

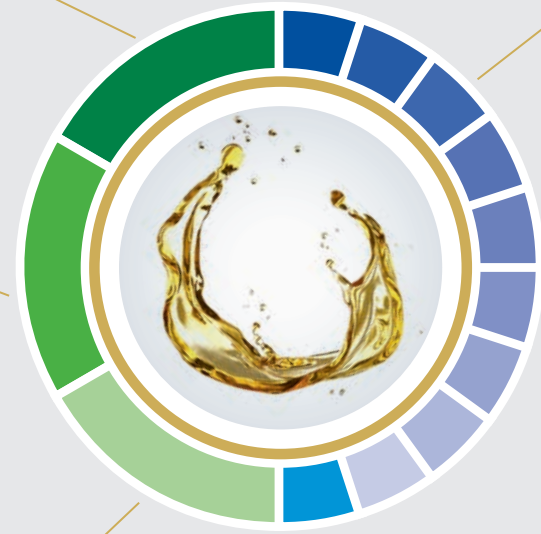
## BASF Lubricant Base Stocks and Additives

### PAG Base Stocks

- Water-Soluble PAG Base Stocks
- Water-Insoluble PAG Base Stocks
- High Viscosity PAGs (Thickeners)

### Ester Base Stocks

- Monoesters
- Diesters
- Polyolesters
- Complex Esters



### Lubricant Additives

- Antioxidants
- Viscosity Index Improvers
- Pour Point Depressants
- Friction Modifiers
- Anti-wear / Extreme Pressure Additives
- Corrosion Inhibitors
- Metal Deactivators
- Components for Metalworking Fluids

### Polyisobutene

- Low Molecular Weight PIB
- Medium / High Molecular Weight PIB

### Industrial Additive Packages

- Hydraulic Packages
- Turbine Packages
- Gear Packages



**Our PAG base stocks keep industrial applications moving**

As a leading global supplier of lubricant base stocks and additives, we are passionate about partnering our customers with strong expertise and best-in-class solutions to meet market requirements today and tomorrow. We are unique in the lubricant industry, offering a broad and extensive portfolio to support the wide range of lubricant applications and enable performance, quality and innovative growth.

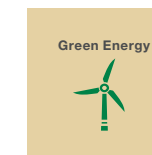
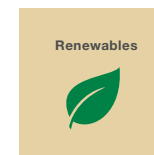
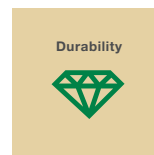
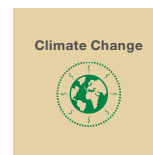
Our high performance and reliable components support the drive towards improved fuel economy, extended equipment lifetime and sustainable solutions. Looking to tomorrow, we are committed to continuously developing products that meet the emerging needs of our customers. Leveraging our global production footprint, strong R&D competence and sustainability expertise, BASF is the ideal partner to fulfill your lubricant component needs.

### BREOX® BMBcert™ series

Delivering CO<sub>2</sub> savings and driving the use of renewable resources

#### Customer benefits

- Using 100% renewable feedstocks (mass balance approach)
- Using ~100% green electricity in production
- Reduced CO<sub>2</sub> footprint by up to ~80%
- Sustainably sourced raw materials
- High quality with no compromise on performance
- Certified by TÜV Nord according to REDcert<sup>2</sup>
- NSF HX-1 incidental food contact approved
- LUSC listed



Climate Change

Durability

Renewables

Green Energy



Get in contact with us

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#### BASF SE

Lubricant Components  
[basf.com/lubricant-components](http://basf.com/lubricant-components)

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09/2023

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**BASF**  
We create chemistry

# Polyalkylene Glycols

## Selection Guide

**BASF Lubricant Components**  
Make the difference



**Polyalkylene glycols (PAGs)**

Product name	Description
<b>Water-soluble PAGs</b>	
Breox® 50 A 20	EO/PO random co-polymer
Breox® 50 A 50	EO/PO random co-polymer
Plurasafe® WS 260	EO/PO random co-polymer
Breox® 50 A 100	EO/PO random co-polymer
Plurasafe® WS 660	EO/PO random co-polymer
Breox® 50 A 140	EO/PO random co-polymer
Breox® 50 A 150	EO/PO random co-polymer
Breox® 45 A 220 Plus	EO/PO random co-polymer
Breox® 60 D 220	EO/PO random co-polymer
Breox® 60 D 220 BMBcert™	EO/PO random co-polymer
Breox® 75 W 270	EO/PO random co-polymer
Breox® 60 D 320	EO/PO random co-polymer
Breox® 60 D 460	EO/PO random co-polymer
Breox® 60 D 460 BMBcert™	EO/PO random co-polymer
Breox® 50 A 1050	EO/PO random co-polymer
Breox® 60 D 1100	EO/PO random co-polymer
Breox® 60 D 1100 BMBcert™	EO/PO random co-polymer
<b>Water-insoluble PAGs</b>	
Breox® B 25	PO homo-polymer
Breox® B 35	PO homo-polymer
Plurasafe® WI 165	PO homo-polymer
Plurasafe® WI 250	PO homo-polymer
Plurasafe® WI 285	PO homo-polymer
Breox® B 55	PO homo-polymer
Breox® B 75	PO homo-polymer
Plurasafe® WI 385	PO homo-polymer
Plurasafe® WI 600 D	PO homo-polymer
Breox® B 125	PO homo-polymer
Plurasafe® WI 625	PO homo-polymer
Plurasafe® WI 700 D	PO homo-polymer
Breox® B 225	PO homo-polymer
Breox® B 335	PO homo-polymer
<b>Thickener product range</b>	
Breox® 75 W 18000	EO/PO random co-polymer
Breox® 75 W 55000	EO/PO random co-polymer
<b>Thickener-water-blends – For ease of handling</b>	
Breox® TB 120	60 % Breox® 75 W 55000 + 40 % water
Breox® TB 150	70 % Breox® 75 W 18000 + 30 % water
Breox® TB 195	60 % Breox® 75 W 18000 + 40 % water
Pluracol® V 1075	70 – 80 % EO/PO random co-polymer (viscosity ~66,000 mm²/s at 40°C) + 20 – 30 % water
<b>Fire resistant hydraulic fluids concentrate (HFC type)</b>	
Plurasafe® Concentrate 1225	Fire-resistant hydraulic fluid concentrate (HFC)

**Main applications**

Industrial										Metalworking				
Industrial gear oils	Fire-resistant hydraulic fluids	Marine EAL lubricants	Chain lubricants	Compressor lubricants	High-temp lubricants	Textile lubricants	Food grade lubricants	Hydrogen combustion engine	Greases	Removal fluids	Aluminum processing	Quenching	Mill and calendar	
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**Chemical properties\***

Kinematic viscosity		Viscosity index	Density	Cloud point	Flash point	Pour point					
mm²/s [40°C]	mm²/s [100°C]		g/cm³ 20°C	°C	°C	°C					
ASTM D445 / DIN 51562	ASTM D2270 / DIN ISO 2909	DIN 51757	DIN EN 1890 [Method A]	ASTM D92 / DIN EN ISO 2592	ASTM D97 / DIN ISO 3016	Biodegradability** [≥ 60 % OECD 301B]	Renewability in %	Low PCF offering (Product Carbon Footprint)	NSF HX-1***	LuSC listing***	
19	4.6	165	1.02	> 90	183	-58	•	-			
52	11	212	1.03	66	220	-53	•	-			•
53	> 12	212	1.04	66	227	-48	•	-			
102	20	217	1.04	55	240	-48	n/a	-		•	
130	26	233	1.05	55	257	-45	•	-		•	•
140	26	230	1.05	57	240	-48	•	-			•
150	29	234	1.05	52	256	-45	•	-		•	•
218	40	239	1.04	n/a	244	-45	•	-			•
220	35	225	1.07	81	240	-45	•	-		•	•
220	35	225	1.07	81	240	-45	•	100	•	•	•
270	41	207	1.10	> 90	250	-1	•	-		•	•
320	60	245	1.07	77	240	-40	•	-		•	•
452	77	252	1.07	74	245	-39	•	-		•	•
452	77	252	1.07	74	245	-39	•	100	•	•	•
972	166	290	1.05	50	237	-37	n/a	-			
1,100	187	290	1.07	72	243	-33	•	-		•	•
1,100	187	290	1.07	72	243	-33	•	100	•	•	•
23	5.2	145	0.98	-	220	-50	•	-			
33	6.7	169	0.98	-	208	-60	•	-			•
34	7	177	0.98	-	218	-51	•	-			
49	9	176	0.99	-	205	-51	•	-			
55	10	182	0.99	-	232	-45	•	-			
56	11	184	0.99	-	210	-57	•	-			
76	14	190	0.99	-	211	-52	•	-		•	•
76	14	194	0.99	-	231	-48	•	-		•	
102	16	176	1.00	-	229	-33	•	-			•
122	21	200	1.00	-	215	-42	•	-			•
126	22	204	1.00	-	232	-42	•	-			•
147	23	188	1.00	-	227	-45	•	-			•
224	37	214	1.00	-	245	-37		-			•
330	52	222	1.00	-	219	-37		-			•
18,000	2,540	414	1.10	78	245	6		-			•
55,000	7,900	430	1.10	76	240	6		-			•
2,600	-	-	1.09	78	-	-31		-			•
2,850	-	-	1.09	76	-	-27		-			•
1,410	-	-	1.09	77	-	-33		-			•
11,015	-	-	1.10	76	-	-12		-			•
3,439	-	-	1,080	-	-	-28		-			•

**Sustainability**

**Features and benefits**

Water-soluble PAGs
<p><b>Key performance benefits</b></p> <ul style="list-style-type: none"> <li>Water solubility</li> <li>Very low coefficient of friction</li> <li>Excellent anti-wear properties</li> <li>Micro pitting resistance</li> <li>Very good film strength and load-carrying capacity</li> <li>Do not form sludges, varnish or gums</li> <li>High viscosity index (VI)</li> <li>Low toxicity and readily biodegradable grades</li> <li>Selected products suitable for use in H1 lubricants (incidental food contact)</li> <li>Selected products suitable for use in VGP and Ecolabel compliant lubricants</li> <li>BREOX® BMBcert™ series is a product family based on the biomass balance approach which delivers significant CO<sub>2</sub> footprint reduction. For BREOX® BMBcert™ range 100% of the fossil-based raw materials have been replaced by renewable feedstocks while also using green electricity in production.</li> </ul>
Water-insoluble PAGs
<p><b>Key performance benefits</b></p> <ul style="list-style-type: none"> <li>Water insolubility for water-free environment as they can demulsify from water</li> <li>Excellent film strength, anti-wear performance and load-carrying capacity</li> <li>Inherent sludge solubility and water tolerance for clean operations</li> <li>Very low coefficient of friction</li> <li>Very good shear stability</li> <li>High viscosity index (VI)</li> <li>Selected products suitable for use in H1 lubricants (incidental food contact)</li> <li>Selected products suitable for use in VGP and ecolabel compliant lubricants</li> </ul>
Thickener product range
<p><b>Key performance benefits</b></p> <ul style="list-style-type: none"> <li>Broad viscosity and technology range</li> <li>Thermal and shear stable</li> <li>Excellent thickening efficiency</li> <li>Water solubility</li> <li>No fumes</li> <li>Minimal need to clean after treatment</li> <li>Flexible cooling curve by adjustment concentration</li> <li>Suitable for formulation of fire resistant hydraulic fluids (HFCs)</li> <li>Various water dilutions for easy handling available</li> </ul>
Fire resistant hydraulic fluids concentrate (HFC type)
Concentrate allowing customers to formulate ready-to-use fire resistant hydraulic fluid (HFC type)

\* Values given in this table represent only typical characteristics. Detailed product specifications are given in the relevant product data sheets or MSDS.

\*\* Readily biodegradable (> 60% OECD 301B) or in analogy to 28-day biodegradation studies acc. OECD 301 series or BODIS test.

\*\*\* NSF and LuSC listing status (2024).