

# THE INFLUENCE OF DURATION IN PRE WELDING OXIDATION USING GMAW IN ALUMINIUM 5083 TO THE WELDING QUALITY

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## Abstract

The experiment is done by keeping material 5083 in open air (atmosphere) room after cleaning with variance of time zero, five and ten days. After specimen A has been cleaned and then welded (at zero days), for specimen B welding was applied after five days and 10 days after cleaning for specimen C. Welding process was done by using weld bead 1-G position and there was no cleaning process on the weld slot. Result of those experiments was tested by radiography, metallographic, and hardness test. From experiment was known that after welding process black smoke/soot and coarse grained spot appeared on the weld surface, and inherently become bigger and larger. Microstructure on welding material has bigger coarse-grained. In welding material number of particles  $Mg_2Al_3$  based on micro photograph for specimen A, B, and C are 12.6%, 7.2% and 5.1%. And for particles  $(Fe, Mn)_3SiAl$ , the result are 9.3%, 5.8% and 5.5%. While for  $Mg_2Si$  the amount of particles are 6.6%, 4.5% and 4.3%. From macro photograph was known that the amount of penetration from specimen A, B and C are 30%, 70% and 85% from the thickness. Width of weld bead for each specimens are 9.34mm, 12.03mm and 12.19mm. HAZ distributions for each specimen are 72 mm<sup>2</sup>, 90 mm<sup>2</sup> and 122.7 mm<sup>2</sup>. From vickers test was known that hardness distribution in welding material for specimen A, B and C are 112 HV, 119 HV and 162 HV.

**Key words:** Aluminum 5083,  $Al_2O_3$ , weld bead, GMAW, radiography, metallography, and Vickers test.