Transformasi austenit - ferit dengan variasi derajat deformasi dan pengaruhnya terhadap laju korosi baja HSLA 0,029% Nb

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Abstrak

High Strength Low Alloy Steel is highly used in marine environment. Highly aggressive attack from cl- ions plus continuously exposure from oxygen worse its condition. Reheated micro alloyed steel is deformed in 30%, 40% , and 50% rolling deformation, resulting varieties corrosion rate depend on its deformation when it is exposed in chloride environment. Austenite prior grain diameter in its sample also varieties. Effect of strain induced Nb (CN) precipitation also give varieties result on its ferrite grain diameter. Approaching in corrosion rate is from its corrosion thermodynamic especially in free energy theory. Where grain boundaries free energy is high, so if number of grain boundaries increased it is also increasing free energy of sample. Analysis is in observation effect of grain diameter and number of grain boundaries on its corrosion rate. Knowing that giving varieties increase deformation will decreasing its ferrite and austenite grain diameter. Method that is used to represents marine environment is salt spray method using 3.5% Sodium Chloride. Experiments is held in 48 hours and it is repeat 3 times. Another approach that is using is, approaching in free energy theory where it is connect with its potential after deformation. Corrosion rate results is match with free energy theory, where with the increasing of deformation degree so the corrosion rate will be increase. It is match with its free energy number when the grain size is decrease, number of corrosion potential will show the corrosion resistance it is low.