

Iron Carbon Phase Diagram Simulator

http://www.matter.org.uk/steelmatter/metallurgy/6_1_3_1.html

Background

It is often very difficult to understand the regions in a phase diagram in which the chemistry and temperature combinations result in a single phase such as austenite or two phases such as ferrite plus carbides.

Simulation

1. Log on to the web page above, the iron-carbide diagram will appear.
2. Move the cursor around the phase diagram and identify which regions are single and two phase regions
3. Identify the point of 0.82 % Carbon and 1000 C. How many phases are in this region? What is the phase called?
4. Keeping the composition at 0.82 % carbon (this is called a eutectoid composition steel), slowly decrease the temperature until the austenite transforms into two phases. What temperature did this occur? What were the two new phases?
5. Now pick a chemistry of 0.50% carbon (this is called a hypo-eutectoid steel) and 1000 C and slowly cool this material. What happened and at what temperature?

