0% by mass), wherein a C content is 0.2% by mass or less (including 0% by mass), and the flux satisfies the following numerical expression (I), where [MgO] is the MgO content, [Al₂O₃] is the Al₂O₃ content, [CaF₂] is a content as the F in terms of CaF₂, and [TiO₂] is the TiO₂ content.

$$0.50 \leq \frac{[MgO]}{[Al_2O_3] + [CaF_2] + [TiO_2]} \leq 1.10 \quad \cdot \cdot \cdot \quad (I)$$