

Risk navigator

Nanotechnology



Products liability

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About Markel's Risk Solution Services team

Risk Solution Services provides technical insight related to existing and potential insured risk at Markel. The team partners with our customers, claims, and underwriters to educate on both current and future risk trends and supports our clients with a comprehensive offering of risk management solutions.

We do this by engaging with clients, underwriting, and claims teams.

E-mail our team at risksolutions@markel.com.



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What is nanotechnology?

Nanotechnology refers to the use of nanoparticles, or particles that are generally equal to or less than 100 nanometers long. The National Science Foundation defines nanotechnology as research and technology development at the atomic, molecular, or macromolecular levels, in the length scale of approximately 1-100 nanometer range, to provide a fundamental understanding of phenomena and materials at the nanoscale; and to create and use structures, devices, and systems that have novel properties and functions because of their small and/or intermediate size.

Nanotechnology is employed in a large number of sectors, including automotive; defense; aerospace; electronics and computers; energy; environment; food and agriculture; housing and construction; medical and pharmaceutical; and personal care, cosmetics, and other consumer products. There are over 1,300 nanotechnology-based consumer products on the market today and the number is growing. Nanoparticles are utilized to enhance material properties. However little is known about what effect these properties may have on human health.



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Nanotechnology and consumer products

Consumer products that may be nanotechnology-based include:

- Batteries
- Electronics and computers
- Cosmetics
- Foods
- Clothing
- Coatings, including food storage and packaging
- Personal care products (including sunscreen)
- Children's toys and games
- Sporting goods
- Pesticides
- Paint
- Appliances
- Textiles, clothing, and footwear
- Automotive exteriors

Nanotechnology is also used in medical applications (cancer treatment, drug delivery, and wound dressings), water purification, and environmental remediation.

Industry use of nanotechnology is increasing. The US government is funding nanotechnology research and development, and nanotechnology is seen as a critical component of improving products. The use of nanotechnology can result in stronger, lighter, more durable products, faster, smaller hand-held devices, UV protection, antimicrobial products, enhanced delivery of drugs and personal care products, and numerous other properties which may benefit manufacturers and consumers.

Engineered nanoparticles are produced in a variety of shapes (including sheets, tubes, and sphere), and may be composed of numerous chemicals. Nanoparticles may be synthesized during the manufacturing process or purchased--generally as a powder or in a gel or liquid form. The most common materials mentioned in consumer product descriptions include:

Silver | Carbon | Titanium | Silica | Zinc | Gold

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