

ISO/TC 229 was established in 2005. Since its inception, it has published over 60 ISO Standards, Technical Specifications and Technical Reports. A complete list of published ISO TC 229 documents can be found [here](#).

There are 5 Working Groups operating under ISO/TC 229:

- JWG 1 – Terminology and nomenclature – leadership assigned to Canada (Joint WG with IEC TC 113)
- JWG 2 – Measurement and characterization – leadership assigned to Japan (Joint WG with IEC TC 113)
- WG 3 – Health, safety and environment – leadership assigned to the US
- WG 4 – Materials specifications – leadership assigned to China
- WG 5 – Products and applications – leadership assigned to Korea

#### Current ISO/TC 229 Program of Work

<b>Working Group</b>	<b>Designation</b>	<b>Title</b>	<b>Country Lead</b>
JWG 1/PG 3 Rev	ISO/TS 80004-3 Rev	Nanotechnologies – Vocabulary – Part 3: Carbon nano-objects	USA
JWG 1 PG 6 Rev	ISO/TS 80004-4 Rev	Nanotechnologies – Vocabulary – Part 4: Nanostructured materials	Germany
JWG 1 PG 8 Rev	ISO/TS 80004-6 Rev	Nanotechnologies – Vocabulary – Part 6: Nano-object characterization	UK
JWG 1 PG 10 Rev	ISO/TS 80004-8 Rev	Nanotechnologies – Vocabulary – Part 8: Nanomanufacturing	USA
JWG 2/PG 2 Rev	ISO/TS 10798 Rev	Nanotechnologies -- Characterization of single-wall carbon nanotubes using scanning electron microscopy and energy dispersive X-ray spectrometry analysis	USA

JWG 2/PG 4 Rev	ISO/TS 10867 Rev	Nanotechnologies -- Characterization of single-wall carbon nanotubes using near infrared photoluminescence spectroscopy	Japan
JWG 2/PG 6 Rev	ISO/TS 11251 Rev	Nanotechnologies – Characterization of volatile components in single-wall carbon nanotube samples using evolved gas analysis/gas chromatograph-mass spectrometry	Japan
JWG 2/PG 7 Rev	ISO/TS 11308 Rev	Nanotechnologies – Characterization of single-wall carbon nanotubes using thermogravimetric analysis	USA
JWG 2/PG 10 Rev	ISO/TS 12025Rev	Nanomaterials -- Quantification of nano-object release from powders by generation of aerosols	Germany
JWG 2/PG 13 Rev	ISO/TS 16195 Rev	Nanotechnologies -- Guidance for developing representative test materials consisting of nano-objects in dry powder form	Japan
JWG 2/PG 18	ISO/DTR 19733	Matrix of characterization and measurement methods for Graphene	Korea/USA
JWG 2/PG 19	ISO/DTR 20489	Separation and size fractionation for the characterization of metal-based nanoparticles in water samples	Singapore
JWG 2/PG 21	ISO/AWI 19749	Determination of size and size distribution of nano-objects by scanning electron microscopy	USA
JWG 2/PG 22	ISO/AWI 21363	Nanotechnologies -- Protocol for particle size distribution by transmission electron microscopy	USA/Japan
JWG 2/PG 23	ISO/DTS 21362	Nanotechnologies -- Analysis of nano-objects using asymmetrical-flow and centrifugal field-flow fractionation	Japan/USA
JWG 2/PG 24	ISO/DTS 21361	Identification and quantification of airborne nano-objects in a mixed dust industrial environment	USA
JWG	ISO/DTS 21346	Nanotechnologies -- Characterization of cellulose elementary fibril	JISC

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JWG 2	ISO/PWI	'Nanotechnologies -- Structural characterization of graphene'	UK
JWG 2	ISO/PWI	Nanotechnologies -- Measurement of average nanoparticle size and assessment of agglomeration state by static multiple light scattering (SMLS) in concentrated media	UK
JWG 2	ISO/PWI	Nanotechnologies – 3D image reconstruction of nano-objects using transmission electron microscopy	Canada
JWG 2	ISO/PWI	Nanotechnologies – Particle size distribution for cellulose nanocrystals	Canada
JWG 2	ISO/PWI	Nanotechnologies -- Chemical characterisation for graphene in powders and suspensions	UK
JWG 2	ISO/PWI	Nanotechnologies -- Crystallinity of cellulose nanomaterials by powder X-ray diffraction (Ruland-Rietveld analysis)	Canada
WG 3/PG 1 Rev	ISO/TR 12885	Health and safety practices in occupational settings relevant to nanotechnologies	USA
WG 3/PG 17	ISO/FDIS 19007	<i>In vitro</i> MTS Assay for measuring the cytotoxic effect of nanoparticles	USA
WG 3/PG 23	ISO/AWI 20814	Photocatalytic activity assay for nanoparticles in aqueous suspension'	Korea/USA
WG 3/PG 24	ISO/DTR 21386	Considerations for the measurement of nano-objects, and their aggregates and agglomerates (NOAA), in the environment	USA
WG 3/PG 25	ISO/DTR 21624	Considerations for <i>in vitro</i> studies of airborne engineered nanomaterials	USA
WG 3/PG 26	ISO/DTS 21633	Label-free impedance technology to assess the toxicity of nanomaterials <i>in vitro</i>	South Africa

WG 3/PG 27	ISO/DTR 22019	Considerations in performing toxicokinetic studies of nanomaterials	NEN
WG 3/PG 28	ISO/DTS 22082	Nanotechnologies --- In vivo toxicity assessment of nanomaterials using dechorionated zebrafish embryo	USA/Korea
WG 3/PG 29	ISO/DTR 22293	Evaluation of methods for assessing the release of nanomaterials from commercial, nanomaterial containing polymer composites	USA/Canada
WG 3/PG 30	ISO/DTR 22455	High throughput screening method for nanoparticles toxicity using 3D cells	Korea
WG 3/PG 31	ISO/DTS 23034	Method to estimate cellular uptake of carbon nanomaterials using optical absorption	Japan
WG 4/PG 5	ISO/DTS 19807-1	Specification for magnetic nanoparticle suspensions	India
WG 4/PG 6	ISO/DTS 20660	Nanotechnologies -- Materials specification -- Antibacterial silver nanoparticles	Korea
WG 4/PG 7	ISO/DTS 21236	Nanotechnologies: nanoclays: characteristics and measurements	Iran
WG 4/PG 8	ISO/DTS 21237	Nanotechnologies- Nano-enhanced air filter media using nanofibres; Characteristics, Performances and Measurement Methods	Iran
WG 4/PG 9	ISO/DTS 19808	Nanotechnology - Specifications for Carbon Nanotube Suspension: characteristics and test methods	China
WG 4/PG 10	ISO/DTS 21412	Nanotechnologies -- Nanostructured layers for enhanced electrochemical bio-sensing applications -- Characteristics and measurements	Korea
WG 4/PG 11	ISO/DTS 21975	Nanotechnologies -- Polymeric nanocomposite films for food packaging -- Barrier properties: characteristics and measurement methods	Iran

WG 4	ISO/PWI	Nanofluids for heat transfer applications – Specification of characteristics, performance and measurement methods	Iran
WG 4	ISO/PWI	Nanotechnologies – Specification of nanoclays used for gas barrier films	Japan
WG 4	ISO/PWI	Nanotechnologies – Specification for superparamagnetic beads composed of nanoparticles for circulating tumor DNA extraction	China
WG 4/PG 15	ISO/TS 17200 Rev	Nanoparticles in powder form – characteristics and measurements	Japan
WG 4/PG 16	ISO/PWI	Nanostructured porous alumina as catalyst support for vehicle exhaust emission control – Material specification	China
WG 5	ISO/PWI	Nanotechnologies – Performance evaluation of quantification methods of biomolecules using fluorescent nano-particles	Japan
WG 5	ISO/PWI	Nanotechnologies – Performance evaluation of nanobio-sensor using electrochemical method for DNA identification: Part 1 - DNA hybridization	KATS

**Acronym Key:**

AWI – Approved Work Item

CD – Committee Draft (ballot at TC)

DIS – Draft International Standard

DTR – Draft Technical Report

DTS – Draft Technical Specification

FDIS – Final Draft International Standard

PWI – Preliminary Work Item

WD – Working Draft (being developed by WG)

TR – Technical Report

TS – Technical Specification