

How do producers justify the use of nano claims on consumer products?

Presence and rationale of nano claims on consumer products

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Summary (for laymen)

Nanomaterials are developed and used in a variety of consumer products on the market. They have novel properties that may improve the functionality of these products.

In recent years, "nano" has become a "hype", and "nano" products are promoted to be novel and superior to the customary ones. In their attempt of attracting consumers' attention, manufacturers have their specific reasons for putting the term "nano" on a product's label or on the product's website.

The aim of the current project was therefore to investigate what kind of consumer products on the European market bear the term "nano" on their label or on the company's website and why the manufacturers are using this nano claim.

For this, an internet search for consumer products with a nano claim on the European market was carried out. The products identified were grouped into different categories: electronics and computer, household products and home improvement, personal care and cosmetics, motor vehicles, sporting goods, textiles and shoes, and miscellaneous.

In total 33 products from 23 different manufacturers were identified and included in the study. For 32 products the claims were mentioned on the website of the manufacturer, for 23 of them also on the product label. One product had the nano claim on the label only.

Examples of nano claims were:

- For personal care and cosmetic products: "... patented nanotechnology...", "...created with the latest nanotechnology...";
- For household products: "... with nanoparticles ...", "... utilizes nanotechnology ...";
- For motor vehicle products: "... with a blend of nanotechnology ...", "... a unique blend of nanoparticles ...".

To ascertain the manufacturers' justifications for the nano claims a questionnaire was sent to the above-mentioned 23 manufacturers. In total 11 manufacturers (48%) provided feedback, 8 of them (35%) filled in the questionnaire.

It turned out that most manufacturers (6 / 8) had more than one reason for placing "nano" on their product. They mostly used the nano claim for marketing reasons, namely to differentiate their products from those of the competitors, but they also aimed at informing consumers to allow them to make informed choices.

It further turned out that the difference between "nanotechnology" and "containing nanomaterial" (or "nanoparticles") in the claim was not always clear. Some manufacturers claimed on the website to use nanotechnology, but answered in the questionnaire that the product contained nanomaterials.

Also the meaning of the term “nano” differed between manufacturers. All manufacturers mentioned size as the most important criterion, but the actual interpretation of size differed considerably. Most manufacturers (5 / 8) referred to a size range of 1 to 100 nm, whereas two manufacturers included sizes of 200 to 300 nm in the nano range as well, and a further manufacturer referred to a size range of 1 to 1000 nm.

One manufacturer (of a waterproofing cream for leather) justified the term "nano" with the nano structured layer that is formed after application of the product on leather, although no nanomaterials were used in the production of the cream. Another manufacturer (of guitar strings) used the term “nano” only for indicating that the coating of the strings was very thin, while no nanomaterials or nanotechnology were used in the manufacture of the strings.

In three cases (socks, toothpaste and skin cream) the products were withdrawn from the market during the course of this study. The reasons for the withdrawal were not clear, although one manufacturer indicated that “the product did appear not to contain particles below 100 nm but rather agglomerates”, thereby suggesting that the claim was not justified, and that “the ‘nano’ label was not good for sales”. He continued that if the company would “decide to market the product again, they would probably not put ‘nano’ on the product”. The latter reasoning suggested that manufacturers may consider the term “nano” to cause a negative perception in consumers which could be detrimental for marketing.

To investigate whether the nano claims were materially justified, three products were analysed for nanoparticles, namely an anti-wrinkle cream, a toothpaste and a coating product for motor vehicles. In all three tested products, nanomaterials could indeed be detected, although in the case of the toothpaste it was not possible to confirm that the nanoparticles advertised on the product label were indeed present.

In conclusion, all manufacturers who responded to the questionnaire used size as the rationale for using "nano", either the size of compounds inside the product (e.g. 1 to 100 nm), or the size of the effect (or result) that their product would provide (e.g. a very thin layer).

In addition, as manufacturers used "nano" at their discretion, products without a claim may contain nanomaterials whereas products with a claim may not contain them. In both cases consumers are not informed correctly about the presence or absence of nanomaterials, and thus the term "nano" does currently not convey reliable information.