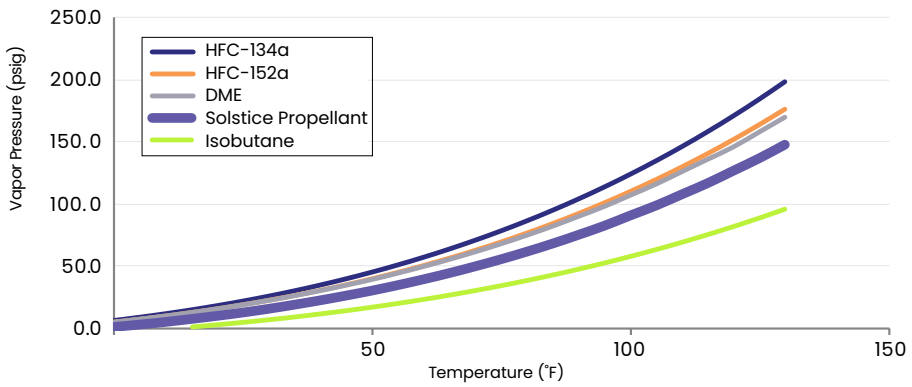
SOLSTICE® PROPELLANT

COMPARISON WITH COMMON PROPELLANTS

Physical Properties and Regulatory Comparison (U.S. Only)

Requirement	Solstice® Propellant HFO-1234ze(E)	HFC-134a	HFC-152a	DME	Propane	i-Butane	n-Butane
Global Warming Potential (GWP) vs. CO_2, 100 year ITH[1]	<1	1300	138	1	3.3	3	4
Volatile Organic Compound (VOC)[2]	No	No	No	Yes	Yes	Yes	Yes
Flammability[3]	No	No	Yes	Yes	Yes	Yes	Yes
LFL / UFL[4] (Vol.% in Air @70°F)	NONE	NONE	3.9/16.9	3.4/18.0	2.2/9.5	1.8/8.4	1.9/8.5
Molecular Weight	114	102	66	46	44	58	58
Boiling Point (°F)	-2.2	-15	-13	-13	-44	11	31
Vapor Pressure							
(PSIG) @70°F	49	71	62	63	108	31	17
(PSIG) @130°F	147	199	176	174	257	97	66
KB Value	12	9	11	60	15	18	20
Specific Gravity @70°F	1.17	1.22	0.91	0.67	0.51	0.55	0.58

1. ITH; integrated time horizon. Data from Intergovernmental Panel on Climate Change (IPCC) report, 2013 (for Solstice Propellant/HFO-1234ze(E), HFC-134a, HFC-152a) and http://www.epa.gov/ozone/snap/aerosol/list.html (for DME, propane, i-Butane and n-Butane).
2. VOC exempt status–U.S. EPA; California Air Resources Board (CARB)
3. ASTM E681 and ISO 10156 flammability testing
4. LFL/UFL; lower flame limit/upper flame limit



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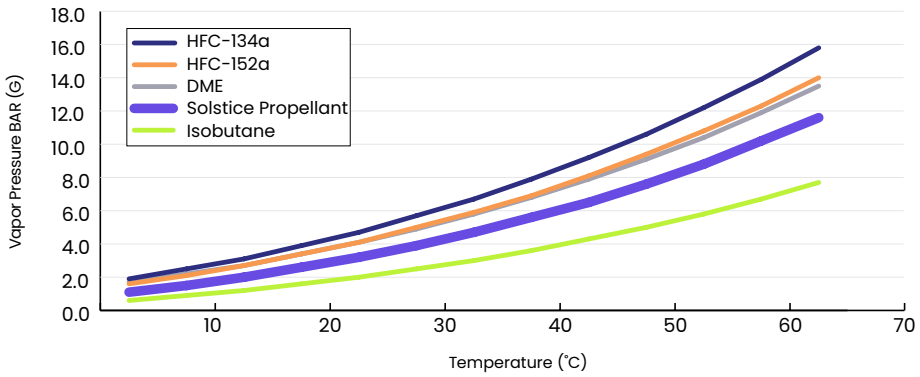
Physical Properties and Regulatory Comparison (Outside U.S.)

Requirement	Solstice® Propellant HFO-1234ze(E)	HFC-134a	HFC-152a	DME	Propane	i-Butane	n-Butane
Global Warming Potential (GWP) vs. CO_2, 100 year ITH[1]	<1	1300	138	1	3.3	3	4
Volatile Organic Compound (VOC)[2]	No	No	No	Yes	Yes	Yes	Yes
Flammability[3]	No	No	Yes	Yes	Yes	Yes	Yes
LFL / UFL[4] (Vol.% in Air @21°C)	NONE	NONE	3.9/16.9	3.4/18.0	2.2/9.5	1.8/8.4	1.9/8.5
Molecular Weight	114	102	66	46	44	58	58
Boiling Point (°C)	-19	-26	-25	-25	-42	-12	-0.5
Vapor Pressure							
barg @21.1°C	3.4	71	62	63	108	31	17
barg @54.4°C	10.1		176	174	257	97	66
KB Value	12	9	11	60	15	18	20
Specific Gravity @21°C	1.17	1.22	0.91	0.67	0.51	0.55	0.58

1. ITH; integrated time horizon. Data from Intergovernmental Panel on Climate Change (IPCC) report, 2013 (for Solstice Propellant/HFO-1234ze(E), HFC-134a, HFC-152a) and http://www.epa.gov/ozone/snap/aerosol/list.html (for DME, propane, i-Butane and n-Butane).
2. VOC exempt status–U.S. EPA; California Air Resources Board (CARB)
3. ASTM E681 and ISO 10156 flammability testing
4. LFL/UFL; lower flame limit/upper flame limit



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OUR COMMITMENT TO SUSTAINABILITY

To learn more, contact us at:
https://go.solstice.com/solvents-propellants-contact

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5580008-SLS-Propellant-Comparison | SOLS | 06/26