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Ageing Characteristics of Some Copper-Beryllium Alloys in Relation to Cold-Working Prior to Ageing Treatment*

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Abstract

The effect of cold-working (cold-rolling of 30 and 80 per cent in reduction) prior to ageing treatment on the ageing characteristics of some copper-beryllium alloys was investigated. The experiments were carried out on the binary alloys containing 0.7 and 1.8 wt per cent Be, respectively as well as on the ternary alloys containing additionally 0.3 per cent Co. In the ageing of cold-worked specimens, it was hardly possible to discriminate the effect of cold-working on the ageing process from the change in hardness and electrical resistance, because of the simultaneous occurrence of recovery, over-ageing or recrystallization. However, the change in Young's modulus showed that the cold-working accelerated the ageing process in both low- and high-temperature ranges. And, cold-working lowered the ageing temperature at which maximum hardening was obtainable. An abnormal etching figures of grooved shape along grain boundaries were observed in the aged specimen of ternary alloys containing Co, instead of remarkable development of localized precipitation (grain boundary reaction) in the binary alloys.

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