



Oxford Instruments TEM Calibration Standards set AGS158

Any calibration of an Energy Dispersive Spectrometry (EDS) system generally requires measuring the X-Ray peak of known energy. The performance of an EDS system can be evaluated by measuring the resolution of a known set of standards in line with the ISO:15632:2012 EDS Performance standard.

For characterisation of EDS systems attached or embedded to a TEM Microscope, a set of thin film standards was designed and manufactured. Besides the standards needed for EDS system characterization, the set also includes a magnification calibration standards that can be used in both TEM and STEM mode in order to calibrate the brightness, field of view, linearity and magnification of the imaging system.

MAIN SPECIFICATIONS:

Grid 1: 400 mesh copper grid covered with 160-180nm carbon film which enables the OI service engineer to measure the carbon K line resolution in line with the ISO:15632:2012 EDS performance standard.

Grid 2: 400 mesh copper grid covered with holey carbon film as a support of Aluminium fluoride trihydrate ($\text{AlF}_3 \cdot 3\text{H}_2\text{O}$) 97% CAS 15098-87, particles (Al 18.86%, F 40.05%, H 4.25%, O 33.73%) which enables the OI service engineer to measure the fluorine K line resolution in line with the ISO:15632:2012 performance standard.

Grid 3: 400 mesh copper grid covered with holey carbon film as a support of manganese Mn >99%, CAS 7439-96-5, particles which enable the OI service engineer to perform the EDS calibration and measure manganese Ka line resolution in line with the ISO:15632:2012 performance standard.

Grid 4: 400 mesh copper grid covered with holey carbon film as a support of lead oxide (PbO), CAS 1314-36-8, particles (Pb 92.83%, O, 7.17%) to characterize the detectors high energy performance.

Grid 5: 400 mesh Aluminium grid covered nickel film, purity 99.99%, thickness 10-12 nm used to check the occlusion of the detector by the sample holder, stray X-rays from the electron column and detection efficiency as indicated by comparing the N L and K intensity.

Grid 6: 400 mesh copper grid covered with cross grating replica, 2160 lines/mm, ruled at 90 degrees to one another, are obtained by replication of a master grating surface using cellulose acetate film. The cellulose acetate replica is shadowed with a layer of gold-palladium alloy and finally with a carbon film which can be used for calibration the OI imaging system (spacing 462.9 nm with accuracy better of 5%)