INTISARI

Aluminium paduan banyak digunakan untuk manufaktur kapal bagian interior dan lambung pada kapal berukuran kecil *(boat)*. Aluminium paduan seri AA5083 H116 memiliki keunggulan kekuatan tarik sedang, ketahanan korosi dan sifat mampu las yang baik. Pada penelitian ini pelat aluminium paduan AA 5083 H116 dilakukan penyambungan dengan proses las Tungsten Inert Gas (TIG). Parameter yang digunakan yaitu pengelasan dengan *sequence one side* dan *double side*, arus las 53 A dan 80 A dan penambahan *purging gas* dan tanpa *purging gas* selama proses pengelasan. Spesimen hasil pengelasan dilakukan pegujian meliputi visual, penetran, uji tarik, uji kekerasan, uji mikro struktur dan uji korosi. Hasil pengujian menunjukkan nilai kekuatan tarik dan kekerasan yang paling tinggi yaitu pada sambungan las dengan arus las 53 A *one side welding* dan pengelasan tanpa penambahan *purging gas*. Hasil pengujian korosi menunjukkan laju korosi paling rendah pada spesimen 53OSP.

Kata Kunci: Aluminium paduan AA 5083, *welding, tungsten inert gas* (TIG), *purging gas, double side welding*

ABSTRACT

Aluminium alloys are widely used for the interior and the hull on some kind of ship. Aluminium alloy 5083 H116 has a good mechanical properties such as: moderately high strength, outstanding corrosion resistance in salt water and well welding ability. In the present study, aluminium alloy AA 5083 H116 plates were joined by tungsten inert gas (TIG) process by single and double sided welding. The parameters used in this study were welding with one-sided and double-side sequences, 53 A and 80 A welding currents, and the addition of purging gas and without purging gas during the welding process. The welded joints were tested including visual, dye penetrant, tensile, hardness, microstructure, and corrosion tests. The results showed that the highest tensile strength and the highest hardness value were found in the welding joint with 53 A welding current, one side welding, and without adding the purging gas. The corrosion test results showed that the lowest corrosion rate were found in the 53OSP specimen.

Keywords: Aluminum alloy AA 5083, welding, tungsten inert gas, purging, double side welding