

# Water-Based Biodegradable Solutions Clean Green

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Using water-based biodegradable solutions instead of solvents allow you to clean green, which saves you money and helps the environment. A comparison of solvents to water-based biodegradable solutions is shown below.



## Terms and Definitions

**Biodegradable.** In this case breaking down petroleum, oil and grease to water and carbon dioxide by using microbes.

**VOCs.** Volatile Organic Compounds... in one year a solvent washer produces a comparable VOC emission equal to 10 automobiles.

**Microbes.** A microscopic organism that in this case eats petroleum, oil and grease and produces water and carbon dioxide. They live and multiply in this solution producing natural enzymes that attach to the molecular bonds in the hydrocarbon molecules of grease and oil. Microbes are as safe as potting soil. Clean 24/7. To keep the microbes at their best, the temperature should be 110 degrees F and have additional aeration.

**Surfactant/Degreaser.** In this case the ingredients in the cleaning solution that break the bond between the oil and/or grease and the part being cleaned.

**Aerator.** A small air pump to circulate air to the microbes for maximum activity.

**Wire basket.** A holding device for the filter bag. It is located between the tank

discharge and the solvent tank.

**Filter bag.** A fiber bag that holds the hydrophobic granules and filters down to 0.5 microns.

**Hydrophobic granules.** A special processed wood by-product that will absorb free floating oil. When the granules have reached their capacity, they can be burned in reclaimed oil heaters.

**Heating Unit.** A drum or submersion heater that will heat the cleaning solution to 110 degrees F. This will increase the cleaning efficiency by approximately 40 percent and also keep the microbes at their maximum performing activity.

## How does it work?

The fluid cleans the parts and the microbes and hydrophobic granules clean the solution.

You start with the water-based *biodegradable* cleaning solution that contains a surfactant that will break the bond between the grease, oil and grime and the parts themselves by lifting it off like a liquid scraper.

## For continuous cleaning:

- To keep removing the free oil and breaking down the suspended oil and petroleum-based grease, you can continuously clean your cleaning solution using this type of system.
- A wire basket lined with a filter bag and filled with hydrophobic granules will absorb the free oils in the solution to start the solution cleaning process.
- Now the microbes in the cleaning solution will eat the oil and grease and produce a by-product of carbon dioxide and water. This continuously keeps the solution cleaner.
- The addition of an aerator and heater will help the microbes work the most effectively. Heat to 110 degrees F.

Applications: Shakers; hand washer ...any type; immersion washers; other products are available for spray washers and ultrasonic cleaners.

## Positive features:

- Biodegradable...(solution is not dangerous to you or our environment),
- no EPA recordkeeping,
- safer to the environment and humans than solvent,
- can be reused and added to (water and solution) as strength decreases,
- very easy on your hands,
- can be heated to 110 degrees F for approximately 40 percent better cleaning ability and reduced cleaning time,
- shippable by UPS,
- when the biodegradable solution is used with the optional system, you can continuously clean the solution, breaking down the greases and oil to carbon dioxide and water and continuously removing free oil,
- after the parts are rinsed and dried, paint will adhere better than after the use of any solvent-based product,
- virtually no odor.

Only negatives: Heavy built up grease must be removed first for faster degreasing; will not dissolve hard grease like mineral spirits (Varsol) will; microbes will not remove synthetic greases and oil.

## How to handle the dirtiest solution after extended use

Take the dirtiest solution and gunk, mix it with 50 percent water and put it in a five-gallon container. Then add the microbes and put the aerator at the bottom of the container. Heat this mixture to 110 degrees F to speed up evaporation. This will also give the microbes a longer, more productive life.

Another option is to get rid of the oil and grease first, as stated above, then you can just let the water evaporate. Some shops will add a heater to speed up the process of evaporation. Depending on federal and state regulation in your area, what is left can possibly be disposed of in the garbage.

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| Type of Solution | Solution Composition             | Output                | Disposal                                            |
|------------------|----------------------------------|-----------------------|-----------------------------------------------------|
| Bioremediation   | surfactant, microbes             | water                 | as per federal/state & local laws for non-hazardous |
| Water-Based      | hydrophobic granules             | carbon dioxide        | as per federal/state & local laws for non-hazardous |
| Solvents         | solvent, mineral spirits, Varsol | VOCs, hazardous waste | cradle to grave liability                           |