

Abstract

A duplex stainless steel having excellent pitting resistance and weldability and particularly a duplex stainless steel which does not form minute intermetallic compounds even in a weld heat affected zone is provided.

It has a chemical composition comprising C: at most 0.03%, Si: at most 1.0%, Mn: at most 1.5%, P: at most 0.040%, S: at most 0.008%, Cr: 23.0 - 27.0%, Mo: 2.0 - 4.0%, Ni: 5.0 - 9.0%, W: greater than 1.5% up to 5.0%, N : 0.24 - 0.35%, and a remainder of Fe and impurities and satisfying the relationships

PREW = Cr + 3.3(Mo + 0.5W) + 16N is at least 40 and

$$\text{Mo} + 1.1\text{Ni} \leq 12.5$$
$$\text{Mo} - 0.8\text{Ni} \leq -1.6$$

wherein the number of coarse inclusions having the following definition observed in a cross section is at most 10 per mm².

Here, coarse inclusions are defined as inclusions containing at least 20 mass % of Al and having a major diameter of at least 5 micrometers.