STANDARDIZATION ON NANOTECHNOLOGIES. THE AENOR SPANISH GROUP GET15 AND ITS ROLE WITHIN ISO AND CEN

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Standards are ubiquitous (covering many different areas), virtually invisible to "the man in the street" – there are over 15,000 International Standards, many with multiple parts, but are absolutely critical to our modern way of life – covering things such as CDs/DVDs, internet protocols, credit cards, pin numbers, quality and environmental management.

Standardization in nanotechnology should help to ensure that nanotechnology is developed and commercialised in an open, safe and responsible manner by supporting safety testing, legislation and regulation, public and environmental safety, commercialisation and procurement, patenting and IPR, communication about the benefits, opportunities and potential problems associated with nanotechnologies.

In 1999, the Interagency Working Group on Nanotechnology workshop concluded that:

"Nanotechnology will only become a coherent field of endeavour through the confluence of three important technological streams:
- New and improved control of the size and manipulation of nanoscale building blocks;
- New and improved characterization (spatial resolution, chemical sensitivity, etc) of materials at the nanoscale;
- New and improved understanding of the relationship between nanostructure and properties and how these can be engineered"
without forgetting safety and consumer acceptance.

Currently, some of the main challenges in nanotechnology standardization are:
- Internationally agreed terminology/definitions.
- Internationally agreed protocols for toxicity testing of nanoparticles.
- Standardized protocols for evaluating environmental impact of nanoparticles.
- Methods of test suitable for nanoscale devices and nanoscale dimensions.
- Development and/or standardization on measurement techniques and instruments.
- New calibration procedures and certified references materials for validation of test instruments at the nanoscale.
- Standards for multifunction nanotechnology systems and devices.

To give an answer to such challenges, ISO TC 229 and CEN TC 352 were created, following also other mirror Committees at national level in all countries members of ISO and/or CEN, as for instance the AENOR GET15 Group in Spain.

Today, Standardization in the field of nanotechnologies includes either or both of the following:

- Understanding and control of matter and processes at the nanoscale, typically, but not exclusively, below 100 nanometres in one or more dimensions where the onset of size-dependent phenomena usually enables novel applications;
- Utilizing the properties of nanoscale materials that differ from the properties of individual atoms, molecules, and bulk matter, to create improved materials, devices, and systems that exploit these new properties.

Specific tasks include developing standards for terminology and nomenclature; metrology and instrumentation, including specifications for reference materials; test methodologies; modelling and simulation; and science-based health, safety, and environmental practices.

The importance, structure, works in progress and for the future within these international (ISO and CEN) and national (GET 15) Committees are presented in detail in this talk.