

Troubleshooting Problems in Precipitation Hardening

Problem	Diagnosis
Low hardness	Solution temperature too low; solution quench delayed or cooling rate too low; aging temperature too low and/or time too short (underaging) or temperature too high and/or time too long (overaging)
Low hardness; low conductivity	Inadequate solution treatment and/or underaging
Low hardness; high conductivity	Inadequate solution treatment and/or overaging
High hardness; low conductivity	Underaging; contaminated material

Source: *ASM Handbook, Vol. 4, Heat Treating*, ASM International, 1991, p 886