GreenEarth FAQs for
Australia & New Zealand Drycleaners

Updated October 2013

Can GreenEarth clean with a low KB value?

The Kauri-butanol value (KBV) is an index of the cleaning power of carbon-based solvents which has the greatest influence on the processing of textiles. A higher KBV means the solvent is more aggressive or active in its ability to dissolve certain materials.

Perc's 90+ KBV means it can effectively dissolve certain "hard to clean" stains such as grease and oil. With the help of surfactants (detergents), perc chemically reacts with fabric fibre and the dirt, greases, oils and other unwanted materials in it to solubilize them. Through extraction and heat, perc releases itself along with the soils from the fibres. As a measure of aggressiveness, KBV is also the most commonly accepted indicator of the potential for certain dye migration and the loss of plasticizers. High KBV means it carries more potential for harm to garments constructed with specialty fabrics and ornamentation.

GreenEarth doesn't technically merit assignment of a KBV since silicone is not carbon-based. GreenEarth's relevant measure of its cleaning ability is its surface tension. Surface tension measures the ability of the surface of liquid to resist external force, e.g. "bead up" rather than spread out or soak in. GreenEarth has the lowest surface tension of any fluid used in cleaning garments, 17 dynes per centimeter. The surface tension of water is 72 dyn/cm, perc is 32 dyn/cm and hydrocarbon is 24 dyn/cm.

The combination of mechanical action and low surface tension allows silicone to quickly penetrate into fibres, lubricate, dislodge and flush out soils, as opposed to capturing or solubilizing the soil. As the soils dislodge, the suspended soils are absorbed (emulsified) by the surfactants so they don't redeposit. GreenEarth then acts as a very effective rinsing agent, as it weighs less than perc. Its chemically inert properties, cleaning without chemically reacting with fabric fibres or dyes, make GreenEarth safer and gentler for all manner of fabrics, dyes and ornamentation. This minimises abrasion to and/or swelling of fabric fibres, eliminates traditional issues with dye removal and dye bleed, helps maintain the soft hand of garments, and prevents shrinkage. The result is a wider variety of clothes can be safely cleaned with GreenEarth including delicate silks, suede and leather trims, beads, sequins, painted garments, specialty buttons and trims, couture garments, heirloom fabrics and other "problem" items. And, unlike petroleum based solvents, liquid silicone is odourless, so there is no lingering chemical "dry cleaned" smell.

Wet cleaning and GreenEarth together are an ideal combination for any dry cleaning plant wanting to ensure the best result for their customers with over 70% of GreenEarth affiliates solely using this combination. Pre- and post-spotting are still useful for more complex stains.

BUSINESS OFFICE

www.gecleaning.com.au * info@gecleaning.com
P.O. Box 149 Manly NSW 1655 Australia * tel 02 8003 6727
ABN 98 828 090 465

Cycle Times

The reported cycle times for current machine technology, i.e., anything 10 years old or less, is approximately 60 minutes. Cycle times exceeding this amount generally mean that the dry time is extended due to overloading of the machine or machine programs are different from those normally used in the industry.

Costs

GreenEarth recognises that drycleaning volumes are different around the world. For this reason, the licence fee for Australia and New Zealand is much lower than for the United States. The annual fee is $1,500 plus GST for each machine. This fee covers the intellectual property, patents, technical and operational information, marks, brands, marketing materials and ongoing support.

What are the cost trade offs? Today, the cost for a new machine compatible with GreenEarth is less than standard multi-solvent machines as complex safety and deodorise systems are not necessary and the equipment can be configured to use far less energy than traditional systems with the elimination or reduced usage of the still. In addition, after cleaning in GreenEarth, less labour is used to process and finish items providing improved operating efficiency. GreenEarth also produces a noticeable difference that customers can see, touch and smell, helping Affiliates attract and keep loyal customers.

I am seeing a lot of "organic" dry cleaning claims. Is GreenEarth organic?

No. And that is a good thing. There is nothing green about organic dry cleaning. "Organic", as it relates to chemistry, refers to anything with a carbon backbone. Gasoline and asphalt are organic. Dry cleaners who market themselves this way are misleading the consumer.

Environmental Studies

Early studies had concerns about the animal and environmental impacts of GreenEarth. Later studies have shown that none of these concerns are valid. The most recent study conducted by Environment Canada and now recognised as the most thorough analysis yet, concludes that “D5 silicone does not pose a danger to the environment or its biological diversity” and furthermore, that “the projected future use of Siloxane D5 will not pose a danger”.

GreenEarth Cleaning is the only alternative solvent to perform and openly report extensive testing on the environmental and safety profile of its cleaning system. Over $30 million worth of independent testing and research has been done on D5 liquid silicone, to confirm that there are no risks to public safety resulting from its use in all of its applications, including dry cleaning. GreenEarth Cleaning also underwrote an independent, comprehensive 2002 IFI Fellowship Study which compared the GreenEarth system to the industry standard perc system. The IFI declared it to be "as effective as perc with no environmental concerns".

Does GreenEarth cause cancer?

Absolutely not. This rumor dates back to 2004-2005 news coverage around the release of the preliminary findings of a 1993 voluntary 2-year bioassay study commissioned in 1999 by Dow Corning, a manufacturer of D5.

The final report from the study as well as follow-up research both concluded that D5 liquid silicone poses no risk to human health, further substantiated by subsequent affirmative scientific reviews by the Illinois EPA, California's Air Resources Board (CARB), the government of Canada and the UK. Here is what matters:

- The US EPA does not recognize D5 silicone as a potential carcinogen or toxic air contaminant.
- The US EPA does not regulate the use of D5 in dry cleaning or any other application.
- The California Air Resources Board conducted an extensive 18 month review of the health and safety research and ruled that use of D5 in dry cleaning does not pose an adverse health risk for the public.
- The Government of Canada conducted a thorough review of all the available D5 data and determined that D5 is not considered to be harmful to human health or to the environment.
- United Kingdom's UK Environment Agency found D5 to be safe for the air, water and soil as well as for humans.
- More than 50 different studies on D5 demonstrate there is not a human health concern.
- D5 is one of the most extensively studied materials in consumer applications.
- D5 has been used safely for more than 40 years in many different applications.

What are the facts of the original bioassay research?

In order to better understand the preliminary test finding, follow up research was conducted by the Silicones Environmental, Health and Safety Council (SEHSC), the same group that conducted the original test. This research concluded that the effects observed in the original study were rat-specific and that D5 does not pose a health risk to humans. This is because silicone is "read" by the female rat pituitary as dopamine, a naturally occurring chemical that can upset the balance of progesterone and estrogen and in turn lead to uterine tumors. The biological pathway that causes rats to react this way does not exist in humans, and scientific experts concluded that there is no risk to human health. This conclusion was also supported by a number of scientific experts, including the Society of Toxicologists.

How long has GreenEarth been around?

GreenEarth was founded in 1999 by drycleaners looking for a replacement solvent to eliminate the environmental hazardous and process those garments that could not be handled by perc. GreenEarth was discovered by a scientist working with a solution used in cosmetics who realized it was removing the fats and dirt from his hands without drying them out. Silicone has been around for a long time and has a wide variety of uses, but no one had found a way to use it for dry cleaning. The process of doing so was patented and now forms one of several baseline patents for the GreenEarth Cleaning system.