CLAIMS

1. A flux for submerged arc welding, comprising:

Al_2O_3: 15 to 35% by mass;

SiO_2: 10 to 30% by mass;

MgO: 10 to 25% by mass;

F (in terms of CaF_2): 10 to 25% by mass;

Mn (in terms of MnO): 3 to 20% by mass;

Na (in terms of Na_2O) and/or K (in terms of K_2O): 0.5 to 4.5% by mass in total;

Fe (in terms of FeO): 0.5 to 8% by mass; and

TiO_2: 1 to 8% by mass, wherein

a C content is restricted to 0.2% by mass or less,

a CaO content is restricted to 6% by mass or less,

a water-soluble SiO_2 content is restricted to 0.8% by mass or less, and

the flux satisfies the following formula (I) and formula (II):

$$0.2 \leq [MgO]/([Al_2O_3] + [MnO]) \leq 0.8 \quad (I)$$

$$0.2 \leq [MgO]/([Al_2O_3] + [MnO] + [TiO_2]) \leq 0.8 \quad (II)$$

where $[Al_2O_3]$ is an Al_2O_3 content, [MgO] is an MgO content, [MnO] is an Mn content (in terms of MnO), and $[TiO_2]$ is a TiO_2 content.

2. A method of manufacturing the flux for submerged arc welding according to claim 1, wherein the flux is sintered at a temperature of 800°C or higher.