vbase SynBoost™

Given constrained Group III base oil availability amid global supply disruptions, formulators are increasingly reliant on Group II base oils, which are more available but fail to match Group III's performance. Using SynBoost™ as a co-base oil, formulators can boost formulations to **optimize performance** and **expand sourcing flexibility** without compromising finished lubricant quality.

SynBoost™ - Designed as a co-base oil to upgrade the performance of API Group II base oils to performance levels of API Group III base oils.

SynBoost Properties

PROPERTY	TEST	TYPICAL
Viscosity @ 40°C (cSt)	ASTM D445	46.0
Viscosity @ 100°C (cSt)	ASTM D445	9.78
Viscosity Index (VI)	ASTM D2270	206
Pour Point (°C)	ASTM D97	-45
Flash Point (°C)	ASTM D92	285
NOACK Volatility (%)	ASTM D6375	3.35
Aniline Point (°C)	ASTM D611	<-10
Density @ 40°C (g/cm³)	ASTM D4052	0.9424

Formulating with SynBoost™ can increase viscosity index. SynBoost gives formulators **VI lift** without excessive thickening of the base blend, for efficient treat rates and predictable blending behavior. The table below demonstrates VI lift capabilities of SynBoost in a Group II 4cSt product.

Recommended treat rates range from 5 to 20 wt% by application.

Property	Test	Gr II 4cSt	Gr II *SynBoost*™ Blend at 20 wt%	Gr III 4cSt
Viscosity @ 40°C (cSt) (KV40)	ASTM D445	21.1	**23.6**	20.3
Viscosity @ 100°C (cSt) (KV100)	ASTM D445	4.40	**4.95**	4.47
Viscosity Index (VI)	ASTM D2270	120	**139.5**	135
4-Ball Wear Scar (µm)	ASTM D4172	785	**672**	780

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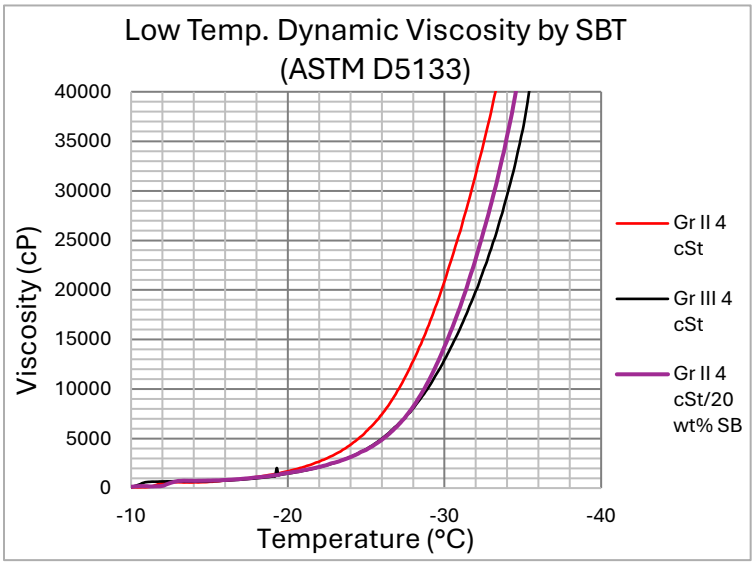
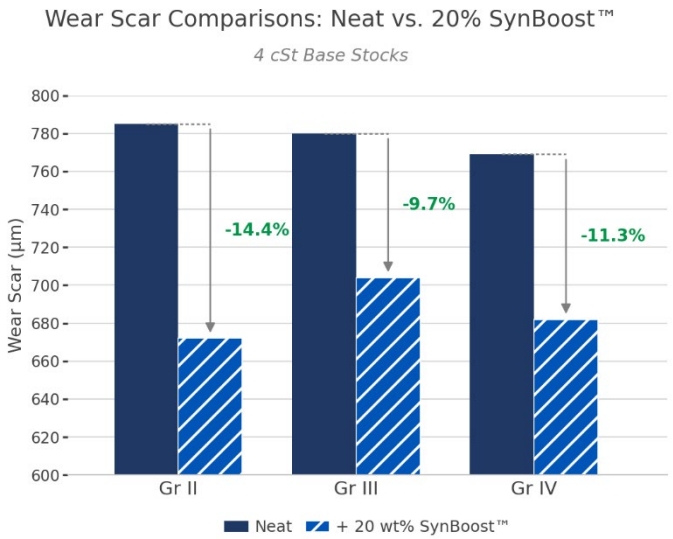
Formulating with SynBoost™ - Performance Advantages

Low-Temperature Flow. Scanning Brookfield viscometry highlights the reduction in **low-temperature flow** of the SynBoost-Enhanced Group II to mimic that of the Group III base stock.

Wear Protection. Four-ball wear testing (ASTM D4172) shows reduced wear scars across Group II, Group III, and Group IV base stocks, with the largest gain seen in Group II. The improvement is attributed to increased film thickness together with the polar character of the SynBoost molecular structure, which supports surface adsorption and reduced friction.

Oxidation Stability. SynBoost™ helps maintain oxidative stability in finished lubricants, as measured by RPVOT. The table below compares RPVOT for a Group II ISO 220 industrial gear oil with and without 10 wt% SynBoost™, alongside a Group III benchmark. With the additive package held constant across all three, the RPVOT lift is attributable to SynBoost.





Industrial Gear Oil ISO 220			
Property	**Gr II**	**Gr II with *SynBoost* at 10 wt%**	**Gr III**
IGO Additive Package (wt%)	2.5	2.5	2.5
KV 40 (cSt)	217	229	206
KV 100 (cSt)	27.6	30.4	28.0
VI	163.7	173.8	171.7
RPVOT (min)	166	346	223

Cross-Group Versatility. Viscometric and wear benefits extend beyond Group II, with improvements also observed in Group III and Group IV base stocks, making SynBoost a flexible tool across a formulator's base oil portfolio.

Evaluate SynBoost in Your Formulation. Sample quantities are available for formulation trials. Contact synboost@vbaseoil.com to discuss base oil compatibility and treat rate guidance for your specific application.

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