



Application NIS Elements

Grain Size in Steel and Alloys



Inspection and measurement of Grain Size

Metals, except for single crystals, contain internal boundaries known as grain boundaries.

A metallographer examines polished cross sections of specimens from appropriate locations to determine the local grain size. Nikon Imaging software classifies grain size automatically.

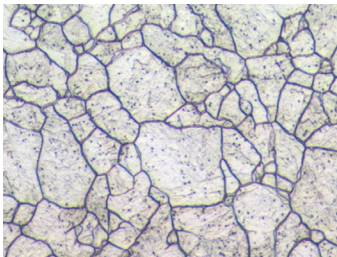


Figure 1 : Original image before grey scale thresholding.

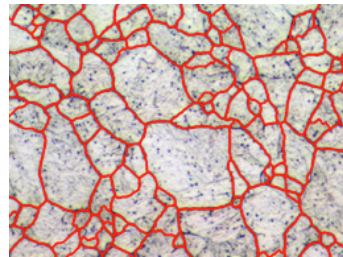


Figure 2 : Binarisation of the boundaries into a red bitplane using planimetric mode.

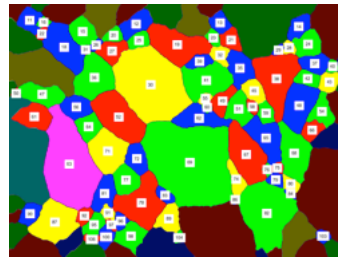


Figure 3 : Classification of the grains.

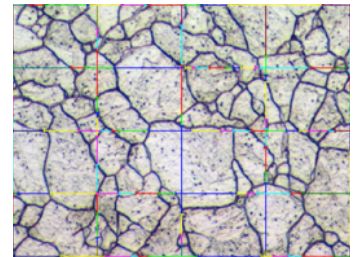


Figure 4 : Determination of the intersections using linear mask.

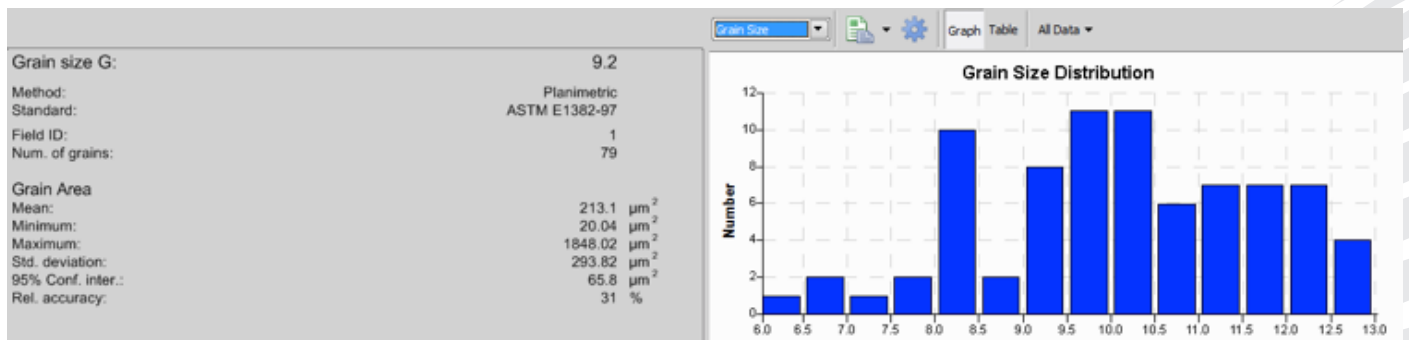


Figure 5 : Results window showing ASTM E1382-97 distribution. Other standards : ASTM E112, JIS G0551, ISO 643 are available. The reports can also be generated in excel.