



A Subsidiary of PETRONAS Chemicals Group

Viscotech[®] upcycled

Industry First: Re-refined
Viscosity Modifiers

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Viscotech® upcycled: Low Carbon Footprint Viscosity Modifiers

The Viscotech® upcycled product line is an industry first in low-carbon viscosity modifiers. By combining high-quality re-refined base oils with our Viscotech® polymer solutions, we deliver innovative formulations that meet stringent performance standards while supporting circular economy principles. They are then ready for reintroduction into the value chain – as high-value products. The result: low-carbon viscosity modifiers that deliver excellent performance.

While some industry players are talking about engaging with the circular economy, we're already doing it.

Specifically designed for reducing lubricants' product carbon footprint (PCF).

To develop lower-carbon lubricants in line with your brand's sustainability goals, you must start with your ingredients. That's where the Viscotech® upcycled portfolio comes in. These are the high performance viscosity modifier solutions you expect from Viscotech®, but with a key difference – they are dissolved in high quality re-refined base oils (RRBO), instead of virgin base oil. Using recycled oil reduces the carbon footprint by 60% from cradle to gate, and 0.1kg of CO₂ per kg of final oil formulation*. That's a big help if you're looking to reduce your Scope 3 emissions. Leveraging Viscotech® upcycled represents a strategic move towards minimising your virgin fossil oil dependence and supporting a circular economy.

*Assuming 8% Viscotech® in the final oil formulation.



Viscotech® upcycled

The Viscotech® upcycled product line is an industry first in low-carbon viscosity modifiers. By combining high-quality, re-refined base oils with our Viscotech® viscosity modifiers, we deliver innovative formulations that meet stringent performance standards while supporting circular economy principles. They are then ready for reintroduction into the value chain – as high-value products. The result: low-carbon viscosity modifiers that deliver excellent performance.

Reduced CO₂ footprint*

~ 60 % reduction

Viscotech® with RRBO instead of VBO

CO₂ reduction (weight), final product

~ 0.2 kg CO₂ reduction per 1.0 kg

Using Viscotech® with RRBO instead of VBO in final formulation

*Note:

- The PCF values are based on production data at a specific production site. Raw materials are allocated on product level and energy on site level.
- All PCF values are based on production data from 2024 and are calculated based on GHG protocol methodology, Together for Sustainability v. 2.1 and ISCC.
- All PCF values are valid for the products in the delivered form (e.g. including water if the product is a water solution).



Viscotech® 6073LR

OCP viscosity modifier dissolved in re-refined base oil

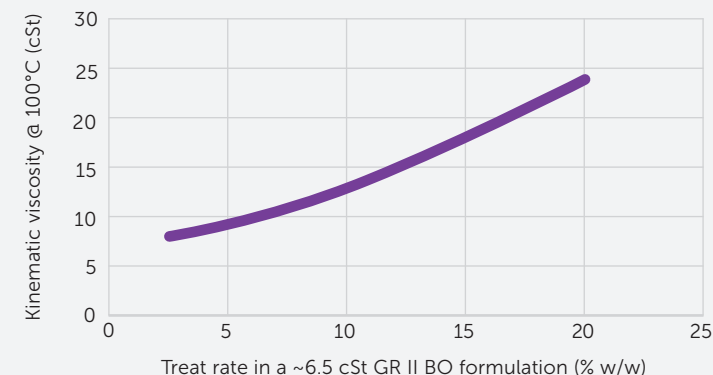
Shear-stable performance for high-load chain oils

The liquid viscosity modifier Viscotech® 6073LR, with a shear stability index (SSI) of 70, is suitable for use in oils that prevent severe wear and can withstand high loads in moving chains across specific industrial segments. The products address environmental sustainability trends, while offering cost-effectiveness and outstanding performance. Viscotech® 6073LR demonstrates excellent compatibility with Petrolad® 484FT, allowing for an easily achievable additive combination.

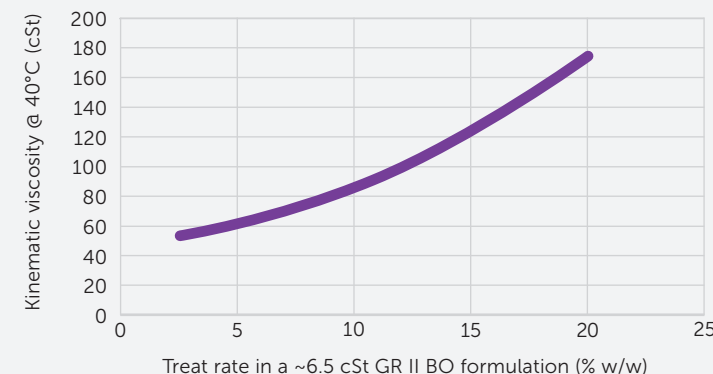
Benefits:

- A contribution to environmental sustainability through partial circular economy practices
- Performance equivalent to traditionally dissolved OCP viscosity modifiers
- Economical treat rate

Thickening efficiency of Viscotech® 6073LR



Thickening efficiency of Viscotech® 6073LR



New: Viscotech® upcycled



Viscotech® 6540LR 1300 cSt

Low-carbon, premium OCP viscosity modifier

Shear stability meets circularity

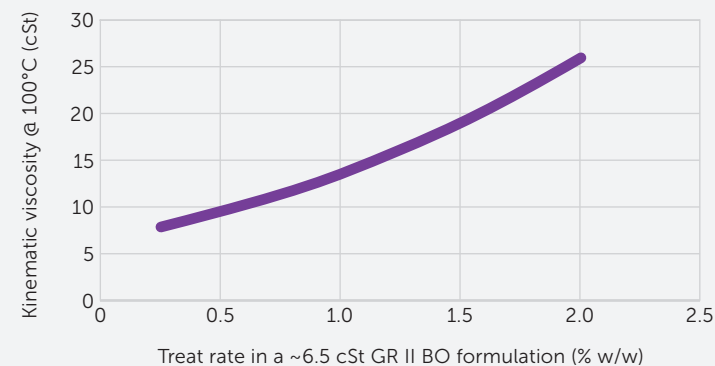
As a shear-stable (22 SSI) amorphous olefin copolymer (OCP) viscosity index improver with circular economy credentials, Viscotech® 6540LR cSt can verifiably reduce your carbon footprint. The innovative product is dissolved in an API GR I+ high-quality re-refined base oil (RRBO), and is recommended for formulating multi-grade crankcase and industrial lubricants. It can also be used in combination with our Petrolad® additive technology.

Benefits:

- Future-proof solution with circular economy practices
- Performance equivalent to its virgin BO-dissolved OCP counterpart
- Suitable for mid-/top-tier engine oils, including those targeting 5W-30 (API SP) and 10W-40 (API CI-4) levels
- Outstanding high-temperature, high-shear (HTHS) results in light- and heavy-duty vehicle applications
- Excellent low-temperature properties, also exhibited in formulations with high-paraffin base oils

Our Viscotech® OCP VMs are available from 500 cSt to 1600 cSt, and we can adjust to custom viscosities within this range, according to customers' requests. In addition, all liquid Viscotech® VMs are available in bulk, drums and IBCs.

Thickening efficiency (TE) performance of Viscotech® 6540LR 1300 cSt



Viscotech® 6540LRP

Low-carbon, premium OCP viscosity modifier with an added PPD

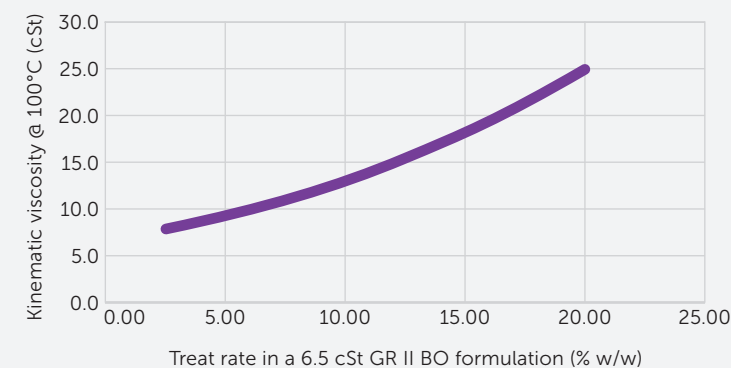
Combining shear stability, circularity and PPD performance

A shear-stable (22 SSI), amorphous olefin copolymer (OCP) viscosity index improver, dissolved in an API GR I+ re-refined base oil (RRBO), and incorporating a pour point depressant (PPD). This innovative product is recommended for formulating multi-grade crankcase and industrial lubricants.

Benefits:

- Future-proof choice for blenders interested in technologies incorporating circular economy practices
- Convenient solution due to its competitive treat rate, multi-application suitability and PPD inclusion
- Suitable for mid-/top-tier engine oils, including ones targeting SAE 5W-30, API SP performance levels
- Excellent low-temperature properties, also exhibited in formulations with high-paraffin base oils

Thickening efficiency (TE) performance of Viscotech® 6540LRP



Viscotech® 6640LR 1200

Premium OCP viscosity modifier for lower carbon emissions

Environmental friendliness, performance and innovation

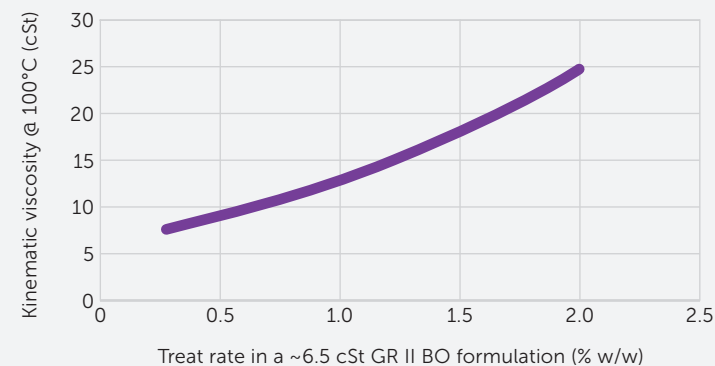
A shear-stable (25 SSI) amorphous olefin copolymer (OCP) viscosity modifier, Viscotech® 6640LR cSt lets you enhance your environmental compatibility. The innovative product is dissolved in an API GR I re-refined base oil (RRBO). It is suitable for formulating multi-grade crankcase and industrial lubricants, and can be used in combination with our Petrolad® additive technology.

Benefits:

- Forward-looking solution with circular economy practices
- Equivalent to virgin BO-dissolved OCP counterpart in performance
- Suitable for mid-/top-tier engine oils, including those targeting 5W-30 (API SP) and 10W-40 (API CI-4) levels
- Outstanding high-temperature, high-shear (HTHS) results in light- and heavy-duty vehicle applications
- Excellent low-temperature properties, also exhibited in formulations with high-paraffin base oils

Our Viscotech® OCP VMs are available from 500 cSt to 1600 cSt, and we can adjust to custom viscosities within this range, according to customers' requests. In addition, all liquid Viscotech® VMs are available in bulk, drums and IBCs.

Thickening efficiency (TE) performance of Viscotech® 6640LR



Viscotech® 535LR

Low-carbon, shear stable, styrenic viscosity modifier

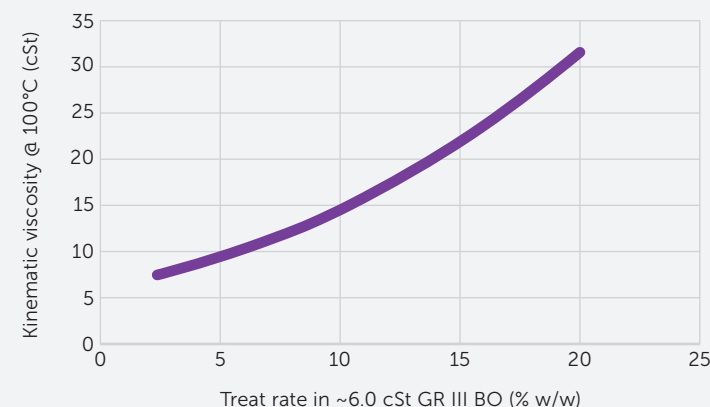
Forward-looking and enviromental friendly liquid solution

A highly shear-stable liquid viscosity modifier (3 SSI) featuring a solid, star-shaped styrenic polymer dissolved in an API Group III re-refined base oil (RRBO). It enhances efficiency across multi-grade blends, satisfies the demanding requirements of current PCMO and HDDO applications, and provides an ideal fit for next-gen ultra-low viscosity grades such as SAE 0W-XX.

Benefits:

- A future-proof option designed for blenders seeking technologies that incorporate circular economy practices
- Offers proven permanent shear stability derived from its advanced star-polymer structure
- Ensures reliable low-temperature performance, specifically proven in API SN targeting blends
- Adapts to modern industry trends by meeting the strict demands of lower viscosity grades

Thickening efficiency (TE) performance of Viscotech® 535LR



Product overview ¹

Viscotech®

Type		Base oil group	Product	KV100 (cSt)	SSI	Applications
Olefin copolymer (OCP) types	Solid		Viscotech® 6540	–	22	Automotive
			Viscotech® 6640	–	25	Automotive
			Viscotech® 6545	–	35	Automotive
			Viscotech® 6550	–	52	Grease
			Viscotech® 6073	–	70	Chain oils
	Liquid in virgin base oils	II	Viscotech® 6540L	1000, 1300	22	Automotive
		II	Viscotech® 6540LP	1000, 1100, 1300	22	Automotive
		II	Viscotech® 6640L	1200	25	Automotive
		II	Viscotech® 6545L	1200	25	Automotive
	Liquid in re-refined base oils	I	Viscotech® 6073LR	1200	70	Chain oils
		I	Viscotech® 6640LR	1200	25	Automotive
		I	Viscotech® 6540LR	1300	22	Automotive
		I	Viscotech® 6540LRP	1300	22	Automotive
		III	Viscotech® 535LR	1200	3	Automotive, Hydraulic
Styrenic types	Solid		Viscotech® 570	–	8	Grease, Automotive
			Viscotech® 533	–	3	Automotive, Hydraulic
			Viscotech® 483	–	10	Grease
	Liquid in virgin base oils	II	Viscotech® 483L	8.0 ²	10	Grease, Automotive
		III	Viscotech® 494L	9.0 ²	7	Automotive
		III	Viscotech® 494LD	8.5 ²	7	Automotive
		II	Viscotech® 372L	1300	15	Automotive
		II	Viscotech® 533L	1400, 1600	3	Automotive, Hydraulic
		III	Viscotech® 535L	1200	3	Automotive, Hydraulic
		III	Viscotech® 535LP	1200	3	Automotive, Hydraulic
		IV	Viscotech® 536L	1300	3	Automotive
New technology	Liquid in virgin base oils	II	Viscotech® 451L	9.0 ²	7	Hydraulic
		III	Viscotech® 431L	8.0 ²	10	Gears

¹ Please note that this is an excerpt only. To find out more, visit our website www.brb-international.com/lac

² At 10% dilution in a GR II BO



Abbreviations

BO	base oil
CCS	cold-cranking simulator
EP	extreme pressure
FM	friction modifier
HTHS	high-temperature, high-shear
KV	kinematic viscosity
MRV	mini-rotary viscometer
PPD	pour point depressant
RR	re-refined
SSI	shear stability index
TE	thickening efficiency
TR	treat rate (referring to additive dosages)
VG	viscosity grade
VI	viscosity index
VIRG	virgin





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