



Shrinkage feature for Ductile Iron

by David Sparkman May 10th 2010 all rights reserved

Release date: May 14th 2010

Type Release: New Feature

Analysis Method affected: Ductile Final Iron Microstructure

Caution: This program will not work if your service contract is out of date, and the features will not be available unless you have the Advanced Ductile Microstructure option activated through your license.

Summary: This feature measures the grain boundary stress as a measure of shrinkage. The shrinkage potential is rated from 1 to 10 with 10 being the highest shrink potential. This value is then presented in the standard data formats for screen, and for reports. But the value can also be reported in a Pass/Fail mode similar to Ductile Nodularity. The underlying stress measurement is also presented graphically on screen when the presentation of the Zero curve is activated in the derivatives window.

This feature is described in four areas for applying this analysis to your system:

1. Activating shrink reporting in the data field
2. Activating shrink reporting in the reports
3. Activating shrink pass/fail box on screen
4. Activating the shrink graphic on the cooling rate curve

Thermal Analysis Software

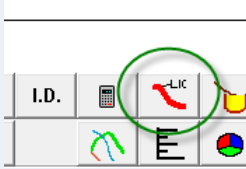
- [MeltLab Service Contracts](#)
- [Meltlab Demo Downloads](#)
- [Meltlab XP Upgrade Download](#)
- [Meltlab Win98 Upgrade Download](#)
- [Cupstand Connectors](#)

The new program can be downloaded at: www.meltlab.com by selecting the MeltLab XP Upgrade. One other note: This version of the program has been successfully tested on Win7 32bit, and Win7 64 bit professional edition. There are some issues in Win7 with the speed of reading inputs, but these problems only affect installations with 6 or more modules. Windows Vista remains on our “not recommended” list.

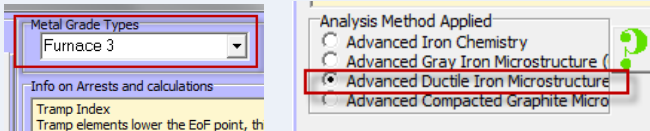


Activating Shrink reporting in the on screen data field

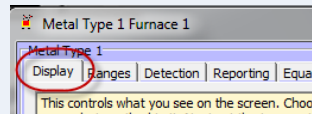
1. Click anywhere on the MeltLab screen to activate the tool bar
2. Select the curve editor from the tool bar



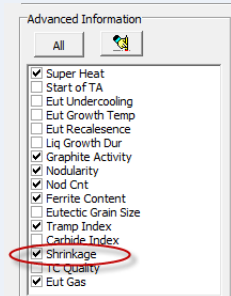
3. Select a curve that analyzes for Advanced Ductile Microstructure:



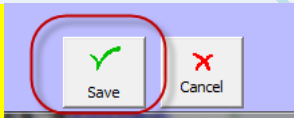
4. Select the tab for Display:



5. Select the shrinkage box



6. Click the Save button



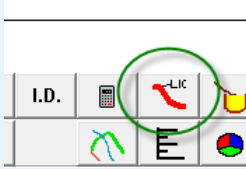
You are finished with activating this option and the number should now appear on your screen as ShrinkA (shrink by area) for this curve method. If you have other Ductile Microstructure curves, set them up the same way.



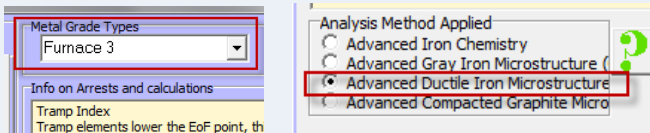


Activating Shrink reporting in the data reports

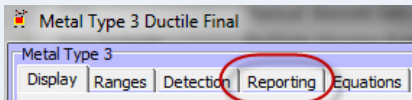
1. Click anywhere on the MeltLab screen to activate the tool bar
2. Select the curve editor from the tool bar



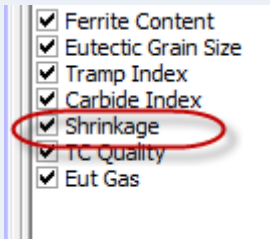
3. Select a curve that analyzes for Advanced Ductile Microstructure:



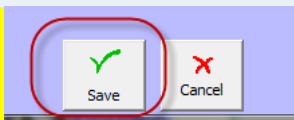
4. Click on the Reporting tab



5. Check the Shrinkage box



6. Click the save button

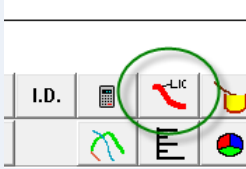


7. You are finished with activating this option and the number should now appear in your reports for this curve method. If you have other Ductile Microstructure curves, set them up the same way.

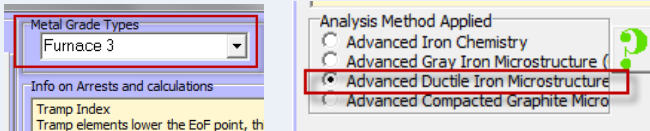


Activating shrink pass/fail box on screen

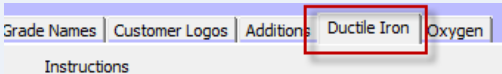
1. Click anywhere on the MeltLab screen to activate the tool bar
2. Select the curve editor from the tool bar



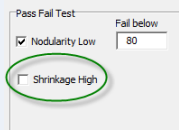
3. Select a curve that analyzes for Advanced Ductile Microstructure:



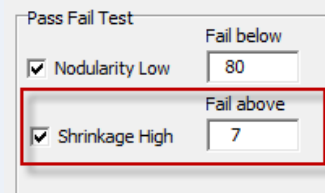
4. Click on the Ductile Iron tab



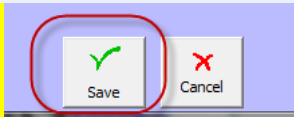
5. Check the Shrinkage High box in the Pass/Fail Test area



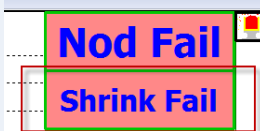
6. A new field will appear for you to enter the shrinkage value to divide pass from fail. You will have to judge from what is acceptable to your foundry and what is not. Generally, 7 and above is a good starting point, but you might want to go lower as you learn more. The entry below means you will get a fail at 7.0 and above. Values that are 6.5 to 6.9 will round up but not display a fail.



7. Click the save button



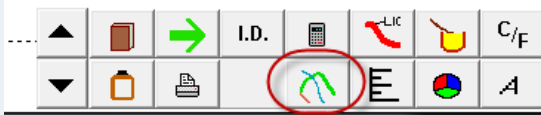
8. You are finished with activating this option and the Pass/Fail for shrinkage should now appear in your main screen for this curve method. If you have other Ductile Microstructure curves, set them up the same way.



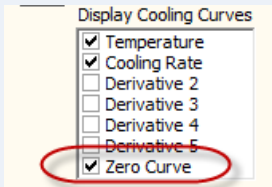


Activating the shrink graphic on the cooling rate curve

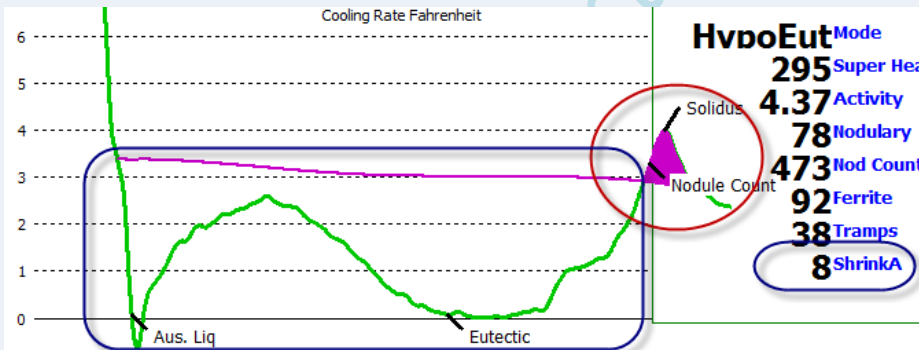
1. Click anywhere on the MeltLab screen to activate the tool bar
2. Select the derivatives to show button on the tool bar



3. In the box that appears locate the “Display Cooling Curves” section and click the Zero Curve box.



4. The current curve will be redrawn and all future plots for this curve will include the zero curve. The shrinkage area plot is activated when a start of liquidus arrest is found and a SSCRS arrest is found. If you are not getting the shrinkage plot, then you may have problems with tests arrests. The first arrest may be missed if there is low superheat in the cup (Max Temp – Liquidus = Superheat). The second arrest may be missed if the cup analysis does not continue far enough past the Solidus temperature (lengthen the time of analysis or lower the stop temperature).



5. Close the derivative box



6. You are finished with activating this option and zero curve and shrink area should now appear in your main screen for this curve method. If you have other Ductile Microstructure curves, set them up the same way.