Gentoo™
Advanced Clear Hydrophobic Coating

ULTRATECH INTERNATIONAL, INC.

Application Instructions

Read through all instructions prior to opening or using Gentoo.

FOLLOW ALL WARNINGS AND CAUTIONS

DO NOT	Open Part A unless inert gas is available or unless the entire container will be used immediately after opening.
DO NOT	Use mixing equipment that has not been rated for flammable liquids.
DO NOT	Leave Gentoo uncovered when it is mixing or when it is not being applied.
DO NOT	Spray Gentoo without sufficient engineering ventilation controls or without making a minimum of supplied-air respirators available to all those exposed to Gentoo spray.
DO NOT	Wait to clean equipment.
DO NOT	Mix Part A and Part B by volume.
DO	Mix Part A thoroughly before adding Part B.
DO	Apply a blanket of inert gas to the headspace of partially used containers of Part A immediately after the material to be used has been poured off.
DO	Use mixing equipment that is rated for flammable liquids.
DO	Cover the Gentoo vessel as often as possible, including when it is mixing and when it is not being applied.
DO	Clean all equipment with acetone, then isopropyl alcohol immediately after use.
DO	Mix Part A and Part B at a 1:1 ratio by weight.

Personal Protective Equipment

Flow, Dip, Brush or Roller Coating: Always wear the following equipment: safety goggles and nitrile gloves. A paint suit / Tyvek suit is recommended. If engineering ventilation controls are not available or sufficient, use a respirator (NIOSH/MSHA approved half-face respirator with an organic vapor cartridge). Refer to Safety Data Sheets (SDSs) for both Part A and Part B before beginning to apply Gentoo.

Spray Coating: If engineering ventilation controls are not available or sufficient, wear a minimum of a hooded supplied-air respirator and nitrile gloves. A paint suit / Tyvek suit is recommended. Refer to Safety Data Sheets (SDSs) for both Part A and Part B before beginning to apply Gentoo.

Preparation

Surface Preparation:

1. Remove all oil, grease, dust, dirt, loose rust, and other foreign materials to ensure adequate adhesion.
2. Clean smooth surfaces with 99% isopropyl alcohol (IPA) and microfiber cloths or other lint-free cloths. If the surface is incompatible with or adversely affected by IPA, the application of Gentoo to the surface is not recommended.
3. Gentoo may not bond to all types of plastic or rubber surfaces without further preparation: corona treatment, plasma treatment or flame treatment may be required in order to attain adequate adhesion on plastics and some rubber materials.
4. Adhesion to some surfaces may improve if they are abraded, but this is not required for all surface types.
5. Surfaces with existing coatings, including Gentoo, may also exhibit a reduction in adhesion without additional surface preparation.
6. If re-coating a surface already coated with Gentoo is required, ensure that the original Gentoo coating has been fully cured, and that it has been scuffed or abraded prior to reapplication.

- Mix and apply Gentoo in a clean, well-lit environment. Dust, dirt, or other particles may influence the appearance of the coating if Gentoo is not mixed and applied in a clean environment.

- Use only glass, stainless steel, or high density polyethylene mixing vessels.

- Ensure all mixing vessels are clean. Rinsing with 99% IPA may be desired to remove any dust from mixing containers prior to mixing Gentoo.

Mixing

NOTICE: Both Part A and Part B of Gentoo are flammable. Use mixing equipment rated for flammable liquids.

- Mix so that a vortex is produced, but not faster.
- Air should not be forced into the mixture as a result of mixing at excessively high speeds or by any other means.

NOTICE

- If the entire container of Part A will not be used, inert gas (preferably argon, or nitrogen) must be used to blanket the headspace of the remaining liquid in the container.
- If this is not performed, Part A will be rendered unusable.
- After the blanket of inert gas is applied to Part A, put the lid back on the container.
- Put the lid back onto the container of Part B to prevent evaporation of solvents.

NOTICE: Cover the mixing vessel with a lid, film or other covering as much as possible to prevent evaporation of solvents during the mixing process. If this is not possible, as in certain production processes, occasional addition of 99% IPA may be required to maintain original density.

- If mixing with stirring equipment, mix so that a vortex is produced, but not faster.
- Air should not be forced into Part A or the mixture of Part A and Part B as a result of mixing at excessively high speeds or by any other means.

1. Mix or shake Part A thoroughly.
    a. Shake quarts of Part A for 30 seconds.
    b. Mix 5-gal and 50-gal containers of Part A for 5 minutes.
2. Once complete, add Part A to the mixing vessel and turn on the mixer.
3. Add Part B to Part A at a 1:1 ratio, by weight (not by volume).

All containers of Part A and Part B have been filled by weight. To use a complete pair of new, unopened Part A and Part B containers, use all of Part A and all of Part B. For example:

Use one complete quart container of Part A + one complete quart container of Part B

-OR-

Use one complete 5-gal pail of Part A + one complete 5-gal pail of Part B

-OR-

Use one complete 50-gal drum of Part A + one complete 50-gal drum of Part B

Follow all other mixing instructions.

Note: From this point forward, “Gentoo” refers to the mixture of Part A and Part B.

- Gentoo should be mixed above 65 °F.
- Mix Gentoo for 120 minutes if between 65 °F and 75 °F.
- Mix Gentoo for 90 minutes if above 75 °F.

After mixing is complete, proceed to filtering Gentoo.

- For best results, filter Gentoo using 1 µm glass fiber filters into a clean vessel, separate from the mixing vessel. This will remove gel bodies and any other particulates introduced into the coating during the mixing step. Failure to filter Gentoo may result in poor coating appearance and may affect coating performance.
- When the mixing and filtering processes are complete, continue to cover the vessel of Gentoo to ensure that the loss of solvents due to evaporation is minimized.
- For easiest cleaning it is best to clean all vessels and equipment as soon as possible after use. See cleanup section for more information.

Application Methods

For best results, all equipment should be glass, stainless steel or high density polyethylene.

Flow

- In essence, flow-coating is controlled pouring.
- Flow coating by hand is not complicated but takes practice to attain an even coating.
- Very small objects can be coated using plastic droppers.
- Objects smaller than a few square feet can be flow coated using a squeeze bottle.
- For large objects, a recirculation pump and filter could be used.
- The object to be coated should be inserted into or suspended above a collection vessel, so the excess Gentoo can drain off of the object and be collected, filtered, and re-used.
- Please see the application video at www.gentoocoating.com or https://youtu.be/x2xKAWjyCZg for more information.
- Once Gentoo has already been applied to an area, even if not fully cured, do not apply additional Gentoo over it, or else lines will be visible in the re-coated area.

After the object has been coated, refer to the drying and curing section.

Dip – Use a clean vessel of sufficient size that holds enough Gentoo to completely coat the desired portion of the object. Dip the object only once.

After the object has been coated, refer to the drying and curing section.

Brush/Roller

- Foam brushes and rollers designed for solvent-based or oil-based paints may be used with Gentoo.
- Applying Gentoo with brushes or rollers may result in bubbles within the coating. This can be avoided by using a slower application speed and less pressure.
- IPA may be used to rinse/store the brush between Gentoo applications. Gentoo allowed to begin to dry on the brush will create undesirable defects in the coating during application.
- Avoid overcoating any area of the Gentoo coating that has begun to dry. This will adversely affect the appearance, and may adversely affect the adhesion.

After the object has been coated, refer to the drying and curing section.

Spray

- The appearance of Gentoo as applied by HVLP (high volume low pressure) sprayers will result in an industrial-grade quality, not a perfect automotive finish. This may include very small gel bodies, orange-peel, or slight mottling.
- Proper engineering controls or personal protective equipment are required when spraying Gentoo.

NOTICE: Engineering controls include a fume hood or other sufficient ventilation, which must be available to remove all Gentoo vapors from the working environment. If engineering controls are not available, a minimum of a supplied-air respirator must be used to protect all those exposed to the spray application.

HVLP parameters:

1. An in-line particle filter and moisture trap is recommended for the HVLP gun.
2. A 1.0 mm needle/tip is recommended for HVLP sprayers.
3. Use gun pressure of less than 20 psi.
4. Ensure spray gun is clean before spraying Gentoo.
5. Pre-flush gun with 99% IPA after gun has been cleaned.
6. Avoid overcoating any area of the Gentoo coating that has begun to dry. This will adversely affect the appearance, and may adversely affect the adhesion.
7. When spraying is complete, immediately flush the spray gun with acetone, and then with 99% IPA.

After the object has been coated, refer to the drying and curing section.

Drying and Curing

Drying: Allow the object to sit at room temperature for 10-15 minutes (or until dry to the touch) after it has been completely coated.

Curing:

- For best performance, insert the object into a clean oven for 1 hour at 90 °C (194 °F), if this will not adversely affect the object.
- If the coated object cannot sustain 1 hour at 90 °C (194 °F), allow the object to cure at room temperature in a clean environment for at least 24 hours.
- A heat gun may be used to impart heat onto the surface (even if not at 90 °C, a heat gun can help accelerate the curing process).
- After 24 hours of curing at ambient conditions, if it is found to meet the needs of the end-user, it may be put into service. Performance may continue to improve over time at ambient conditions.

Cleanup

- If and when a vessel is no longer needed during the Gentoo mixing and application processes, remove excess Gentoo from the mixing vessel as soon as possible after taking the mixing vessel out of service.
- Excess Gentoo should be poured into a waste container, where it will turn into a gel over several hours.
- Rinse the mixing vessel with acetone and wipe it clean. Then, rinse the mixing vessel with 99% IPA and wipe it clean.
- For pumps and spray equipment, flush the systems with acetone, followed by a flush with 99% IPA.
- Abrasive material and/or other strong chemicals may be required if cleanup is not performed immediately.

Video Link

Please see the application video at www.gentoocoating.com or https://youtu.be/x2xKAWjyCZg for more information.