

FREQUENTLY ASKED QUESTIONS

- 1. Why is the coating called Gentoo?** It is named after an Antarctic species of penguin that repels water and oil off its feathered coat. [Learn more](#). It is NOT short for “generation two”, as some have guessed.
- 2. Gentoo is a two-part mixture, what is the proper mixing ratio?** Gentoo is mixed in equal parts (1:1) of Part A and Part B by weight, not by volume. Equal sized containers are sold in equal weights for Part A and Part B.
- 3. How is Gentoo cured?** Gentoo can be cured in an oven at 90 °C (194 °F) for 1 hour.

Alternatively, Gentoo can cure in ambient conditions for 24-48 hours. After application Gentoo is dry to the touch within 20-30 minutes. After 24 hours of curing at ambient conditions, if it is found to meet the needs of the customer, it may be put into service. Performance may improve after multiple days of curing at ambient conditions.
- 4. How durable and abrasion-resistant is the coating?** Gentoo is very durable and abrasion resistant. Testing and technical data is available upon request.
- 5. Is Gentoo transparent?** Yes, Gentoo is transparent and it retains its transparency even with mild abrasion.
- 6. Is Gentoo oleophobic and hydrophobic?** Yes. Gentoo has been tested with a wide range of solvents including mild soap, salt water, isopropyl alcohol (IPA), naphtha, some acids, heptane, jet fuel, deicing fluid, hydraulic fluid, lubricants, and others. The coating maintains its performance durability.
- 7. How can Gentoo be removed?** Gentoo hydrophobic coating is very durable so removing it is can be difficult. Gentoo can be removed using abrasive materials such as heavy-duty Scotch Brite[™] (which contains aluminum oxide). A chemical solution of 100% pure potassium hydroxide with 99% isopropyl alcohol may also be used. A recommended ratio is 1 lb (0.45 kg) of potassium hydroxide to 2-3 gallons (7.5 -11 liters) of isopropyl alcohol. Paint remover Eldorado PR-3500 (MIL-R-81294) may also be used to remove Gentoo. Note: These removal methods may damage the substrate and/or coating beneath the Gentoo coating. Appropriate safety precautions, including the use of proper personal protective equipment, must be taken when removing Gentoo from a surface.



- 8. How long will Gentoo last?** Longevity of the Gentoo coating will vary based on environmental factors, abrasion, chemical contact, etc. In general, it should last well beyond five years in an indoor environment with no abrasion. Outdoors, it is likely to last 3-5 years depending on the conditions and application. After long outdoor service, it has been observed that the sliding angle of liquids will tend to increase over time, but the coating will still be effective. Gentoo is a new product, developed under a number of military SBIRs (developmental grants) and there has been quite a bit of testing done, but there is still much to learn.
- 9. Can Gentoo be used on rubber or other elastic substrates?** No testing has been performed on ultimate elongation, but Gentoo can be stretched. There is data for coatings on polyurethane that have been stretched to >1500% before breaking. Elasticity has not been tested. Elongation beyond 100% would not be elastic. A rubber primer/surface treatment may help adhesion.
- 10. What is the best method for preventing corrosion with Gentoo?** Gentoo is an excellent anti-corrosion coating. Gentoo's dense structure provides a high physical barrier to electrolytes that cause corrosion and an insulating electronic barrier for galvanic corrosion. For best results, a paint or another protective coating should be applied to the substrate, and then Gentoo should be applied when the paint or other coating is still "green" (tack-free but still has reactive groups available to help bonding). Gentoo hydrophobic coating can also be applied to a paint or other coating after it has dried, but surface roughening (if acceptable) is recommended to promote adhesion. Gentoo can also be applied directly to a substrate. In this case, surface roughening (if acceptable) and/or other surface preparation methods are recommended to promote adhesion.
- 11. Can Gentoo be 'refreshed' or re-applied over an existing Gentoo application?** We are looking at an option to be able to do this. It may require a light sanding or abrasion to allow better adhesion. We are working on a development to allow a "refresher spray" to be applied to the old coating to refresh the performance of the top surface.
- 12. How much of Part A and Part B get mixed together and for how long?** Equal parts (50/50) of Part A & Part B (BY WEIGHT, NOT VOLUME) will need to be mixed together for a minimum of 90 – 120 minutes, depending on temperature of surroundings, to hydrolyze the chemicals together and allow the proper reaction to occur.
- 13. What substrates have been successfully coated with Gentoo hydrophobic coating?** Stretched acrylic, glass, aluminum, stainless steel, brushed steel, polycarbonate panels, wood, rubber, leather, polyethylene, painted surfaces.
- 14. What is the typical thickness of the Gentoo Coating?** The coating thickness is normally 4-6 microns, much thinner than a typical paint.
- 15. Does Gentoo repel or allow for easier clean-up of cement and concrete?** It should help prevent buildup because it is a durable hydrophobic coating, however, we do not have any testing to support this claim at this time. Real-world testing is recommended.



- 16. What kind of pre-treatment do you recommend before applying Gentoo to a substrate?** For plastics and acrylics, we recommend preparing the surface with a [Corona treatment](#) and then wetting the surface with IPA prior to applying Gentoo. Corona treatment is not a requirement, but is a recommendation that may help achieve the best bonding of the Gentoo coating to the substrate. Flame coating of polyethylene plastic has also proven effective. Some plastics have not required any pre-treatment, so testing the need for pre-treatment on a specific plastic would be advised.
- 17. What is the contact angle and the watershed angle for Gentoo?** The initial coating exhibits a contact angle of approximately 110° - 115° for many liquids. The watershed angle is 5° - 10°.
- 18. How flexible is Gentoo?** We have test data showing Gentoo on metal being bent 180 degrees over a 1/8" diameter mandrel, without any cracking. The hybrid inorganic-polymer coating exhibits excellent flexibility.
- 19. Can Gentoo be used primarily as a top-coat?** Gentoo makes a great top coat – it has been coated on bare metal (aluminum, steel, stainless steel, etc.), on plating (Cd, Zn-Ni), and on top of current primer/top coats. The coating thickness is normally 4-6 microns, much thinner than a typical paint.
- 20. Can Gentoo hydrophobic coating be applied with a commercial spray equipment?** Yes, Gentoo can be applied with HVLP spray equipment (it can also be applied by flow coating, dip coating, brush, etc.). The thickness is mainly controlled by viscosity of the solution, which is close to water viscosity. The coating can be thicker or thinner based on concentration, but we typically like to be between 1-10 microns. These do cure at ambient conditions with a tack free time in 30 minutes, and full properties in a day or so. We typically do a thermal cure (80°C, 30 min) to accelerate this, and optimize properties (durability, repellency).
- 21. Is corrosion resistance correlated directly to the thickness of the coating?** There has not been much testing done showing corrosion resistance versus thickness of Gentoo, as it is difficult to build the thickness of Gentoo (versus a paint that can be built up over itself to achieve a targeted thickness). However, even a thin coating 4-6 microns) of Gentoo will help to prevent corrosion, since it is hydrophobic, and it is insulating and acts as a barrier. Because it is hydrophobic, it will shed water and water-based substances more easily than other surfaces. Because it is insulating, it will inhibit the flow of electricity to the substrate, which slows the corrosion process. Because it acts as a barrier, many liquids that may remain on the surface will be physically separated from the substrate.
- 22. Does Gentoo have any known chemical compatibility issues?** There are no known chemical compatibility issues. The chemistry can be modified, if necessary for adhesion to alternative substrates, but would be good as is on glass, metals, and ceramics.
- 23. Are there any regulatory concerns with the materials used in Gentoo hydrophobic coating?** The coating is currently relatively high VOC, so there are some controls necessary for application.

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