

Grain Size in Steel Image Analysis Report 243

Sample Description

Sample of steel etched to reveal grain boundaries.

Purpose of Analysis

Demonstrate the ability of the Clemex Vision image analyzer to discriminate all grains in the field of view and to produce a standard ASTM E 112 rating.

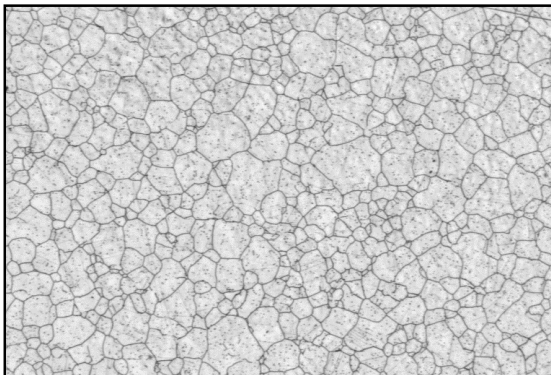


Figure 1: Original image before gray Thresholding.

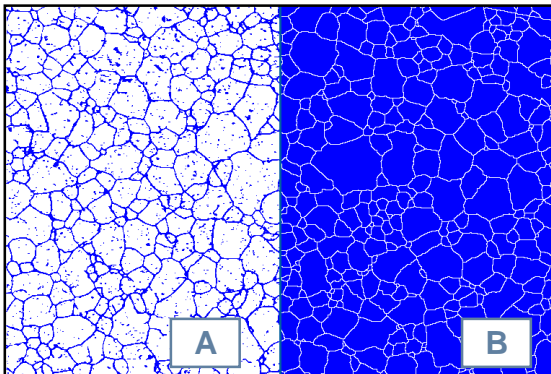


Figure 2: **a)** Binarization of the original image into the blue bitplane using Gray Thresholding. **b)** Artifacts were removed and the network was inverted to obtain the grains. Touching grains were separated using Convex Hull, Separate and Zone binary transformations

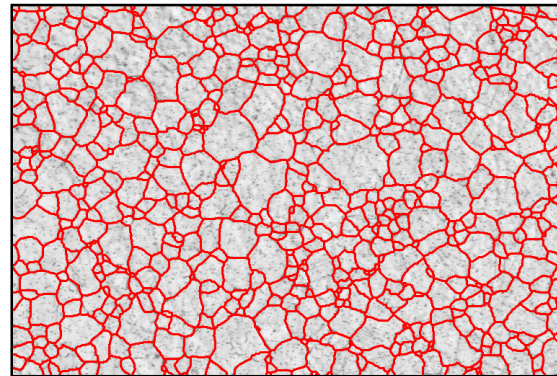


Figure 3: Outline grain network overlaid against the original image.

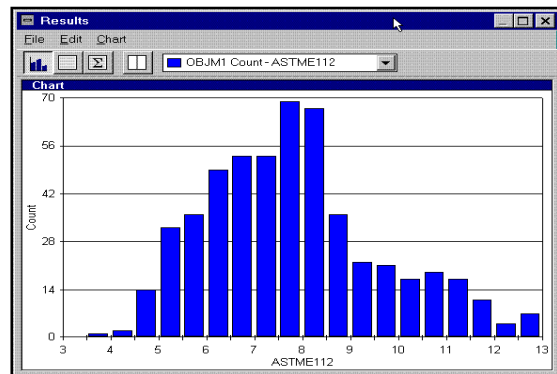


Figure 4: Results Window showing the ASTM E 112 distribution.

Results Summary

| | ASTM E 112 |
|----------|------------|
| Minimum | 3.81 |
| Maximum | 12.92 |
| Rating # | 7.31 |
| | ASTM E 112 |

Equipment

| | |
|------------------------|------------------------|
| Image Analysis System: | Clemex Vision PE |
| Camera: | Sony XC-77 CE |
| Microscope: | Nikon Epiphot 200 |
| Objective: | Nikon 10x (Mag.: 100x) |