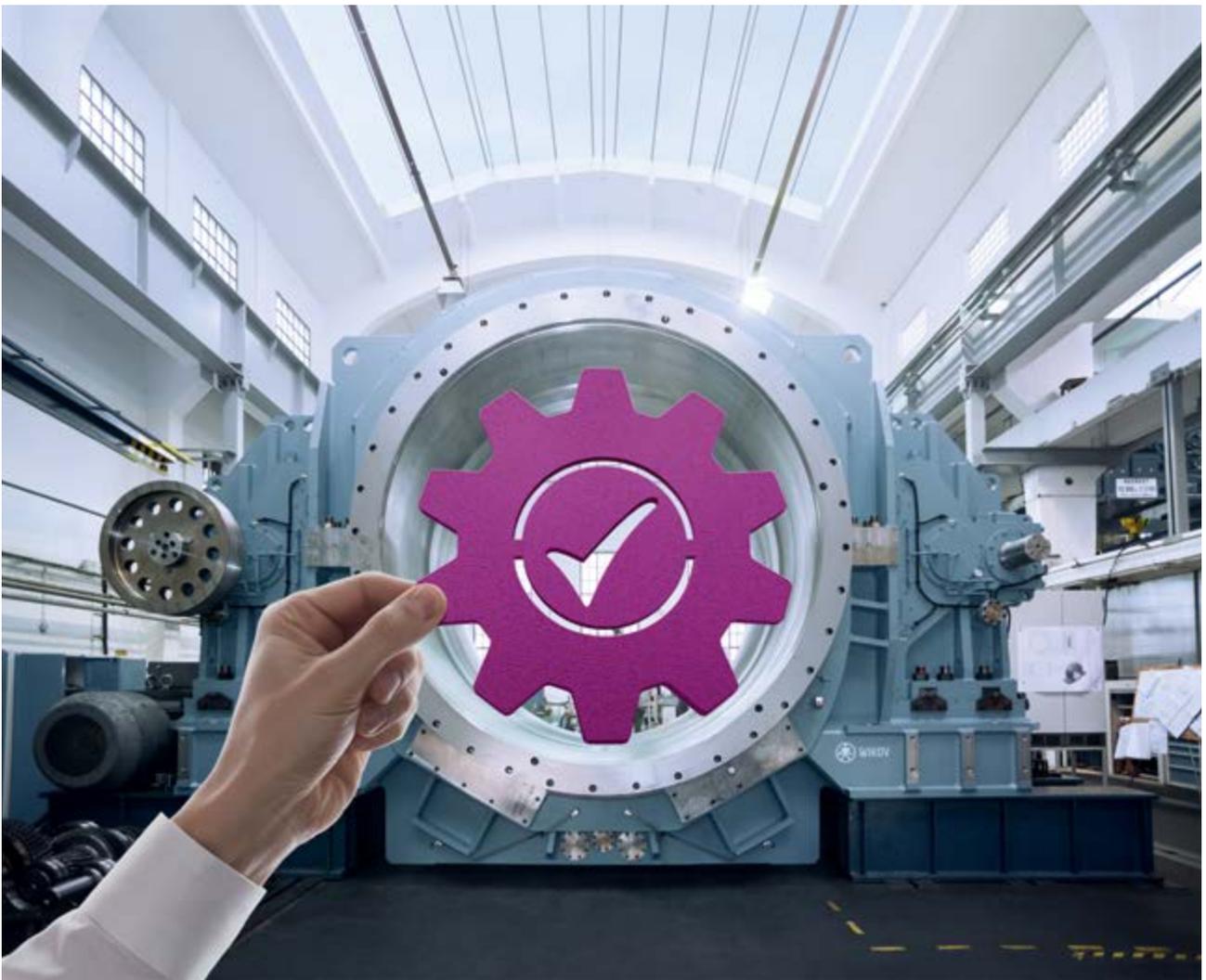


NUFLUX™ technology

SYNTHETIC BASE FLUIDS FOR
INDUSTRIAL GEAR APPLICATIONS

NUFLUX™



GET AN EDGE WITH EVONIK

Industrial applications for energy transfer using gearboxes, especially, but not exclusively, worm gear systems, place high demands on oil formulators to provide effective, durable and energy-efficient lubricants. Evonik's VISCOBASE® synthetic base fluids provide the essential tribological performance and additive package solvency for enduring mechanical system protection. **Where film strength, load carrying capacity, shear stability, operating temperatures, efficiency and extended service life dictate high performance — VISCOBASE® is an ideal choice.** Designing fully- or semi-synthetic lubricants, VISCOBASE® synthetic base fluids are the essential high-viscosity component.

Evonik's team of Oil Additives specialists have responded to the market need for improved, cost-effective performance in a broad range of industrial gear oils, especially in severe or difficult to service applications. State-of-the-art research and development, a global

manufacturing and global supply capability, combined with close customer alignment, create an ideal basis for tailored customer solutions to meet stringent oil marketer, industry or regulatory standards.

Evonik's Oil Additives specialists and technical teams partner with lubricant formulators and key OEMs to provide cost-effective performance advantages with VISCOBASE® synthetic base fluids. The VISCOBASE® range of high-viscosity synthetic fluids are shear-stable base fluids. When combined with low-viscosity fully-synthetic or semi-synthetic base stocks, they provide a highly-durable fluid foundation for specialty additives, providing marketers with high-value brand recognition among end-users. Offering a cost-effective alternative to other fully-synthetic base stock formulation approaches, VISCOBASE® synthetic fluids are available in both drum and bulk quantities globally.



Typical properties of VISCOBASE® 5-220

	Unit	Method	Value
Appearance		Visual	Clear
Color		ASTM D 1500	0.5
Kinematic viscosity 40°C	mm ² /s	ASTM D 445	12,000
Kinematic viscosity 100°C	mm ² /s	ASTM D 445	480
Viscosity index		ASTM D 2270	188
Density 15°C	g/cm ³	ASTM D 4052	0.94
Flash point	°C	ASTM D 92	220
Pour point	°C	ASTM D 97	-6
Noack volatility	%	ASTM D 5800	3.1



BOOST EFFICIENCY WITH NUFLUX™ TECHNOLOGY

In industrial gear oils, high-performance lubricants need to address a variety of issues, including the following:

- Severe operating environments
- Smaller sump sizes
- Higher loads and temperatures coupled with increased shaft speeds
- Difficulty in performing routine maintenance
- Heightened expectations for longer drain intervals
- Improved equipment efficiency

In response, Evonik's Oil Additives Team offers NUFLUX™ technology. NUFLUX™ technology is a collection of products, formulation concepts and services that Evonik provides to customers in need of resource-efficient industrial lubricants. Formulations based on NUFLUX™ technology are approved by leading international gearbox OEMs.

When applied to industrial gear lubricants, NUFLUX™ technology with VISCOBASE® synthetic base fluids will deliver efficiency gains, more productivity, less downtime and optimal fluid service costs.



Gear oil formulation examples

Industrial gear oil ISO class		150	220	320	460	680
VISCOBASE® 5-220	%wt	28.4	37.0	45.1	51.5	58.5
VISCOPLEX® 1-180	%wt	0.7	0.7	0.7	0.7	0.7
Afton HiTEC® 307	%wt	2.65	2.65	2.65	2.65	2.65
NEXBASE® 3080	%wt	68.25	59.65	51.55	45.15	38.15
VISCOPLEX® 14-520, used as a top treat	%wt	0.2	0.2	0.2	0.2	0.2
KV40°C	mm ² /s	151	223	320	465	688
KV100°C	mm ² /s	20.6	27.7	37.0	48.8	65.5
VI		159	160	164	165	167
Brookfield -26°C	mPa·s	40,500	53,000	82,000	152,000	292,000
Pour Point	°C	-39	-36	-36	-36	-33

HiTEC® is a trademark of Afton Chemical Corporation.
NEXBASE® is a registered trademark of Neste Corporation.
Formulation of low viscosity grades (such as VG 68 and VG 100) is also possible.

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