

**INVESTIGATION OF APPLICABILITY OF ALTERNATIVE AQUEOUS SOLUTION BATH
PATENTING HEAT TREATMENT TO CONVENTIONAL LEAD BATH METHOD****OZDEMIR Eyup***Guney Celik, Adana, Turkey***Abstract**

Eutectoid or high carbon steel wire rods are widely used for the production of steel cable, metal cord, springs, and other wire products. In this regard, the main microstructural objective is to obtain pearlite with fine interlamellar spacing and also to control the mechanical strength. The best mechanical properties and wire drawability (diameter reduction) capability are achieved by traditional lead patenting process at the temperature range of 480–600°C. However, due to some disadvantages such as low safety, environmental pollution and high investment costs, the application of this heat treatment method has been limited. In this research; the cooling behavior of 0.72 % carbon steel wire upon patenting using a lead bath and polymeric aqueous solutions were investigated. The experimental results showed that the high-carbon steel wire can complete the fine pearlite transformation in the aqueous solution, but the transformation temperature is higher and the transformation time is longer than that observed for lead patenting because of the continuous cooling transformation process in the fluid used as an alternative to molten lead.

Keywords: Pearlitic steel wire, patenting heat treatment, aqueous solution bath

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