

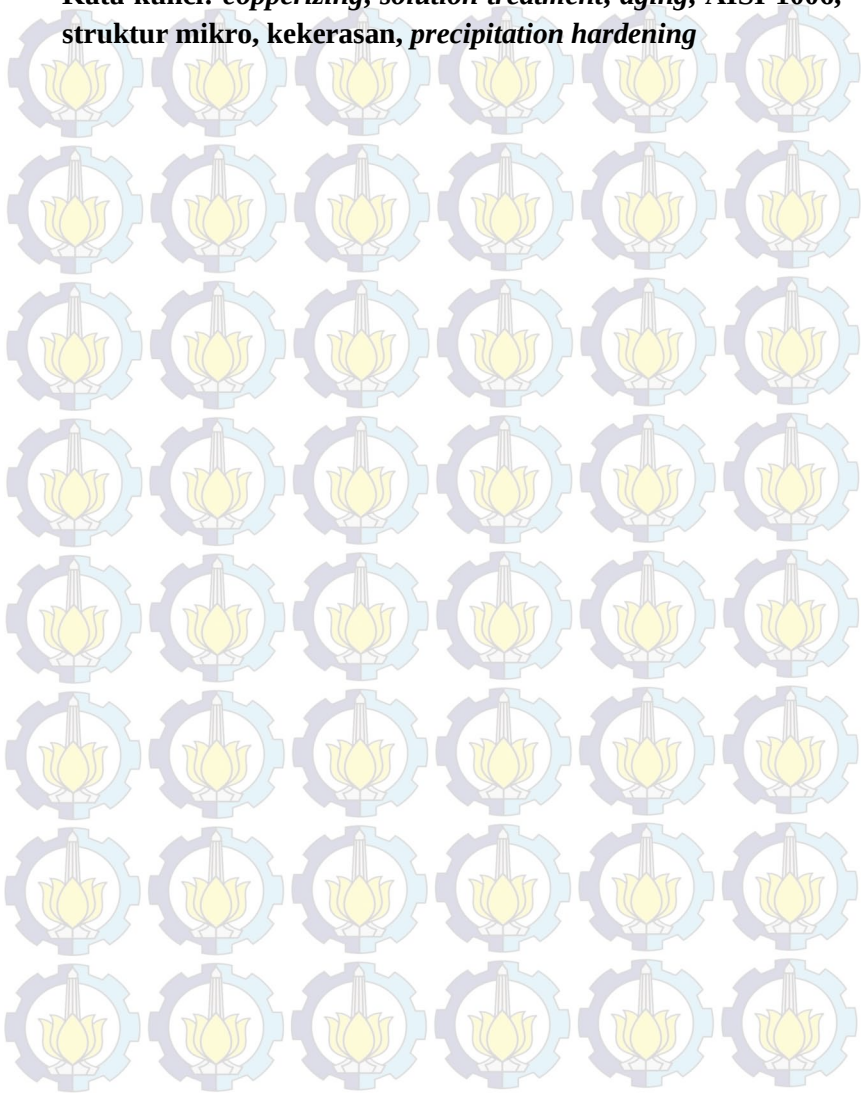
PENGARUH TEMPERATUR SOLUTION TREATMENT DAN AGING TERHADAP STRUKTUR MIKRO DAN KEKERASAN COPPERIZED-AISI 1006

Nama Mahasiswa : Widia Anggia Vicky
NRP : 2712100007
Jurusan : Teknik Material dan Metalurgi
Dosen Pembimbing : Sutarsis, ST., M.Sc.
Co-Pembimbing : Hariyati P., S.Si., M.Si.

Abstrak

Sebagai salah satu unsur paduan yang digunakan pada baja karbon rendah, tembaga dapat meningkatkan kekuatan tanpa menurunkan keuletan secara signifikan. Tembaga meningkatkan kekuatan pada baja dengan mekanisme penguatan secara precipitation hardening. Pemaduan tembaga dan baja AISI 1006 pada penelitian ini dilakukan dengan mencelupkan baja AISI 1006 yang telah di-pre-heat ke dalam tembaga cair. Selanjutnya dilakukan precipitation hardening dengan variasi pada temperatur solution treatment dan aging. Dari hasil penelitian ini didapatkan bahwa temperatur solution treatment dan aging tidak mempengaruhi fasa yang terbentuk pada copperized-AISI 1006, yaitu tetap berupa α -ferit. Kenaikan temperatur solution treatment sebanding dengan kenaikan diameter rata-rata butir copperized-AISI 1006 yang berpengaruh terhadap turunnya nilai kekerasan. Sementara itu, temperatur aging 450°C menghasilkan diameter butir rata-rata paling kecil dibanding temperatur aging yang lain, yaitu sebesar 49,23 μm dan 50,26 μm untuk sampel yang sebelumnya di-solution treatment 800 dan 900°C. Sebagai akibatnya, copperized-AISI 1006 dengan temperatur aging 450°C menghasilkan kekerasan tertinggi dibanding temperatur aging yang lain, yaitu 119, 47 VHN dan 115,75 VHN untuk sampel yang sebelumnya di-solution treatment 800 dan 900°C.

Kata kunci: *copperizing, solution treatment, aging, AISI 1006, struktur mikro, kekerasan, precipitation hardening*



EFFECTS OF SOLUTION TREATMENT AND AGING TEMPERATURE ON MICROSTRUCTURE AND HARDNESS OF COPPERIZED-AISI 1006

Name : Widia Anggia Vicky
NRP : 2712100007
Department : Teknik Material dan Metalurgi
Advisor : Sutarsis, ST., M.Sc.
Co-Advisor : Hariyati P., S.Si., M.Si.

Abstract

As one of the alloying elements used in low carbon steel, copper can increase the strength of steel without lowering its ductility significantly. Copper increases the strength of steel by precipitation hardening. In this research, copper and AISI 1006 steel were alloyed by immersing the pre-heated steel into molten copper. After the immersion process, the precipitation hardening was performed with variations in temperature of solution treatment and aging. From the results of this study, it was found that the solution treatment temperature did not affect the phase of copperized-AISI 1006, but the aging process affected the formation of secondary phase. The increase of solution treatment temperature is proportional to the increase of copperized-AISI 1006 average grain diameter. In contrast, the use of aging temperature of 450°C obtained the smallest average grain diameter than others, in the amount of 49,23 μm and 50,26 μm for sample that previously being solution treatment at 800 and 900°C. Besides, the increase of the solution treatment temperature is inversely proportional to the hardness number of copperized-AISI 1006. However, the aging temperature of 450°C obtained the highest hardness number than other aging temperature, in the amount of 119,47 VHN and 115,75 VHN for sample that previously being solution treatment at 800 and 900°C.

Keyword: *copperizing, solution treatment, aging, AISI 1006, microstructure, hardness, precipitation hardening*

