



QUANTAX Steel

- Steel Cleanliness Analysis Solution

Automatic steel inclusion analysis



QUANTAX 400 Steel offers advanced steel inclusion analysis according to the latest international standards. It automatically scans predefined areas of polished steel specimens. Found objects are analyzed morphologically and chemically to be finally counted as inclusions or rejected as false positives. The review function provides full user control.

Benefits

- **High productivity**
The specialized intuitive software with its interactive setup procedure allows easy configuration and unattended 24/7 operation.
- **Fast and accurate results**
The Bruker steel analysis solution benefits from the superior speed of the QUANTAX system. It minimizes both measurement time and review time with dual-channel imaging and chem class false positive rejection respectively. The accuracy can be checked with the built in review method.
- **Standardized results interpretation**
Evaluation can be performed according to relevant international standards. Results can be either output for processing with generic office software or in custom format.

Highlights

- Configurable sample definition
- Interactive region of interest (ROI) definition
- Automatic image acquisition and stitch
- Automatic inclusion analysis using:
 - Search, measure and classify
 - Filtering of unwanted features
 - Determination of element concentration and classification
 - False positive rejection through chem class and through SE-BSE correlation
- Review and manual correction using:
 - Drive stage to feature & acquire new image
 - Hierarchical classifiers to sort inclusions
 - Modification/editing of analysis through manual correction
- Selectable analysis results output:
 - According to Standards ASTM E45 and E2142, ISO 4967, JIS G0555, DIN 50602, EN 10247, and GB/T 30834
 - Microsoft Excel® export

Classify steel inclusions according to internationally recognized standards (ASTM, ISO, JIS, EN, DIN) and more

QUANTAX steel solution

Combining the speed and accuracy of a QUANTAX system with a specially designed steel analysis software package, a Bruker solution for analyzing particles and inclusions in and around steel is born.

SEM based analysis

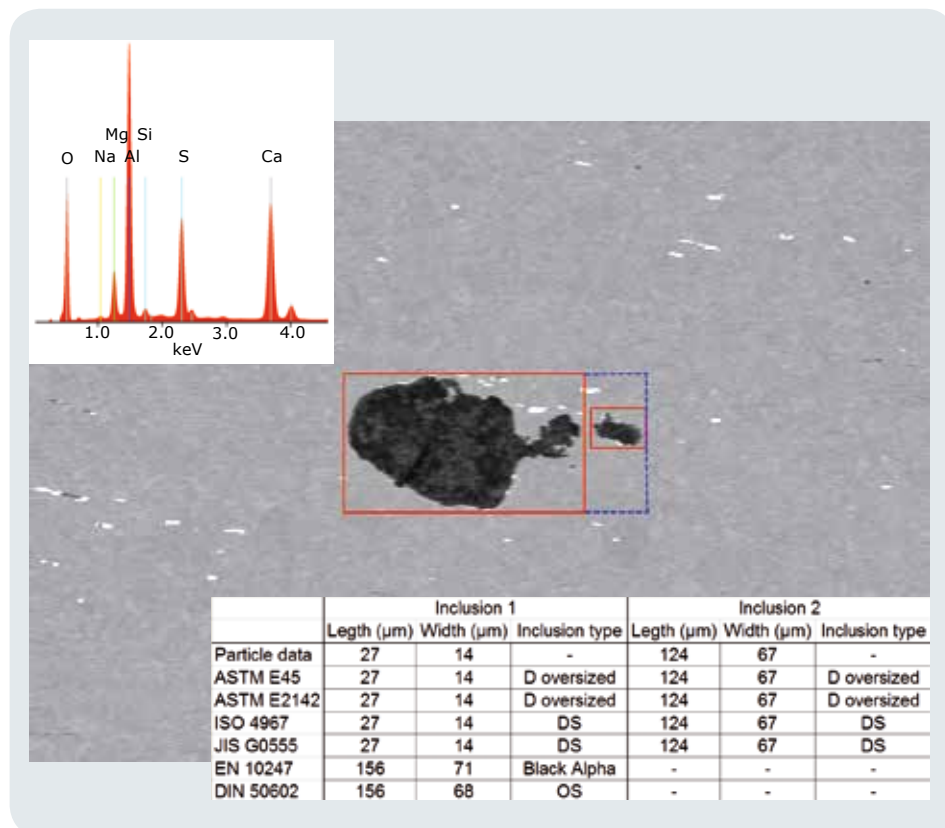
An image is acquired and analyzed using a SEM with backscattered or secondary electron detector. This can be done for many ROIs and samples through sample definition and automation of the stage.

Morphological and chemical classification

Any particles or inclusions found and matching the preset criteria are subsequently analyzed via EDS for their chemical concentrations and are classified accordingly. Once the measurement is complete, the results can be reviewed and edited or reanalyzed.

Standardized results

The results can be labelled and combined into batches. These are interpreted and represented in a standardized manner according to ASTM, ISO, JIS, DIN or EN. Results can also be exported to Microsoft Excel®.



Technical Specifications

Available XFlash® detectors

XFlash® model	60 I 10	60 I 30	60 I 60	60 I 100
Active area [mm ²]	10	30	60	100
Standard energy resolution [eV] at 100.000 cps				
Mn K α		≤ 129		
F K α		≤ 67		
C K α		≤ 57		
Other available resolutions, Mn K α [eV]	$\leq 121, \leq 123, \leq 127$	$\leq 123, \leq 126$	≤ 126	–
Detection range	Be (4) to Am (95)			
Max. input count rate [cps]	1,500,000			
Max. output count rate [cps]	600,000			

Supported steel cleanliness standards

Standard	Short description
ASTM E45-2005	US standard. Classifies into 4 inclusion types (A: Sulfide, B: Alumina (Discontinuous String), C: Silicate, D: Globular Oxide).
ASTM E2142-01	Modification of ASTM 45-2005 for SEM EDS-analysis. Uses EDS to decide between inclusion types by chemical classification.
ISO 4967	International standard. Largely similar to ASTM 45-2005, extends the classification of that standard by adding a type DS that classifies inclusions with a 13 μm diameter and larger.
JIS G0555	Japanese industrial standard. Largely based on ASTM E45 and similar to ISO 4967. Classifies oversized inclusions as with ISO into class DS.
DIN 50602	German standard. Based on the evaluation of areas, groups inclusions into class averages, distinguishes 4 inclusion types (SS: sulfide in line form, OA: discontinuous oxide lines, OS: oxide lines, OG: globular oxide).
DIN EN 10247	European standard, replaces DIN 50602. Is based on the philosophy that all inclusions are described as ellipses, mathematical basis is designed for equivalence of manual and automatic evaluation. Differentiates between particles, inclusions and inclusion lines. Inclusion types are classified into four categories in either black or grey ($\alpha, \beta, \chi, \delta$).
GB/T 30834	Chinese industrial standard. Largely based on ASTM 2142.

For more information scan the QR code or visit www.bruker.com/quantax-eds-for-sem



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