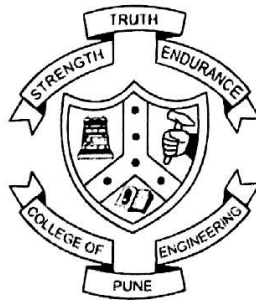


A
Dissertation Report
ON
**Cryogenic Treatment and Standardization of Soft Tempering
Temperatures for High Speed Tool Steels**
Submitted in partial fulfilment of the requirements of the degree of
Master of Technology
In
Process Metallurgy
Submitted By
HONDROV GANGADHAR
(MIS No.: 121527009)
Under the Guidance of
Dr. N.B. DHOKEY
Department of Metallurgy and Materials Science



DEPARTMENT OF METALLURGY AND MATERIALS SCIENCE
COLLEGE OF ENGINEERING PUNE
(An Autonomous Institute of Govt. of Maharashtra)
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Abstract

In the present work, dimensional distortion and standardization of soft tempering temperatures were studied for the selected grades of high speed steels. M2 and M35 specimens were hardened at 1200 °C, followed by triple tempering at 555 °C in a muffle furnace. These two types of steels were then cryotreated at -185 °C for 16 h cryosoaking period followed by soft tempering at 50°C, 100°C, 150°C, 200°C and 250°C. The treated samples were measured for dimensional distortion and characterized for hardness and wear rate. Over the conventional treatment, the cryogenic treated M2 and M35 showed reduction in wear rate at the transition point by 93%. The shift in wear transition was noted with increasing cobalt content and wear regimes were identified followed by discussion on wear mechanism.

Keywords: Cryosoaking period; Hardness; Grain size; Wear transition.