

Alternative systems at-a-glance

	Perc	N Propyl Bromide	Hydrocarbon	Solvair	CO2	100%Wet Cleaning	GreenEarth Cleaning
Chemical Properties	Halogenated Hydrocarbon	N Propyl Bromide	Hydrocarbon	Glycol-ether CO2 rinse	Carbon dioxide	H2O	Siloxane
Solvent Chemical Structure	Carbon Organic	Carbon Organic	Carbon Organic	Carbon Organic	NA Organic	NA Inorganic	Silica Inorganic
Odor	Strong ether-like smell	Strong ether-like smell	Slight petroleum smell	Strong paint-like smell; gas is odorless	Odorless	Odorless	Odorless
Commercial Introduction	1940s	2006	1993	2007	1993	1994	1999
# U.S. sites	20,000+	<100	5,000+	<10	<40	<50	750+
Machine System Cost	\$30,000-75,000	\$40,000-75,000	\$45,000-95,000	\$150,000-175,000	\$125,000+	\$50,000+	\$45,000-95,000
IFI 2007 Ratings Contamination Health Issues Equipment Cost Operating Cost Variety of Garments Does it clean?	Poor Poor Excellent Excellent Excellent Yes	Average Poor Excellent Average Average NA	Average Average Good Average Excellent Yes	Good* Excellent Bad Bad* Good* Yes	Excellent Excellent Bad Bad* Bad* Yes	Excellent Excellent Excellent Average Poor Yes	Excellent Good Good Excellent Excellent Yes
Extensive, openly reported testing	Yes	No	No	No	No	Yes	Yes
Physical Properties	Clear liquid	Clear liquid	Amber liquid	Liquid; colorless gas	Colorless gas	Clear liquid	Clear liquid
Surface Tension** (dynes/cm-2)	32	25.9	24@68°F	24@77°F	NA	72.7°F	17.4
Solvent KB Value***	89	125	27	65-75	NA	NA	<20
Specific Weight (water=8.3lbs/gal)	13.6	11.0	6.6	NA	NA	8.3	7.9
Viscosity	2	.49	2.1@77°F	NA	NA	.89@25C	4.0CST
Flash Point Machine Class	None IV	None	142-147°F IIIA	<200°F IIIA	None Pressure Vessel	None	170°F IIIA
VOC, HAP, TAC	Yes	Yes	Yes	Yes	No	No	No
Permits Required	Yes	Yes	Yes	Yes	Sometimes	Rarely	Rarely
Claims	(Baseline)	Higher than perc	Less than perc	Similar to perc	Similar to perc	Higher than perc	Significantly less than perc
Shrinkage Issues	Some	Some	Some	Possibly	Some Acetate/Triacetate	Yes	None
Color Fastness	Average	Poor	Good	Good	Good	Good	Exceptional
Hand of Garment	Average	Poor	Good	Good	Good	Good	Exceptional
Pre-sort Necessary	Yes	Yes	Yes	Yes, wet wash some garments	Yes	Yes	Limited
Problem Garments	Silks, beads, trims, vinyl, buttons, leather, cashmere	Silks, beads, trims, vinyl, buttons, leather, cashmere	Beads, trims, vinyl, buttons, certain colors	Too early to tell	Acetates, triacetates, elastic, beads, trims, buttons	Wool, natural fiber & skins, items with water soluble dyes	None
Finishing	Baseline	Similar to perc	Similar to perc	Similar to perc	Significantly higher than perc (cool drying creates more wrinkling)	Significantly higher (garments must be dried 80% then blocked and stretched)	Significantly less than perc; less wrinkling, lint & static, large % can be tunneled
Cycle Time	35-55 minutes	35-45 minutes	47-65 minutes	45 minutes	35-45 minutes	28 minutes (20% residual moisture)	47-65 minutes
Operational & Technical Support	No	No	No	Yes	No	No	Yes
Marketing Support	None	None	None	None	None	None	Significant
Fees & Royalties	NA	NA	NA	NA	NA	NA	\$2,500 license fee 1st machine (additional machines \$1,250)

* Represents modification to IFI assessment by GreenEarth Cleaning, based on input from industry experts informed by in-use experience. (Note: at the time of the IFI assessment, Solvair was not yet in independent operation.)

**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.

***KB value is a measure of the strength of the solvent alone in dissolving Kauri Gum (degreasing ability) GreenEarth without detergent has a low KB value, meaning that it is not itself a cleaning agent, but the unique chemical interaction that silicone has with detergent allows it to clean as effectively as higher KB value solvents without risk of damage to the fabric.