Petroferm

Technical Data Sheet

LENIUM ®* GS
General Cleaning Solvent

Description

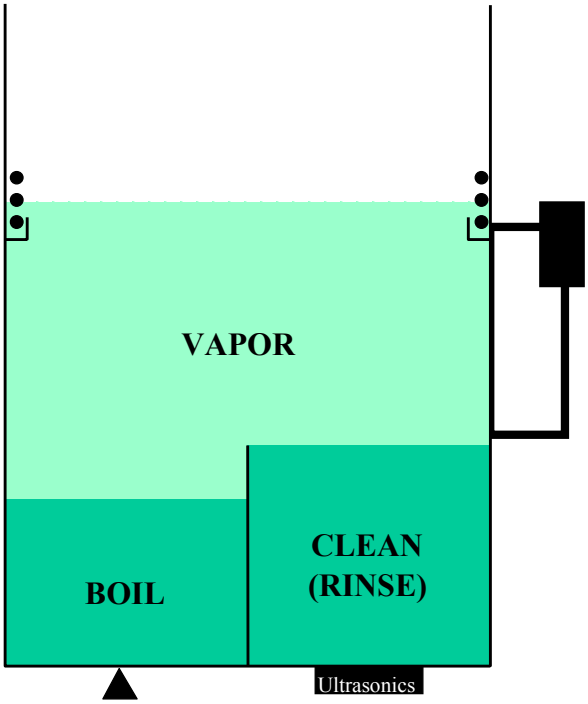
LENIUM GS is a general solvent specially formulated to remove contaminants such as oils, greases, adhesives, resins, and flux residues. The fluid has physical properties and solvency characteristics that are similar to chlorinated solvents such as 1,1,1-trichloroethane and trichloroethylene. It is a vapor degreasing solvent suitable for removing a wide variety of soils in immersion and vapor cleaning applications.

LENIUM GS is a direct replacement for 1,1,1-trichloroethane, HCFC-141b, HCFC-225, hydrofluorocarbons, and methylene chloride in vapor degreasers.

Process

LENIUM GS is designed for use in a vapor degreasing process. The product can be used in existing vapor degreasing equipment (batch or in line), but emission control retrofits may be useful in reducing vapor losses. If existing equipment is utilized, it is necessary to adjust temperature control settings.

Petroferm has developed a comprehensive users manual that covers all aspects of operating a LENIUM GS vapor degreasing process. Topics discussed in the manual include process parameters, equipment start-up and operational procedures, solvent maintenance, and health, safety, and disposal information. If converting from another solvent to a LENIUM product, please consult the operator manual and your Petroferm representative.



* LENIUM is a registered trademark of Petroferm Inc.

Typical Properties

The physical and environmental properties of LENIUM GS are compared to other halogenated solvents in Table 1.

Table 1.

	LENIUM GS	Trichloro-ethylene	HCFC-141b	HCFC-225	Methylene Chloride	1,1,1-TCA
Flash Point (TCC)	None	None	None	None	None	None
Boiling Point	160°F (71°C)	189°F (87°C)	90°F (32°C)	129°F (54°C)	104°F (40°C)	165°F (74°C)
Specific Gravity @ 25°C	1.35	1.46	1.24	1.55	1.33	1.32
Viscosity @ 25°C	0.49 cp	0.54 cp	0.43 cp	0.59 cp	0.43 cp	0.79 cp
Surface Tension (dynes/cm)	25.9	26.4	19.3	16.2	28.2	25.6
Vapor Pressure @ 20°C	110.8 mm Hg	57.8 mm Hg	593 mm Hg	283 mm Hg	349 mm Hg	100 mm Hg
Evaporation Rate (TCA = 1)	0.96	0.57	>1	>1	1.64	1
Specific Heat @ 25°C	0.27	0.22	ó	0.25	0.28	0.25
Heat of Vaporization	58.8 cal/g	57.2 cal/g	52.3 cal/g	33 cal/g	78.7 cal/g	57.5 cal/g
Solubility in Water	240 ppm	110 ppm	180 ppm	330 ppm	140 ppm	70 ppm
Solubility of Water	500 ppm	300 ppm	420 ppm	300 ppm	6 ppm	500 ppm
Flammability Limits (vol %)	4 - 7.8	8 - 10.5	7.6 - 17.7	None	14 - 22	7 - 13
Kauri Butanol (KB) Value	125	129	56	31	136	124
Atmospheric Lifetime	16 days	<1 year	10 years	5 years	<1 year	5 years
ACGIH TLV	25 ppm*	50 ppm	500 ppm	50 ppm	25 ppm	350 ppm

* *n*PB exposure limit not established. Manufacturer recommended exposure limit only.

Compatibility

LENIUM GS was tested for compatibility with metals according to MIL-T-81533A. In this test, metal coupons were submerged halfway in the refluxing fluid for twenty-four hours. The following metals showed no signs of corrosion.

Table 2.

Aluminum	Copper	Monel	316 Stainless Steel
Brass	Iconel	Nickel	Titanium
Carbon Steel 1010			Zinc

The compatibility of aluminum with LENIUM GS was further tested by scratching an aluminum coupon beneath the surface of the solvent. Several hours elapsed before signs of corrosion were noticed. In contrast, when 1,1,1-trichlorethane is subjected to the same test, corrosion can be seen immediately.

The table on the following page details the results of compatibility testing with selected plastic and elastomeric materials. This table is intended only as a general guide. Petroferm recommends that you test compatibility with the particular materials in question under your actual use conditions.

Table 3. Effects of LENIUM GS on Plastics and Elastomers

Plastic / Elastomer	Percent (%) Weight Change				Percent (%) Thickness Change			
	77ºF (25°C) 1 Hour	150ºF (66°C) 1 Hour	150ºF (66°C) 1 Month	Control[1] 150ºF (66°C) 1 Month	77ºF (25°C) 1 Hour	150ºF (66°C) 1 Hour	150ºF (66°C) 1 Month	Control[1] 150ºF (66°C) 1 Month
ACETAL (Delrin, Celcon)	0.01	0.04	4.58	0.32	0.00	1.58	2.52	1.90
ACRYLIC (Lucite, Plexiglas)	Stopped	Stopped	Stopped	0.15	Stopped	Stopped	Stopped	0.60
ACRYLONITRILE	Stopped	Stopped	Stopped	0.04	Stopped	Stopped	Stopped	1.55
BUNA N	19.69	22.60	31.61	0.11	10.14	7.89	13.82	3.57
BUNA S	27.31	25.05	106.47	-0.06	6.29	7.45	30.43	4.35
BUTYL RUBBER	1.33	2.95	8.86	-0.03	0.35	3.19	6.74	2.70
CPVC	26.88	39.98	Stopped	-0.03	20.54	41.11	Stopped	2.70
EP RUBBER	41.87	55.42	53.53	-0.23	19.42	18.51	10.71	-1.88
EPDM	4.90	-.037	-19.02	-0.63	-2.16	-4.48	-9.70	6.25
EPICHLOROHYDRIN	-10.31	-9.19	-21.36	-0.70	-5.50	-6.42	-8.26	6.96
FIBERGLASS	-0.08	0.91	Stopped	-0.61	2.45	-0.26	Stopped	1.71
FLUOROELASTOMER	-9.69	85.21	-10.34	-0.41	11.90	2.34	-8.19	4.85
G-10 EPOXY GLASS	0.03	0.03	5.27	-0.35	0.00	-1.47	15.63	2.42
HDPE	0.38	1.07	11.16	-0.02	0.32	0.32	2.88	0.32
Hypalon®	49.04	45.22	0.84	-2.22	15.63	11.88	0.99	2.04
NATURAL RUBBER	64.54	84.13	Stopped	0.24	12.57	19.70	Stopped	3.08
NEOPRENE	41.02	41.21	42.63	-0.78	16.94	12.58	6.95	2.73
NYLON	-0.02	-0.06	-1.51	-2.55	0.62	0.31	0.00	1.90
PBT (Valox, Gafite, Celanex)	0.01	0.04	2.20	-0.21	0.35	0.85	1.93	1.11
POLYCARBONATE (Lexan)	13.40	12.53	Stopped	-0.18	21.90	13.84	Stopped	0.32
POLYETHERIMIDE (Ultem)	0.01	0.01	1.18	-0.64	-2.52	0.32	2.52	2.56
POLYPHENYLENE OXIDE (Noryl)	Stopped	Stopped	Stopped	-0.05	Stopped	Stopped	Stopped	1.92
POLYPROPYLENE	0.63	2.46	20.66	-0.02	-0.97	1.66	7.97	2.67
POLYSTYRENE	Stopped	Stopped	Stopped	-0.03	Stopped	Stopped	Stopped	1.58
POLYSULFIDE	-5.23	-12.76	-17.79	-0.44	-7.69	-6.35	-5.56	5.51
POLYSULFONE	Stopped	Stopped	Stopped	-.036	Stopped	Stopped	Stopped	3.58
POLYURETHANE	8.38	13.14	71.42	-0.89	5.67	7.36	23.08	2.33
PVC, WHITE	5.91	15.58	149.37	-0.09	5.61	11.41	67.11	0.68
PVC, CLEAR	4.06	Stopped	Stopped	-0.10	3.86	Stopped	Stopped	4.53
SILICONE	11.42	12.29	31.31	-0.06	9.18	11.82	18.24	3.72
Teflon®	-0.08	-.0.01	0.79	-0.01	0.00	0.29	3.45	1.15
TYGON	22.89	17.67	12.00	-0.46	9.29	9.35	8.63	5.67

Plastic / Elastomer	Percent (%) Weight Change				Percent (%) Thickness Change			
	77ºF (25°C) 1 Hour	150ºF (66°C) 1 Hour	150ºF (66°C) 1 Month	Control[1] 150ºF (66°C) 1 Month	77ºF (25°C) 1 Hour	150ºF (66°C) 1 Hour	150ºF (66°C) 1 Month	Control[1] 150ºF (66°C) 1 Month
UHMW POLYETHYLENE	0.25	1.07	11.53	-0.01	0.96	0.32	4.46	2.24
Viton® A/B	1.01	2.85	18.12	-0.22	-.032	2.54	10.48	4.19
Viton® G/F	20.72	29.17	123.59	-0.63	9.06	12.15	28.97	3.10

1. Effect of temperature only. Sample kept at 150°F (66°C) with no solvent.

Hypalon and Viton are registered trademarks of DuPont Dow Elastomers. Teflon is a registered trademark of DuPont.

Environmental and Regulatory

Table 4.

Ozone Depletion Potential (ODP)	0.013-0.018*
Global Warming Potential (GWP)	Zero
Volatile Organic Compound (VOC)	Yes
Significant New Alternatives Program (SNAP)	Pending
Hazardous Air Pollutants (HAP)	No
National Emission Standards for Hazardous Air Pollutants (NESHAP)	Not regulated
Superfund Amendments and Reauthorization Act (SARA)	Not regulated
Resource Conservation and Recovery Act (RCRA)	Not regulated

* Source: US EPA. ODP may be greater at locations near the equator.

Safety and Toxicity Please see Material Safety Data Sheet for detailed information.

Disposal Petroferm recommends contacting your current or local environmental service company for disposal of this product. The most common and economical method of disposal is incineration of used material in compliance with all applicable government regulations. Used LENIUM GS can also be delivered to a solvent reclaimer.

Packaging LENIUM GS is available in 5-gallon pails (55 lb/25 kg net, 62 lb/28 kg gross) and 55-gallon drums (600 lb/272 kg net, 638 lb/ 289 kg gross). Samples are available in one-quart and one-gallon containers.

Storage LENIUM GS should be stored in the original container at temperatures below 140ºF (60ºC).

Shelf Life The shelf life for this product is indefinite when it is stored in its original, sealed container at room temperature. However, the product should be inspected after the designated date on the product label (twenty-four months from the date of manufacture) prior to customer use.

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Petroferm products are available worldwide.