

## NGA2D REPORT: The Importance of Global Graphene Standards



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The area of graphene standards has been a hot topic within the industry over the last few years and regularly comes up in conversation when you get a few graphene professionals together at an event.

This is not without reason, as [graphene standards](#) are becoming ever important and if the industry wants to get graphene adopted into a range of products and market sectors, then effective standards need to be in place to ensure that all graphene materials going into end-use products are of a high quality.

With that in mind, I recently caught up with Denis Koltsov from [BREC Solutions](#), who is the chairman of ISO TC229 (Nanotechnologies), to discuss why global standards are going to be the likely outcome going forward, rather than localized standards in each region, as well looking at why standards are going to be important for the future longevity of graphene.

Unlike regulations (which are mandatory in a given region), standards are voluntary, but in a world where we're trying to get a greater confidence in graphene (after previous issues surrounding quality for both graphene and some other nanomaterials) then people should be looking to adopt better standards.

In many cases, the testing requirements are the same, so once international standards have been defined, there shouldn't be any reasons to not adopt specific standards if the quality control processes for local regulatory purposes are the same as the methods for determining if a material meets the requirements of the standard(s).

This brings me on to the next point of global vs regional standards.

While many regions talk about standards, the effort to produce them is an international affair, with relevant data being processed from various regions and in different processing

scenarios. It's uncommon to have a localized standard and there's a good reason for this (although localized regulations are a thing).

The main reason for an international standard is simplicity. With an international standard, it can apply to everyone and then be adopted nationally, meaning that a product does not need to conform to many different standards to be used in different markets.

Because of this, there are not really any local/regional standards (and creating them instead of going the international route could bring more problems).

This not only breaks down any potential (extra) barriers for entering new markets, it means that the product you are getting should meet a certain quality, regardless of where in the world you purchase it from (if they are adhering to the standards).

There are some countries which move away from the norm, such as [China](#), who do have their own national standards. However, these standards are only applicable in that country and are not directly applicable for exporting, so many opt to go the international route and conform to ISO/IEC standards, even though it can be a lengthy process.

In some markets, it will become essential that the product meets certain standard requirements to ensure that the consumer is getting a high-quality product.

### **The potential consequences of not adopting standards**

It goes without saying that there can be consequences if a company does not want to adhere to standards (for whatever reason). On an individual level, it may be that you are forced out of the market.

There has been a huge growth in the number of graphene manufacturing companies around the world, so if you're not remaining competitive (on all fronts) then it goes without saying that other companies' products are likely to take the center stage.

This also applies to graphene materials on the whole — if enough people don't adopt standards and market confidence drops as a result.

We've seen these issues before when a certain quality level for other nanomaterials has not been achieved and this has led to the materials not fulfilling its potential.

The immediate material which will spring to mind within the nanotechnology sector is carbon nanotubes — where developments disappeared for many years and have never really fully recovered (we are starting to see some developments with carbon nanotube but no where near what was predicted).

If manufacturers don't want graphene to go the same way as carbon nanotubes, then work needs to be done for everyone to adopt better standards so that the materials given to end-users are of a high quality.

Given that there's already been issues highlighted with this over the last couple of years, its of immediate importance that companies start working towards better standards collectively and prevent history from repeating itself to another promising carbon-based nanomaterial.

## **Concluding Remarks**

Graphene standards are an ongoing process and are likely to be developed fully over the next few years as a lot of work is being put in different regions of the world to help develop internationally accepted standards.

In the meantime, if you are looking to purchase graphene for an intended application, it's recommended that you inquire as to whether the manufacturer is working towards ISO standards, because if they are, it's likely that they will be a lot more thorough when it comes to characterizing and testing the quality of the material they are selling to you.

When international standards come into effect, this will be a lot easier to determine, but for now, finding out as much information about the quality control of the product is the best way to obtain the highest quality graphene.

Read the [original article](#) on The National Graphene2D Association (NGA2D).