

# Ceri+™ GTL Base Oils

Ceri+™ Gas-to-Liquids (GTL) Base Oils are unique, premium quality, low carbon footprint, synthetic fluids produced in the US, from natural gas. The majority of the viscosity grades within the product range are classified as Group III+ base oils. Globally, these will be the first and only GTL base oils manufactured from a production facility deploying Carbon Capture and Sequestration (CCS) on commercial scale. Cerilon GTL Base Oils offer quality superior to most competitive products.

## Typical Properties (indicative)

Property	ASTM test method	Units	Viscosity grades			
			3 cSt	4 cSt	6 cSt	8 cSt
CCS Viscosity @ -30°C	D5293	cP	-	847	2,083	3,768
Flash Point	D92	°C (°F)	196 (385)	222 (431)	247 (477)	271 (520)
NOACK Volatility	D5800-B	wt%	27	13	6	2
Pour Point	D5950	°C (°F)	-40 (-40) max	-20 (-4) max	-20 (-4) max	-20 (-4) max
Sulphur Content	D2622	ppm	5 max	5 max	5 max	5 max
Viscosity @ 40°C	D445	mm <sup>2</sup> /s	10.9	16.9	28.6	41.2
Viscosity @ 100°C	D445	mm <sup>2</sup> /s	2.9	4.0	5.9	7.7
Viscosity Index	D2270	-	125	140	159	160

*These properties are typical of anticipated production. While future production will conform to Cerilon's specifications, variations in these properties may occur.*

## Applications

- **3 cSt:** Top-tier transmission fluids and other automotive gear oils; niche automotive engine oils; premium process, transformer and white oils; specialty fluids.
- **4 and 6 cSt :** High performance, low viscosity engine oils; compressor, hydraulic, gear and turbine oils.
- **8 cSt:** Select industrial, marine engine and process oils.



Clear appearance and virtually odorless



Essentially contaminant-free



Top-tier volatility and cold flow properties



Favorable carbon intensity compared to other top-tier base stocks



Highly saturated with good oxidation stability



Elevated iso-paraffinicity yielding superior viscosity indices

## Benefits

- For North American customers, local US production ensures direct-from-facility deliveries and eliminates risks associated with over-stretched international supply chains.
- Enables the formulation of ultra-fuel economy, low carbon footprint lubricants not accessible by conventional Group III base oils.
- Facilitates the elimination of expensive synthetic-derived base stocks, such as poly alpha olefins, from formulations.
- Low toxicity, readily biodegradable and suitable for environmentally sensitive applications.
- Lower handling and use-related health risks compared to conventional base oil.

# GTL Ultra-Low Sulphur Diesel







Cerilon Gas-to-Liquids (GTL) Ultra-Low Sulphur-Diesel (ULSD) is a unique, premium quality, synthetic middle distillate produced in the United States (US) from natural gas. Globally, it will be the first and only GTL diesel manufactured at a production facility deploying Carbon Capture and Sequestration (CCS) on commercial scale. Cerilon GTL ULSD, a fully fungible drop-in alternative for crude-oil based diesel, offers a cleaner engine burn with reduced emission levels, and further positively contributes to the decarbonising of the transportation sector.

## Typical Properties (indicative)

Property	ASTM test method	Units	#1 ULSD	#2 ULSD
Aromatics	D5186	wt%	1 max	1 max
Cetane number	D613	-	60 min	70 min
Cloud Point (winter)	D2500	°C (°F)	-28 (-18)	-22 (-8)
Density @ 15°C	D4052	kg/m <sup>3</sup>	756	767
Gravity	D4052	°API	55	53
Pour Point (winter)	D5950	°C (°F)	-33 (-27)	-27 (-17)
Sulphur Content	D2622	ppm	5 max	5 max

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Cerilon GTL ULSD conforms to ASTM D975, the Cenex, Magellan and NuStar (North Line) Pipeline specification requirements, and others.

	Clear appearance		Nominally no sulphur
	Very high cetane number		Non-toxic to aquatic organisms and readily biodegradable
	Highly paraffinic and essentially aromatics-free		Virutally odorless

## Benefits

- Improvement in refinery profitability given the blending pool's ability to accommodate additional volumes of lower-quality components.
- No vehicle or infrastructure investment required to use as drop-in alternative.
- Substantial reduction in exhaust emissions, including particulate matter.
- No negative impact on exhaust after-treatment devices.
- Facilitates higher levels of biodiesel blending without resultant increase in NOx emissions.
- Lower handling and use-related health risks compared to conventional diesel.

## Applications

- A unique refinery diesel pool component, ideally suited to unlock blending constraints.
- A premium quality blending component for finished product automotive diesel.
- A neat diesel fuel for use in sensitive (e.g. marine) and/or challenging (e.g. underground mining) environments.

# GTL Naphtha

Cerilon Gas-to-Liquids (GTL) Naphtha is a premium quality, highly paraffinic, synthetic light distillate produced in the US from natural gas. Globally, it will be the first and only GTL naphtha manufactured at a production facility deploying Carbon Capture and Sequestration (CCS) on commercial scale. Cerilon GTL Naphtha, similar in carbon distribution to the more familiar US natural gasoline stream, offers quality superior to that of competitive products. The product has been confirmed to satisfy the Wiehe Oil Compatibility test at diluent operating conditions.

## Typical Properties (indicative)

Property	ASTM test method	Units	Value
Density @ 15°C	D4052	kg/m <sup>3</sup>	680
Gravity	D287	°API	77
PONA	Paraffins		>95
	Olefins	D6729	wt%
	Naphthenes		<3
	Aromatics		<1
Reid Vapour Pressure @ 37.8°C	D323	kPa (psi)	42 (6)
Viscosity @ 7.5°C	D7042	cSt	1 max
Wiehe compatibility analysis	-	-	Pass

*These properties are typical of anticipated production. While future production will conform to Cerilon's specifications, variations in these properties may occur.*

Cerilon GTL Naphtha conforms to Condensate Blend (CRW) Pool Quality specification requirements, and others.



Nominally no sulphur



Insignificant levels of metallic contaminants



Essentially aromatics free



Virtually odorless



Highly paraffinic

## Benefits

- Superior light olefin yields, reduced coking rates and subsequent extended run durations, as well as lower-carbon footprint compared to alternative steam cracker feedstocks.
- Improvement in stability of bitumen and/or heavy oil blending operations as a result of diluent quality consistency.
- Enables the formulation of environmentally friendly fuels.
- Lower handling and use-related health risks compared to conventional naphtha.

## Applications

- A premium quality, alternative feedstock for light olefin production via steam cracking.
- An essentially contaminant-free diluent for bitumen and/or heavy oil blending.
- A low octane finished product gasoline blending component.
- A refinery gasoline reformer feedstock.