

PURITY™ VHVI Specialty Base Oils

The clear choice from start to finish.

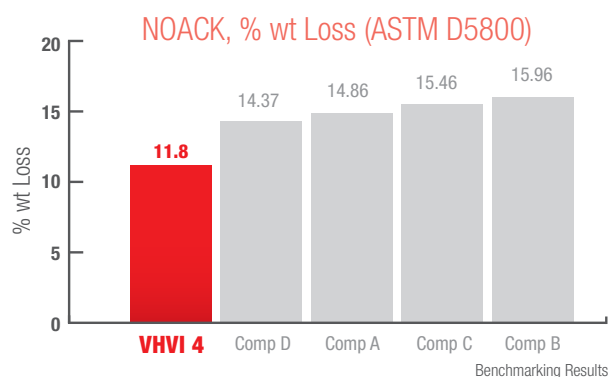
Petro-Canada PURITY VHVI Specialty Base Oils are produced at HollyFrontier's Mississauga base oil refinery, one of the few Group III refineries in North America. The result is highly isoparaaffinic, saturated base oils with a high viscosity index. These highly pure base oils are clear and bright, and are well suited to help formulators meet ever increasing technical demands. Formulating with PURITY VHVI base oils results in leading edge lubricants with high performance and long life for enhanced equipment protection.

FEATURES

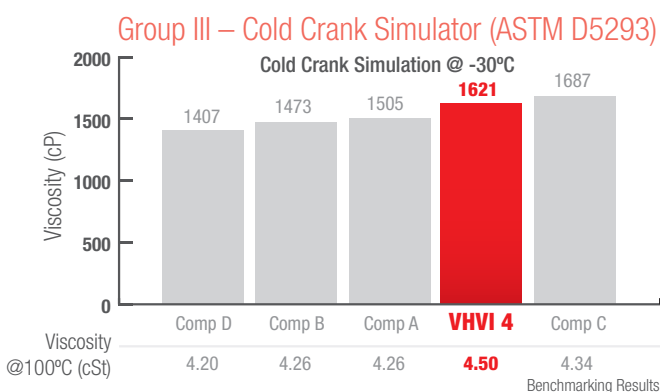
- High purity
- Very high viscosity index
- Very low volatility
- Excellent low temperature properties
- Outstanding oxidative and thermal stability

BENEFITS

- Well positioned to meet needs of future ultra-low viscosity grades such as 0W-16
- Excellent response to additives
- Shear stability permits development of premium HTHS motor oils
- Can replace more expensive PAOs/GP III+ in many high performance lubricant applications



Low volatility is critical in finished formulations for reduced oil consumption and emissions, particularly with increased oil drain intervals and higher engine operating temperatures.



Note: VHVI 4 has a higher Vis @100°C, but a comparable CCS

Cold Crank Viscosity measures ease of starting at low temperatures (wear at low temperatures). Lower cranking resistance means faster, easier starting in engine oils.



Clear Advantage

FORMULATING

- PURITY VHVI's excellent low temperature properties and low volatility allow for the formulation of challenging multi-grades, such as SAE 0W-20, without the use of PAO in a wide range of additive packages
- PURITY VHVI can help you reduce or eliminate the need for PAO and GROUP III+ in your formulations, optimizing cost and performance
- Due to the higher viscosity of Petro-Canada 4 cSt base oil, customers may need only one ISO grade for formulating
- Benefits of formulating with PURITY VHVI base oils include: leading edge lubricants with high performance, long life and enhanced equipment protection

RELIABLE SUPPLY AND WORLD CLASS SUPPORT

- Over 40 years of experience producing base oils that are among the purest in the world
- Consistent and reliable quality
- Strategically located to deliver bulk shipments by rail, truck and marine globally to meet your needs
- Produced under ISO 9001, ISO/TS 16949 registered quality management system
- Produced under ISO 14001 registered environmental management system
- World class R&D and an experienced team to support your business
- A full range of PURITY base oils available to meet customer requests

TYPICAL PROPERTIES OF PURITY VHVI

PROPERTY	ASTM TEST METHOD	PRODUCT NAME				
		VHVI 2	VHVI 3	VHVI 4	VHVI 6	VHVI 8
Density @ 15°C, kg/L	D4052	0.83	0.83	0.83	0.84	0.85
Color, ASTM	D1500	<0.5	<0.5	<0.5	<1.0	<1.5
Viscosity						
	@ 40°C, cSt	9.3	15.5	21.3	32.8	51.9
	@ 100°C, cSt	2.6	3.7	4.5	6.0	8.1
	SUS @ 100°F	60	86	128	175	266
Viscosity Index	D2270	102	120	128	128	128
Pour Point, °C (°F)	D5950	-45 (-49)	-30 (-22)	-24 (-11)	-24 (-11)	-21 (-6)
Flash Point, PM, °C (°F)	D93	179 (354)	186 (367)	210 (410)	225 (437)	242 (468)
Flash Point, COC, °C (°F)	D92	187 (369)	204 (399)	230 (446)	241 (466)	262 (504)
Cold Crank Simulator						
	@ -20°C, cP	D5293			1279	3291
	@ -25°C, cP	D5293		990	1998	5894
	@ -30°C, cP	D5293		1621	3560	
	@ -35°C, cP	D5293	641	1683	2648	
NOACK Volatility, % wt	D5800	60.2	30.2	11.8	9.0	3.2
Composition						
	% Saturates	PCM435	99.9	>99.5	99.8	99.8
	% Aromatics	PCM435	0.1	<0.5	0.2	0.2
	Sulfur, ppm	D5453	<1	<1	<1	<1

To learn more about how our base oils can help your business visit:

lubricants.petro-canada.com

or contact us at lubecsr@hollyfrontier.com

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