


Example: Grain Size Analysis - Manual Line Method

This method is particularly well suited for measuring austenitic grain size of high alloy steels in general and specially for high alloy tool steels.

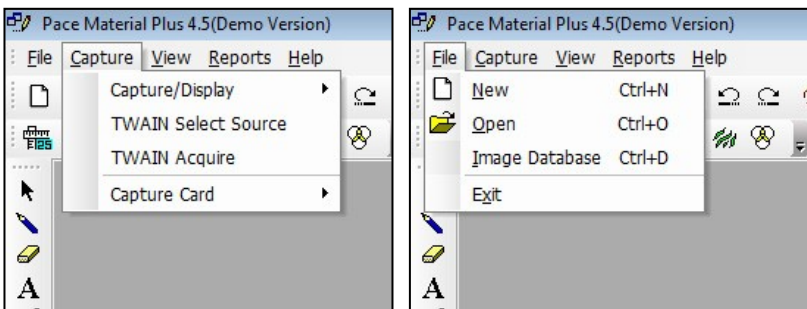
This method is recommended by ASTM for samples which have a poor etch, as well as for samples where the boundaries are either darker or less dark. In both cases the Automatic Method is not recommended for these samples.

PROCEDURE:

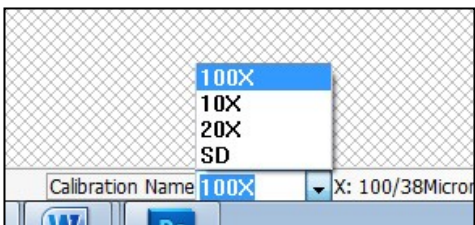
1. Load the image for grain size measurement.
2. Select the appropriate saved calibration scales from the drop down list at the bottom of the Window
3. Click on the Grain Size icon  either from the Toolbar or from the Menu-bar
4. Grain Size Measurement dialogue box will open. Select MANUAL LINE ASTM method.
5. Click on SET THRESHOLD. A new platform with two scroll bars will appear. Move both scroll bars until all of the boundaries are properly pseudo colored (filled in red). Click OK.
6. Click DRAW INTERCEPTS. Several intercepts appear on the image.
7. Click the mouse on the points of the grain boundaries which are intercepting (touching) the circular lines. Small circles are formed once you click the mouse on an individual point. Continue the procedure until all the points are marked.
8. Click on MEASURE. The software will automatically measure the distance between the points. The average grain size will be displayed.
9. Click ADD to place in grid.
10. To save the report, click on REPORT.
11. A sample information window will appear. Fill the required information. Click on "Save Data For Report Tool"
12. Click on "TO EXCEL" to see the result in Excel.


EXAMPLE of Grain Size – MANUAL LINE ASTM Method

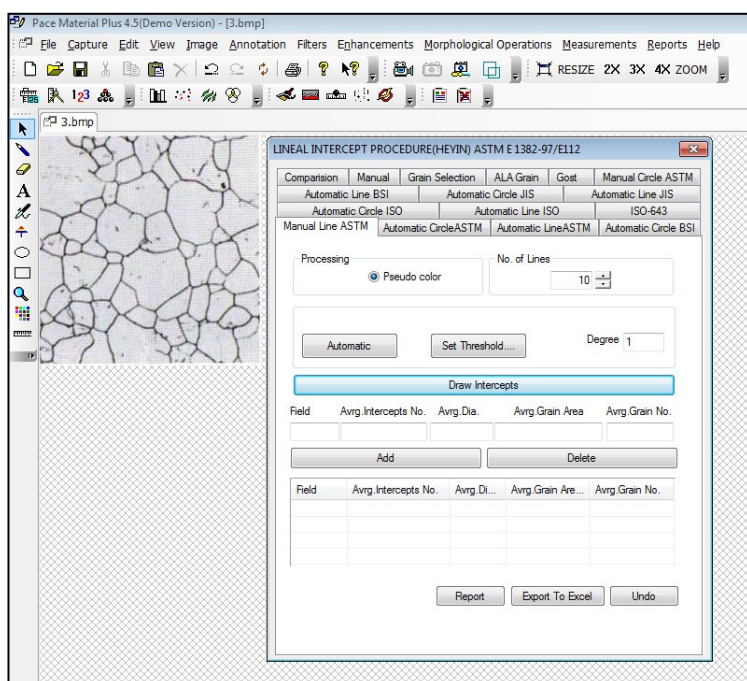
1. File > Open (select image) or Capture > TWAIN Acquire (for live image)



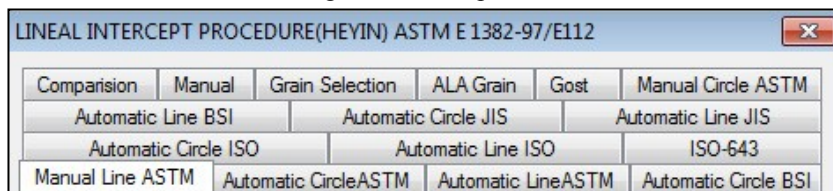
2. Select Calibration scale at bottom of the Window



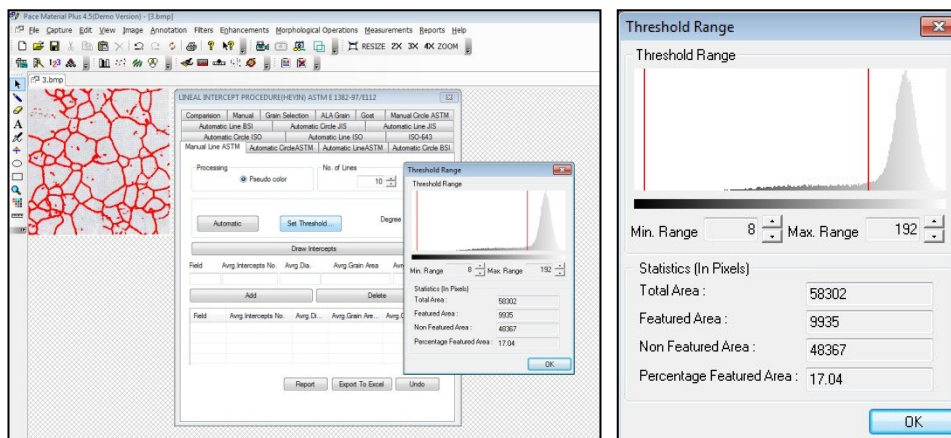
3. Click on the Grain Size icon  either from the Toolbar or from the Menu-bar



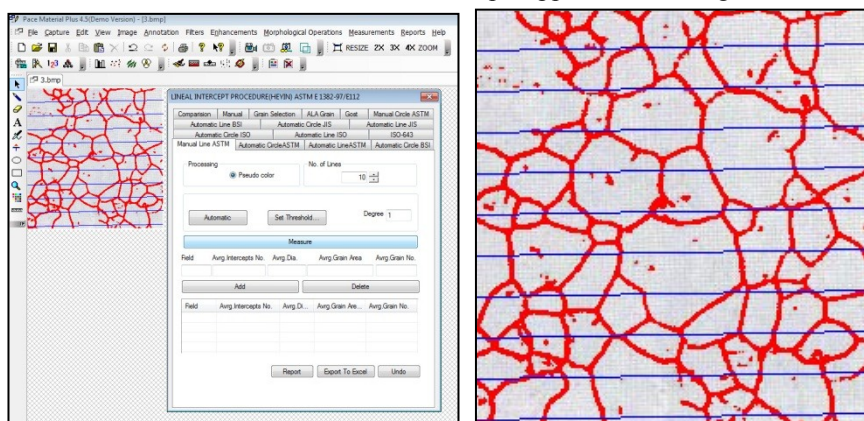
4. Grain Size Measurement dialogue box will open. Select MANUAL LINE ASTM method.



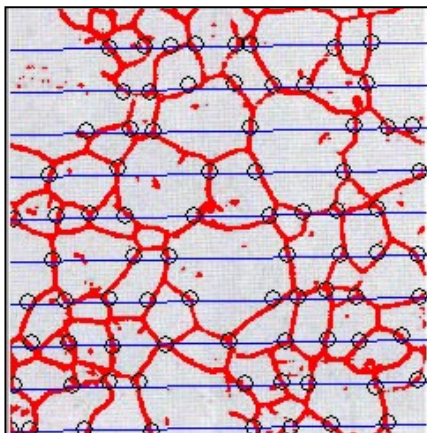
5. Click on SET THRESHOLD. A new platform with two scroll bars will appear. Move both scroll bars until all of the boundaries are properly pseudo colored (filled in red). Click OK.



6. Click DRAW INTERCEPTS. Several intercepts appear on the image.



7. Click the mouse on the points of the grain boundaries which are intercepting (touching) the circular lines. Small circles are formed once you click the mouse on an individual point. Continue the procedure until all the points are marked.



8. Click on MEASURE. The software will automatically measure the distance between the points. The average grain size will be displayed.

LINEAL INTERCEPT PROCEDURE (HEYNI) ASTM E 1382-97/E112

Comparison	Manual	Grain Selection	ALA Grain	Gost	Manual Circle ASTM
Automatic Line BSI		Automatic Circle JIS		Automatic Line JIS	
Automatic Circle ISO		Automatic Line ISO		ISO-643	
Manual Line ASTM	Automatic Circle ASTM	Automatic Line ASTM	Automatic Circle BSI		

Processing: ☒ Pseudo color No. of Lines: 10

Automatic Set Threshold... Degree: 1

Draw Intercepts

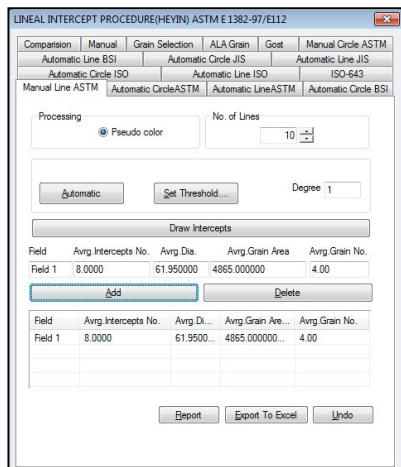
Field	Avg. Intercepts No.	Avg. Dia.	Avg. Grain Area	Avg. Grain No.
Field 1	8.0000	61.950000	4865.000000	4.00

Add Delete

Field	Avg. Intercepts No.	Avg. Di...	Avg. Grain Are...	Avg. Grain No.

Report Export To Excel Undo

9. Click ADD to place in grid.



10. To save the report, click on REPORT.
11. A sample information window will appear. Fill the required information. Click on “Save Data For Report Tool”
12. Click on “TO EXCEL” to see the result in Excel.

