# ISO Published 12 Nanotechnology Standards in 2020


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By Feb 2021, International Organization for Standardization (ISO) was published 114 nanotechnology standards, 12 of which were first published in 2020. Vocabulary, carbon nano-objects, nanoparticles in powder form, polymeric nanocomposite films for food packaging, airborne nano-objects, nano-object-assembled layers for electrochemical bio-sensing applications, and air filter media containing polymeric nanofibres are the main focus of these standards.

According to International Organization for Standardization (ISO), standardization in the field of nanotechnologies includes either or both of the 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, and 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.

The recent StatNano statistical analysis shows that various committees of ISO (e.g., TC 229, TC 201, etc.) were published 114 nanotechnology standards by Feb 2021. Despite the constraints of coronavirus pandemic all over the world in 2020, ISO passed one of its most active years in publishing nanotechnology standards, when this organization published 12 standards. In addition, 22 standards were reviewed, 15 standards were under development, and 7 standards were withdrawn. Figure 1 presents an overview of ISO performance in nanotechnology standardization in 2020.

Figure 1. An overview of ISO performance in nanotechnology standardization in 2020.

Among the published standards of 2020, 8 cases are classified into the Test Method category,

and the Terminology, Specification, and Guide categories hold the next stages with 2, 1, and 1 standards, respectively. These standards are mainly focused on carbon nanotubes, nano-objects, nanocomposites, nanofibers, nanoparticles, and nanostructured materials in line with nanomanufacturing processes, polymeric nanocomposite films for food packaging with barrier properties, the measurements of particle size and shape distributions by transmission electron microscopy (TEM), the assessment of nanomaterial toxicity using dechorionated zebrafish embryo, considerations for in vitro studies of airborne nano-objects and their aggregates and agglomerates (NOAA), nano-object-assembled layers for electrochemical bio-sensing applications, the characterization of carbon nanotube samples using thermogravimetric analysis (TGA), and air filter media containing polymeric nanofibers, as shown in Table 1.

Table 1- ISO nanotechnology standards published in 2020.

| No. | Reference | Standard Title | Category |
|---|---|---|---|
| 1 | ISO/TS 80004-8:2020 | Nanotechnologies — Vocabulary — Part 8: Nanomanufacturing processes | Terminology |
| 2 | ISO/TS 80004-3:2020 | Nanotechnologies — Vocabulary — Part 3: Carbon nano-objects | Terminology |
| 3 | ISO 17200:2020 | Nanotechnology — Nanoparticles in powder form — Characteristics and measurements | Test Method |
| 4 | ISO/TR 14187:2020 | Surface chemical analysis — Characterization of nanostructured materials | Test Method |
| 5 | ISO/TS 21975:2020 | Nanotechnologies — Polymeric nanocomposite films for food packaging with barrier properties — Specification of characteristics and measurement methods | Test Method |
| 6 | ISO 21363:2020 | Nanotechnologies — Measurements of particle size and shape distributions by transmission electron microscopy | Test Method |
| 7 | ISO/TS 22082:2020 | Nanotechnologies — Assessment of nanomaterial toxicity using dechorionated zebrafish embryo | Specification |
| 8 | ISO/TR 21624:2020 | Nanotechnologies — Considerations for in vitro studies of airborne nano-objects and their aggregates and agglomerates (NOAA) | Practice |
| 9 | ISO/TS 21412:2020 | Nanotechnologies — Nano-object-assembled layers for electrochemical bio-sensing applications — Specification of characteristics and measurement methods | Test Method |
| 10 | ISO/TS 11308:2020 | Nanotechnologies — Characterization of carbon nanotube samples using thermogravimetric analysis | Test Method |
| 11 | ISO/TS 21237:2020 | Nanotechnologies — Air filter media containing polymeric nanofibres — Specification of characteristics and measurement methods | Test Method |
| 12 | ISO/TS 19808:2020 | Nanotechnologies — Carbon nanotube suspensions — Specification of characteristics and measurement methods | Test Method |