Ansys Granta EduPack™ Case Study Exercises: Aluminum Strengthening

1. Find the Structure Science Notes within the MS&E Edition. List all strengthening mechanisms covered there. (Home Page)

2. What is the range of yield strengths for pure cast Al?

3. Which of the hardening/strengthening mechanisms discussed in the case study require alloying? (Case Study)

4. What are some applications of precipitation hardened alloys? (Structure Science Notes)

5. What are the first copper precipitates formed during the precipitating strengthening heat treatment process called? (Structure Science Notes)

6. How does heat treating affect the strength of wrought Al alloys? (PPP Datasheets)

7. What is the maximum yield strength in MPa for a wrought non age-hardened alloy on the graph? (Case Study)

8. Between the three different Al-alloy classes, which one is used to make beverage cans? (Datasheets)

9. If you want to maximize strength, should you use a T4 or T6 heat treatment? (Datasheets)

10. Explore the datasheets for Al alloys. Name two properties are considerably impacted by the strengthening mechanisms (apart from the two shown in the chart)? (Property-Process Profile Datasheets)

11. Try to reproduce the PPP chart in the Case Study (Case Study)

12. What happens to the properties of a precipitation hardened alloy if it is aged for longer and longer times? (Case Study/Datasheets)