

11.D16 This problem inquires as to the possibility of producing a precipitation-hardened 2014 aluminum alloy having a minimum yield strength of 380 MPa (55,000 psi) and a ductility of at least 15%EL. In order to solve this problem it is necessary to consult Figures 11.27(a) and 11.27(b). Below are tabulated the times required at the various temperatures to achieve the stipulated yield strength.

<u>Temperature (°C)</u>	<u>Time Range (h)</u>
260	not possible
204	0.5-7
149	10-250
121	500-2500

With regard to temperatures and times to give the desired ductility:

<u>Temperature (°C)</u>	<u>Time Range (h)</u>
260	<0.005
204	<0.13
149	<10
121	<500

Therefore, an alloy having this combination of yield strength and ductility is marginally possible. A heat treatment at 149°C for 10 h would probably just achieve the stipulated ductility and yield strength.