

# GREENEARTH CLEANING FACT SHEET

## COMPOSITION & PROPERTIES

- Modified, clear, and odorless liquid silicone. Specific gravity of .95. Chemically inert.
- Surface tension: 17.42 dynes/cm at 77°F (25°C)
- Flash point: 180.9°F/Fire point: 190°F Boiling point: 410°F
- Same base ingredient used in many shampoos, conditioners, skin creams, and other personal care products.

## SAFETY & ENVIRONMENTAL BENEFITS

- Non-toxic (oral, dermal, inhalation), deterined by EPA Study protocol.
- Non-irritating to skin, non-sensitizing.
- Not regulated by EPA, RCRA, CERCLA, or California Prop 65.
- Non-VOC. Specifically exempted under U.S. EPA regulations - degrades in atmosphere.
- Listed by EPA as "SNAP" material, a good substance to use in place of ozone-depleting chemicals
- If released to the environment, degrades to sand (SiO<sub>2</sub>) and trace amounts of H<sub>2</sub>O and CO<sub>2</sub>.
- Comprehensive independent testing on waste streams and exposure levels. Over 30 million dollars of independent testing and research confirms GreenEarth's liquid silicone is ecologically friendly and safe to use.
- Affirmed by California Air Resources Board as an acceptable dry cleaning solvent alternative, and based on the available exposure information, the use of D<sub>s</sub> in GreenEarth's patented dry cleaning process will not pose a health risk to the public living near businesses using D<sub>s</sub>.
- Confirmed by Environment Canada; does not constitute a danger to human life or health (2008) and is not harmful to the environment (2012).
- No immunosuppressant effects.
- Used Activated Clay Filter Powder when used as part of the GreenEarth Optimized System is eligible for standard municipal waste disposal (no licensed waste hauler needed Independent 3rd party waste analysis is accepted throughout the USA, including by California "CUPA" districts, as proof that GreenEarth Affiliates are not Hazardous Waste Generators."

## CLEANING, PRODUCTION, & COST BENEFITS

- Great cleaning: whites and colors. Low surface tension for faster penetration and soil removal. No odor. No shrinkage.
- Cycle time: 47-65 minutes in typical dry to dry Class IIIA machine.
- Not aggressive toward dyes. Mix colors and fabrics, minimal load classification. Full loads. Increased productivity and efficiency.
- Soft hand. Very little wrinkling or lint. Static-free. Decreased labor costs: less finishing and sorting time.
- Significantly lower disposal costs. When using the GreenEarth Optimized System, disposal costs may be \$0. Lower utility costs (up to 60% savings per cycle). Excellent solvent mileage, up to 2,000 pounds per gallon reported.
- Gentle on all fabrics. No special handling for buttons, trims, sequins, or other difficult garments. Significantly reduced claims: fewer damaged garments, fewer assembly errors due to less stragglers.

## LICENSE COSTS & BENEFITS

- \$2,500 Annual Affiliation fee per machine. Second machine at same location is \$1,250. GreenEarth Cleaning is a patented process that includes our new patent covering Vapor Cleansing. Any dry cleaner using silicone in their dry cleaning machine must have a license from GreenEarth's trademarked name and logo in store marketing.
- Operational, technical, and marketing support Wide variety of high quality, customizable marketing materials. 24/7 website store locator.

## EQUIPMENT REQUIRED

- Runs in Class IIIA machine, with or without distillation. Filtration system can be cartridge, spin disk, all carbon, powder/clay, or Kleen-Rite.
- Can run in most hydrocarbon machines.
- We can sell a GreenEarth Optimized Machine directly to the end user, reducing capital outlay, and with financing options. We have a network of independent installers and local support to get you up and running.

# AVAILABLE ALTERNATIVE SYSTEMS AT-A-GLANCE

	Perc	Intense	DF2000 / EcoSolv	K-TeX	Solvon K4	Sensene	CO2	Wet Cleaning	GreenEarth Cleaning
<b>Chemical Properties</b>	Halogenated Hydrocarbon	Hydrocarbon + Glycol Ether	Hydrocarbon	Hydrocarbon + Glycol Ether + "Identifier"	Formaldehyde Dibutyl Acetal	Modified Alcohol + Hydrocarbons	Carbon dioxide	H2O	Decamethylcyclopentasiloxane
<b>Solvent Chemical Structure</b>	Carbon Organic	Carbon Organic	Carbon Organic	Carbon Organic	Carbon Organic	Carbon Organic	N/A Organic	N/A Inorganic	Silica Inorganic
<b>Odor</b>	Strong ether-like smell	"Product-specific mild smell"	Slight petroleum smell	Mild Citric	Strong paint-like smell	Mild, Menthol-like	Odorless	Odorless	Odorless
<b>Commercial Introduction</b>	1940s	2015	1993	2016	2010	2016	1993	1994	1999
<b># Machines U.S.</b>	<25,000	N/A	<8,000	N/A	<200	>25	<10	<150 <sup>4</sup>	<1000
<b>Machine System Cost</b>	\$30,000 - \$75,000	\$45,000 - \$95,000	\$45,000 - \$95,000	\$45,000 - \$95,000	\$54,000 - \$105,000	\$45,000 - \$95,000	\$125,000+	\$50,000+	\$38,000 – \$95,000
<b>IFI Performance Ratings</b> <b>Contamination</b> <b>Health Issues</b> <b>Equipment Cost</b> <b>Operating Cost</b> <b>Variety of Garments</b> <b>Does it clean?</b>	Poor Poor Excellent Excellent Good Yes	Average Average Good Average Good Yes	Average Average Good Average Good Yes	Average Average Good Average Good Yes	Average <sup>1</sup> N/A Average <sup>1</sup> Average <sup>1</sup> Good <sup>1</sup> Yes <sup>1</sup>	N/A N/A N/A N/A N/A N/A	Excellent Excellent Poor Poor <sup>1</sup> Poor <sup>1</sup> Yes	Excellent Excellent Excellent Average Poor Yes	Excellent Good Good Excellent Excellent Yes
<b>Extensive, openly reported testing</b>	Yes	No	No	No	No	No	No	Yes	Yes
<b>Physical Properties</b>	Clear liquid	Clear liquid	Clear liquid	Clear liquid	Clear liquid	Colorless liquid	Colorless gas	Clear liquid	Clear liquid
<b>Surface Tension<sup>2</sup> (dynes/cm-2)</b>	32	24 @ 68°F	24 @ 68 °F	24 @ 68 °F	25.2	not reported	N/A	72.7 @ 68 °F	17.4
<b>Solvent KB Value<sup>3</sup></b>	90	73	27	75	75	161	N/A	N/A	<20
<b>Specific Weight (water = 8.3lbs/gal)</b>	13.6	6.56	6.6	6.7	6.9	6.96	N/A	8.3	7.9
<b>Flash Point</b>	None	> 147 °F	142-147 °F	> 142 °F	143 °F	149 °F	None	None	170°F
<b>Machine Class</b>	IV	IIIA	IIIA	IIIA	IIIA	IIIA	Pressure Vessel	-	IIIA
<b>VOC, HAP, TAC</b>	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No
<b>Permits Required</b>	Yes	Yes	Yes	Yes	Yes	Yes	Rarely	Rarely	Rarely
<b>Claims</b>	(Baseline)	Less than perc	Less than perc	Less than perc	Similar to perc	Unknown	Similar to perc	Higher than perc	Significantly less than perc
<b>Shrinkage Issues</b>	Some	Some	Some	Some	Some	Unknown	Some Acetate/Triacetate	Yes	None
<b>Color Fastness</b>	Average	Good	Good	Good	Average	Poor	Good	Good	Exceptional
<b>Hand of Garment</b>	Average	Average	Good	Average	Good	Similar to perc	Good	Good	Exceptional
<b>Pre-sort Necessary</b>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Limited
<b>Problem Garments</b>	Silks, beads, trims, vinyl buttons, leather, cashmere	Silks, beads, trims, vinyl, buttons, leather, cashmere	Certain beads, trims, vinyl, buttons, certain colors	Silks, beads, trims, vinyl buttons, leather, cashmere	Certain trims, beads, vinyl, ornamentation	Similar to perc	Acetates, triacetates, elastic, beads, trims, buttons	Wool, natural fiber/skins, water soluble dyes	None
<b>Finishing</b>	Baseline	Similar to perc	Similar to perc	Similar to perc	Similar to perc	Similar to perc	Significantly higher than perc (cold drying creates wrinkling)	Significantly higher (must be dried 80% and blocked and stretched)	Significantly less than perc; less wrinkling, lint & static, large % can be tunneled
<b>Cycle Time</b>	35 - 55 minutes	60 - 70 minutes	47 - 65 minutes	60 - 70 minutes	60 - 80 minutes	Unknown	35 - 45 minutes	28 minutes (dried 80%)	65 minutes
<b>Operational &amp; Technical Support</b>	No	No	No	No	Via Kreussler Rep	Via Soap Rep	No	No	Yes
<b>Marketing Support</b>	None	None	None	None	Limited	None	None	None	Significant
<b>Fees, Royalties, Proprietary Products</b>	N/A	N/A	N/A	N/A	Proprietary products required (solvent, detergent, stabilizer and spotters)	Not possible to convert a used machine, must be a new machine w/ special gaskets	N/A	N/A	\$2,500 license fee 1st machine (additional machines \$1,250)

<sup>1</sup> Represents modification to IFI assessment by GreenEarth Cleaning, based on input from industry experts informed by in-use experience; K4 and Rynex represent industry reported performance, no IFI ratings exist. <sup>2</sup> Surface tension has a direct correlation to cleaning ability. The lower the surface tension, the quicker the wetting and penetrating ability for cleaning to take place.

<sup>3</sup> KBV is a measure of the strength of the solvent alone in dissolving Kauri Gum (degreasing ability); GreenEarth without detergent has a low KBV, meaning that it is not itself a cleaning agent, but the unique chemical interaction that siloxanes have with detergent allows it to clean as effectively as higher KB value solvents without risk of damage to the fabric. <sup>4</sup> 100% wet cleaning processing.