

Granta EduPack Exercises for the MS&E database

Simplified Case Study; Stainless Steels

12 Problems for guided self-study

1. Find *Stainless Steel* in the MS&E database. Where is it in the folder system? (Browse/Search)
2. What are the ratings for stainless steel in **Durability** to Water and aqueous solutions in the database? (Datasheets)
3. What is the main alloying element that makes the iron corrosion resistant? (Case Study Paper)
4. How does the composition of stainless steel differ from Ni-Cr Alloys in the database? (Datasheets)
5. What are the crystal structures of the pure Ni and Cr, respectively? (Elements data-table)
6. Which are the two main allotropes (forms) of iron and which one exists at room temperature? (Elements data-table)
7. Which four types of stainless steels are mentioned in the technical notes of its datasheet? (Datasheet)
8. Name one advantage and one disadvantage with *Austenitic* stainless steel, compared to the others (Case Study Paper)
9. Explore the links from the Chromium datasheet in the Elements data-table. Which materials does it link to? (Datasheets)
10. In the Phase Diagrams data-table, compare the Ni-Cr and Cu-Ni phase diagrams. Why do they differ? (Phase Diagrams & Science Notes)
11. Name two *Austenite stabilizers* and two *Ferrite stabilizers* (Case Study Paper)
12. Try to reproduce the two property charts in the Case Study. Use Select from: 3. *Alloying and heat treatment* as the subset for the second chart (Case Study Paper)