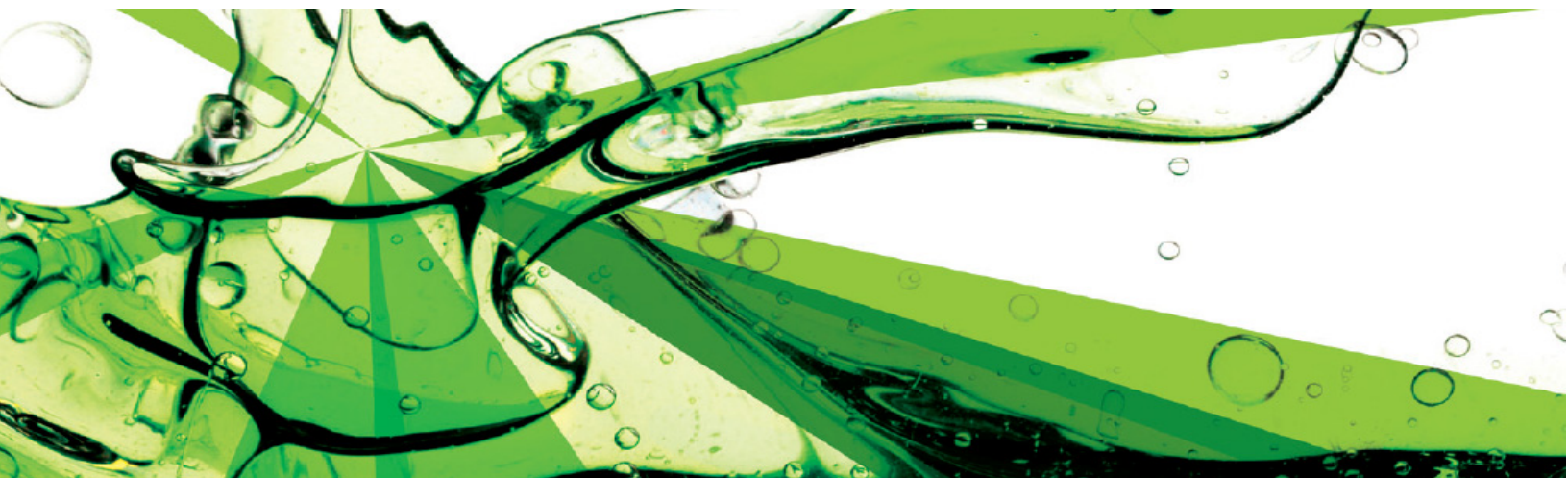


# NovaSpec™ Base Oils



## Renewably-Sourced High Performance Synthetic Base Oils



NovaSpec base oils are produced from plant sugars, which are converted to pure hydrocarbon molecules through an advanced industrial biotechnology platform. Due to this production process, NovaSpec base oils are pure compounds, containing none of the impurities found in conventional base oils derived from crude petroleum. NovaSpec base oils are designed to face the toughest lubricant challenges. They are engineered to be compatible with a wide range of additive packages to formulate lubricants for a range of applications from automotive engine oils to process and industrial oils. NovaSpec base oils improve upon key environmental metrics including biodegradability, toxicity, and renewability to enable the formulation of lubricants with reduced environmental impact.

FEATURES	BENEFITS
Wide range of environmentally friendly attributes	Allows for formulations that meet strict regulatory considerations
Fully compatible with mineral oil	Utilizes existing infrastructure for product use and disposal
Low pour point	Performs well in very cold environments
Excellent shear stability	Allows viscosity retention under harsh conditions
Low NOACK volatility	Minimizes evaporative losses
No sulfur content	Contributes to lower emissions
Improved biodegradability	Reduces potential for environmental damage caused by spills or leakage
High Viscosity Index	Enables product use over a wide temperature range

# NovaSpec™ Base Oils

## TYPICAL PROPERTIES

Properties	Method	NovaSpec 350	NovaSpec 450	NovaSpec EL34	NovaSpec 750	NovaSpec 1250
Appearance	Visual	Bright and Clear	Bright and Clear	Bright and Clear	Bright and Clear	Bright and Clear
Color	ASTM D1500	L0.5	L0.5	L0.5	L0.5	L0.5
Density, 15°C (kg/l)	ASTM D4052	0.82	0.82	0.83	0.83	0.84
Viscosity, 40°C (cSt)	ASTM D445	13.5	19.2	34.0	44.0	77.0
Viscosity, 100°C (cSt)	ASTM D445	3.2	4.2	6.1	7.2	10.5
Viscosity Index	ASTM D2270	107	122	125	125	122
Pour point (°C)	ASTM D97	-60	-42	-36	-48	-27
Flash point, (°C)	ASTM D92	195	220	210	250	280
Bromine Index	ASTM D2710	< 200	< 200	< 200	< 200	< 200
CCS @-25°C, cP	ASTM D5293	NA	NA	NA	NA	10,000
CCS @-30°C, cP	ASTM D5293	NA	1200	NA	6400	NA
CCS @-35°C, cP	ASTM D5293	NA	2000	NA	11,000	NA
Evaporation Loss, NOACK (%)	ASTM D5800	NA	14	NA	5	NA
Octanol-Water Partition Coefficient (log Kow)	EPIWIN Calculation	> 7	> 7	> 7	> 7	> 7
Biodegradability, (%)	OECD 301B	> 75%	> 70%	> 60%	> 50%	> 30%
Biobased Carbon Content	ASTM D6866	50%	50%	50%	50%	50%
Ecotoxicity	OECD 201, 202, and 203	Pass	Pass	Pass	Pass	Pass

Typical properties are average values only and do not constitute a specification. Minor variations that do not affect product performance are to be expected during normal manufacture, and at different blending locations. Product formulations are subject to change without notification.



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