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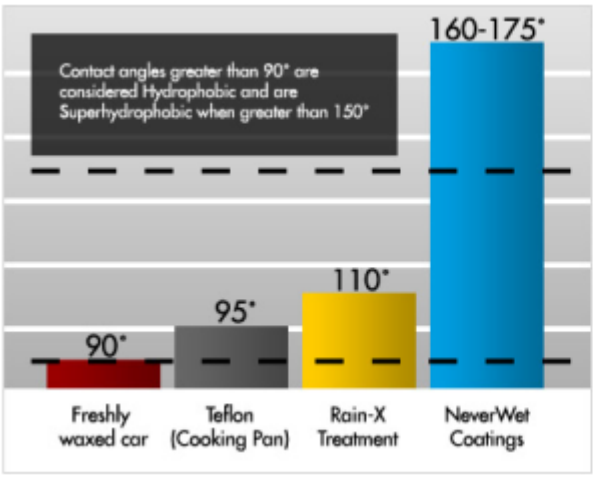
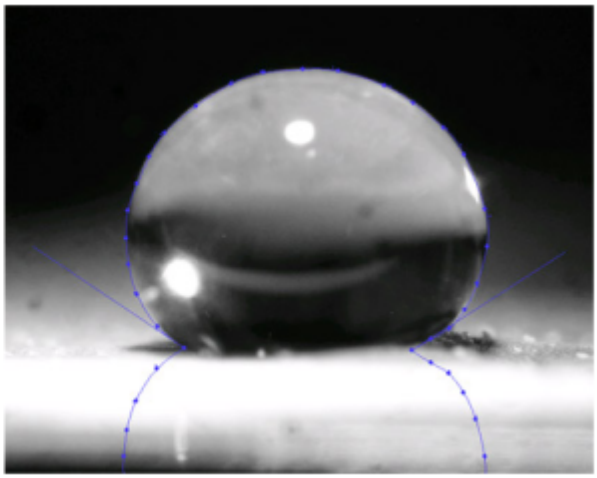
Super-Hydrophobic Coating [1]





Super-hydrophobic [2] coatings are used to create super hydrophobic [2] surfaces. When water [3] or a water [3] based substance comes into contact with these coated surfaces, the water [3] or substance will "run off" of the surface because of the hydrophobic [2] characteristics of the coating [4]. Neverwet is a superhydrophobic [5] coating [4] made from a proprietary silicon [6] based material that can be used to coat everything from shoes to personal electronics [7] to aircraft.

The coating [4] creates surface contact angles of 160-175 degrees; greater than the 150 degrees necessary to deem a substance superhydrophobic [5]. Liquids, oil, bacteria [8] and even ice slide right off the coated surface in almost a surreal fashion. In a demonstration, the makers of Never-Wet submerged a fully functioning smartphone in water [3] for a half hour only to come out completely dry. In another demonstration, an item submerged for over a year in seawater was retrieved completely dry and corrosion free.

Supehydrophobic coatings are used to create materials [9] that are anti-wetting [10], anti-icing [11], anti-corrosion [12], anti-bacterial [13] and self-cleaning [14]. Coatings like these have the potential to increase economic spending, decrease pollutants and bacterial growth, as well as increase longevity and durability of machines that are susceptible to corrosion and water [3] damage.

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Product Name:

- Never Wet [Ross Nanotechnology] [17]

Development Stage:

- Available, but not Ubiquitous [18]

Key Words:

- Self-Cleaning [14]
- Never Wet [19]
- Anti-Icing [11]
- Anti-Wetting [10]
- Anti-Corrosion [12]
- Anti-Bacterial [13]
- Hydrophobic [2]
- Water [3]

Mechanism:

- Passive Nanostructure [20]

Summary:

A super hydrophobic [2] surface is created when the contact angle of water [3] on a surface of a material, as measured from the center of the droplet, is between 150 and 180 degrees. The water [3] is not attracted to the hydrophobic coating [21], causing the liquid to "run off" the surface.

Function:

- Hydrophobicity [22]

Material:

- Proprietary [23]

Benefit Summary:

Superhydrophobic [5] coatings increase the longevity and durability of machines due to its anti-corrosive abilities. Additionally, these coatings can potentially increase sanitation in hospitals, bathrooms, and other places where bacteria [8] thrives. Products and machines coated with superhydrophobic [5] coatings have a decreased cost of maintenance/replacement on parts/items that become damaged due to water [3], ice or corrosion.

Risk Summary:

Never Wet [19] is silicon [6] based, which means it has the potential to turn into silica, which can cause silicosis, lung cancer [24], bronchitis, tuberculosis and other health [25] problems. Silicon [6] can also be a pollutant.

Risk Characterization:

- Complex [26]

Risk Assessment:

- Ecological Risks [27]
- Health Risks [28]

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[4] http://nice.asu.edu/keywords/coating
[5] http://nice.asu.edu/keywords/superhydrophobic
[6] http://nice.asu.edu/keywords/silicon
[7] http://nice.asu.edu/keywords/personal-electronics
[8] http://nice.asu.edu/keywords/bacteria
[9] http://nice.asu.edu/keywords/materials
[10] http://nice.asu.edu/keywords/anti-wetting
[11] http://nice.asu.edu/keywords/anti-icing
[12] http://nice.asu.edu/keywords/anti-corrosion
[13] http://nice.asu.edu/keywords/anti-bacterial
[14] http://nice.asu.edu/keywords/self-cleaning
[15] http://nice.asu.edu/users/rider-foley
[16] http://nice.asu.edu/users/tai-wallace
[17] http://nice.asu.edu/product-name/never-wet-ross-nanotechnology
[18] http://nice.asu.edu/development-stage/available-not-ubiquitous
[19] http://nice.asu.edu/keywords/never-wet
[20] http://nice.asu.edu/mechanism/passive-nanostructure
[21] http://nice.asu.edu/keywords/hydrophobic-coating
[22] http://nice.asu.edu/function/hydrophobicity
[23] http://nice.asu.edu/material/proprietary
[24] http://nice.asu.edu/keywords/lung-cancer
[25] http://nice.asu.edu/keywords/health
[26] http://nice.asu.edu/risk-characterization/complex
[27] http://nice.asu.edu/risk-assessment/ecological-risks
[28] http://nice.asu.edu/risk-assessment/health-risks