Abstract: Properties of magnesium alloy WE43 and the effect of substantial grain refinement by ECAP were studied. The compressive strength test revealed a significant increase of yield strength after ECAP, resulting in yield strength of over 400 MPa after 8 ECAP passes. The material remained surprisingly ductile in both compression and tension. Thermal stability of the material was investigated via Vickers hardness test. The ultrafine-grained structure shows good thermal stability up to 300 °C, where the precipitates start to dissolve and grain size starts to increase, resulting in sharp fall of hardness. Annealing of the initial state showed best results for 210 °C where the precipitation hardening led to an increase in hardness up to ∼101 HV.