KEMAT Group

Part of a strong holding

POLYBUT+ KEMAT

Largest independent supplier of PIB in the EMEA Region

KEMAT SERVICES

Analytical laboratory and knowledge centre for testing and quality control

KEMITO

Chemical logistics provider: Blending, Repacking, Warehousing, Sourcing, Transport, Heating, Customs, Freight Forwarding

- Metalworking Fluids
- Lubricating Greases (PIB)
- Lubricating Greases (EPO)
- Lubricating Oils (PIB)
- Lubricating Oils (EPO)
- Viscosity Modifiers
- Two Stroke Engine Oils
- Compressor Oils (PIB)
- Compressor Oils (EPO)
- Hydraulic Fluids (PIB)
- Hydraulic Fluids (EPO)
- Transmission Oils
- Insulating Oils

- Industrial Adhesives (PIB)
- Industrial Adhesives (APAO)
- Industrial Sealants
- Automotive Sealants
- Corrosion Protection
- Roofing
- Cabling
- Coatings
- Inks

- Diesel Fuel Additives
- Gasoline Fuel Additives

- Rubber Parts
- Road Marking
- Tyres
- Defoamer (EPO)
- Rubber Modifier (EPO)
- Mould release for PU (EPO)

- Gum Base
- Cosmetics
- Food Packaging
- Medical Adhesives

- Crop Protection
- Agricultural Film

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The largest independent polybutene supplier in EMEA

KEMAT is a privately held company, founded in 1989. It is the largest independent supplier of PIB throughout Europe, Middle East, and Africa with a global reach. In addition to PIBs, their portfolio includes PAOs, molybdenum disulphide (MoS2) and 12-hydroxy stearic acid (12-HSA), natural oils, natural and synthetic rubbers, and fuel additives.

KEMAT's unparalleled experience and insights in PIB markets and applications, together with their many years of growing strong supplier relationships, have been the foundations on which the company has built active sales across all continents. KEMAT continues with its business expansion plans by developing new products. KEMAT equally offers added value services including tailor made logistic and technical support.

Locations worldwide and supply chain reliability

SALES OFFICES

EMEA

- Belgium
- Netherlands
- Turkey
- UK

LOGISTIC CENTRES

Readily available heated stock across all grades

- Belgium
- France
- Italy
- Netherlands
- Turkey
- UK

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Portfolio

PIB IS CORE BUSINESS FOR KEMAT
Alongside the PIB product series, KEMAT offers complementary products to better serve different industries: Poly alpha olefins (**PAO**) and metallocene poly alpha olefins (**mPAO**), natural oils, molybdenum disulphide (**MoS_2**) and 12-hydroxystearic acid (**12-HSA**). Natural and synthetic rubber: **Kemarub**. Fuel performance packages made with the newest technology from market leader BASF: **Keropur**.

Our portfolio has expanded and now includes two new products:
- Amorphous Poly Alpha Olefin (**APAO**) a copolymer made by the polymerization of propylene, ethylene, butene-1, etc.
- Ethylene-Propylene Oligomer (**EPO**) a liquid polymer product that selectively polymerizes ethylene and propylene with metallocene catalyst.

PRODUCT LINE	PRODUCT SERIES	CHEMISTRY
PIB	Polybut	Low molecular weight conventional polybutenes
	Polybut HR	Low molecular weight high reactive polyisobutenes
	Polybut EM	Proprietary PIB emulsions
	Polybut PIBSA	Polyisobutene succinic anhydride
	Polybol	Medium and High molecular weight polyisobutenes
	Polybut Exact	Polybutenes and polyisobutenes with customer specific molecular weight and viscosity specifications
	Polybase	Tailor made blends of polybutenes and base oils
	Kemaclean	Proprietary solvent blends for cleaning and removing PIB spills
PAO	PAO	Low and High viscosity poly alpha olefins
	mPAO	High viscosity metallocene poly alpha olefins
Lubricant Auxiliaries	Polytac	Tacky additive for mineral oil-based lubricants
	Natural Oils	Castor Oil and Linseed/Flaxseed Oil
	MoS_2	Molybdenum Disulphide
	12-HSA	12-Hydroxy Stearic Acid

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PRODUCT LINE	PRODUCT SERIES	CHEMISTRY
Rubber Auxiliaries	Kemarub	Fuel Performance Packages with BASF Technology
Fuel Additives	Keropur	Fuel Performance Packages with BASF Technology
APAO	Amorphous Poly Alpha Olefin	Copolymer made by the polymerization of propylene, ethylene, butene-1, etc.
EPO	Ethylene-Propylene Oligomer	Liquid polymer product that selectively polymerizes ethylene and propylene with metallocene catalyst

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Polybut

KEMAT and PIBs
PIB is core business for KEMAT; its portfolio offers the widest range of PIBs available in the market.

KEMAT provides a broad product series of low molecular weight conventional polybutenes, spanning molecular weights from 280 up to 6.000 with viscosities ranging from 2 up to 40.000 centistokes: **Polybut**.

KEMAT equally offers a line of low molecular weight high reactive polyisobutenes with molecular weights ranging from 1.000 up to 2.300 g/mol responding to increasing technical requirements in the field of lubricants and related markets: **Polybut HR**.

Completing the full molecular weight spectrum of PIBs, the KEMAT portfolio includes medium and high molecular weight polyisobutenes with molecular weights from 30.000 up to 3.000.000 g/mol: **Polybol**.

POLYBUT™ *Low Molecular Weight Conventional Polybutenes*

Typical Properties

Polybut™	Molecular Weight Mn	Kinematic Viscosity cSt		Flash Point °C	Colour Pt-Co Scale
		@ 38°C	@ 100°C		
X2	280	7,5		80	40
X7	300	12		140	20
X10	320	16		125	40
0	330	30		130	40
06	425		10,5	130	40
09	500		28	135	40
010	630		30	140	40
025	675		50	140	40
3	710		80	145	50
4	750		85	180	30
5	800		110	180	30
10	950		220	200	40
28	1.050		270	200	40
30	1.300		620	215	40
32	1.300		700	220	40
80	1.600		1.500	220	40
120	2.000		2.600	240	20
150	2.200		3.200	240	20
190	2.900		3.700	250	20
200	2.400		4.700	260	20
600	4.200		13.000	300	50
1800	6.000		40.000	305	80

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Polybut HR & PIBSA

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POLYBUT™ HR *Low Molecular Weight Conventional Polybutenes*

Typical Properties

Polybut™ HR	Molecular Weight Mn	Kinematic Viscosity cSt		Flash Point °C	Colour Pt-Co Scale
		@ 40°C	@ 100°C		
1000	1.000	4.650	190	210	10
1300	1.300	13.000	430	215	15
2300	2.300	48.000	1.500	220	20
230	1.050	5.600	230	210	15
640	1.500	18.600	640	220	15

POLYBUT™ PIBSA *based on chlorine-free HR PIB with a Mn of 1.000*

Typical Properties

Polybut™	Activity %	Kinematic Viscosity cSt		Flash Point °C	Density Kg/m³
		@ 40°C	@ 100°C		
PIBSA	78	27.900	480	180	920

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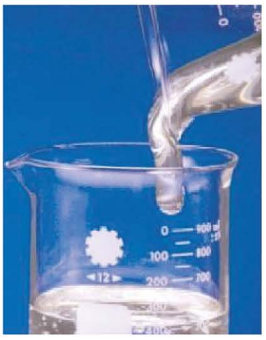
Polybut EM

Water-Based Emulsions of Polybutenes and Polyisobutenes

Features

- Polybut EM technology offers PIB in an easy to handle liquid or paste format
- Polybut EM products are soluble and easily miscible in water
- Polybut EM products are VOC-free, non-toxic and require no special labelling
- Pure or formulated Polybut EM products can be applied by spraying, dipping, rolling and brushing



Viscous Liquid

Sticky Material

POLYBUT EM Technology

Easy to Process Liquid

Typical Composition

- Water-based emulsion of a low (LM) or medium (MM) molecular weight PIB
- Available in low viscosity liquids (typically 50-60% PIB) and semi solid pastes (75%)
- Available in non-ionic (NI-series), anionic (A-series) and cationic (C-series) stabilization
- Polybut EM technology can be applied to PIB with molecular weights Mn from 300 up to 100.000
- Polybut EM technology can combine PIB with other polymers: waxes, resins

Typical Applications

- Adhesives & Sealants
- Water Based Lubricants & Metal Working Fluids
- Anti-Corrosion & Barrier Coatings
- Road Marking Paints & Construction Formulations
- Paper, Leather & Textile Coatings
- Crop Protection & Insect Trap Formulations
- Personal Care Formulations
- Novel Applications

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POLYBUT™ EM *water-based emulsions of polybutenes and polyisobutenes*

Typical Properties

Polybut™ EM Grade	PIB Type	PIB Molecular Weight	Stabilization	PIB Content %	Brookfield Viscosity mPa.s at 20°C
Polybut™ EM 0 (NI-50)	LM Polybutene	330 (Mn)	Non-Ionic	50	250
Polybut™ EM 5 (A-50)	LM Polybutene	800 (Mn)	Anionic	50	250
Polybut™ EM 10 (A-50)	LM Polybutene	950 (Mn)	Anionic	50	250
Polybut™ EM HR 1000 (A-55)	LM Polyisobutene	1.000 (Mn)	Anionic	55	250
Polybut™ EM HR 1000 (A-75)	LM Polyisobutene	1.000 (Mn)	Anionic	75	Paste
Polybut™ EM 30 (A-50)	LM Polybutene	1.300 (Mn)	Anionic	50	250
Polybut™ EM 200 (A-50)	LM Polybutene	2.400 (Mn)	Anionic	50	250
Polybut™ EM 600 (A-50)	LM Polybutene	4.200 (Mn)	Anionic	50	250
Polybut™ EM 1800 (A-50)	LM Polybutene	6.000 (Mn)	Anionic	50	250
Polybut™ EM 1800 (NI-55)	LM Polybutene	6.000 (Mn)	Non-Ionic	55	250
Polybut™ EM 1800 (A-75)	LM Polybutene	6.000 (Mn)	Anionic	75	Paste
Polybut™ EM MM 10 (A-60)	MM Polyisobutene	40.000 (Mv)	Anionic	60	750
Polybut™ EM MM 10 (A-75)	MM Polyisobutene	40.000 (Mv)	Anionic	75	Paste
Polybut™ EM MM 12 (A-60)	MM Polyisobutene	55.000 (Mv)	Anionic	60	750
Polybut™ EM MM 12 (A-75)	MM Polyisobutene	55.000 (Mv)	Anionic	75	Paste
Polybut™ EM MM 15 (A-60)	MM Polyisobutene	85.000 (Mv)	Anionic	60	750
Polybut™ EM MM 15 (A-75)	MM Polyisobutene	85.000 (Mv)	Anionic	75	Paste

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Polybol

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KEMAT equally offers a line of low molecular weight high reactive polyisobutenes with molecular weights ranging from 1.000 up to 2.300 g/mol responding to increasing technical requirements in the field of lubricants and related markets: **Polybut HR**.

Completing the full molecular weight spectrum of PIBs, the KEMAT portfolio includes medium and high molecular weight polyisobutenes with molecular weights from 30.000 up to 3.000.000 g/mol: **Polybol**.

POLYBOL™ *Low molecular weight conventional polybutenes*

Typical Properties

Polybol™	Molecular Weight			Kinematic Viscosity @ 200°C	Staudinger Index	Industrial Grade	Food Grade
	Series	Mv	Mw	cSt	cm^3/g		
3	Medium	30.000	49.000	6.500		✓	
10	Medium	40.000	56.000	16.500	29	✓	✓
11	Medium	50.000		30.500	33	✓	✓
X12	Medium	54.000			37	✓	✓
12	Medium	60.000	75.000	50.500		✓	✓
23	Medium	65.000			41	✓	✓
24	Medium	75.000			44	✓	✓
25	Medium	85.000	110.000		49	✓	✓
500	High	425.000	565.000		140	✓	✓
800	High	800.000	1.050.000		210	✓	
1000	High	1.110.000	1.550.000		270	✓	
1500	High	2.600.000	3.050.000		450	✓	
2500	High	3.000.000			550	✓	

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Polybut Exact

Polybutenes and polyisobutenes with customer specific molecular weight and viscosity specifications

All PIB producers and suppliers offer standard PIB products with standard specifications.

Kemat goes one step beyond and will be offering PIB with customer specific molecular weight and viscosity specifications: Polybut Exact with exactly your target specifications which allows you to formulate an optimum final product.

The newly developed Polybut Exact technology will focus on producing PIBs which have a molecular weight midway between the low and medium molecular weight PIB range: 5.000 – 30.000.

Polybut Exact is a response to a growing demand for PIBs with a non-standard molecular weight and viscosity.

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Polybase

Tailor made blends of polybutenes and base oils
Polybase are blends of polybutenes and base oils, produced in our logistic hub in Moerdijk which now houses extended blending capabilities.

Polybase products have a unique composition jointly developed by the customer and Kemat.

Contact your local Kemat sales manager to explore if a specific blend can be offered.

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Kemaclean NI

Non-Irritant Cleaning Product for Polybutene and Polyisobutene Spills

Composition

Kemaclean NI is a new generation cleaning product composed of a proprietary blend of organic solvents.

Application

Thanks to its non-irritant nature, Kemaclean NI is recommended for removing polybutene and polyisobutene stains from human skin, clothing and sensitive substrates and surfaces.

Properties

- 100% biodegradable
- Not soluble in water
- High flashpoint: >150°C
- Harmless for the environment

Usage

- Use Kemaclean NI undiluted by spray or apply it with a cloth
- Leave the Kemaclean NI in contact with the spill for a couple of minutes
- Clean off with a dry cloth and rinse with plenty of water and detergent

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Poly Alpha Olefins

KEMAT offers a unique and broad series of Poly Alpha Olefins (PAO) and metallocene Poly Alpha Olefins (mPAO), with viscosities ranging from 2 up to 150 centistokes.

PAO *Low and High Viscosity Poly Alpha Olefins*

Typical Properties

PAO	Kinematic Viscosity cSt					Viscosity Index	Pour Point °C	Flash Point °C
	@ 100°C	@ 40°C	@ 0°C	@ -20°C	@ -40°C			
2	1,7	5,1			260		-73	159
4	3,9	16,8			2.498	124	-68	226
5	5,1	24,1			4.687	145	-46	245
6	5,9	30,5			7.712	137	-61	245
7	7,0	37,7			10.732	146	-43	264
8	7,8	46,4			19.574	138	-56	262
10	9.5	60,3			32.102	140	-49	271
40	39	396	4.840	40.500		147	-36	281
100	100	1.240	25.100	250.000		170	-30	283

mPAO *High Viscosity Metallocene Poly Alpha Olefins*

Typical Properties

mPAO	Kinematic Viscosity cSt					Viscosity Index	Pour Point °C	Flash Point °C
	@ 100°C	@ 40°C	@ 0°C	@ -20°C	@ -40°C			
65	65	605				181	-46	266
100	101	1.023				192	-44	265
150	156	1.719				205	-39	278

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Lubricant Auxiliaries

Alongside the extensive product line of low, medium and high molecular weight PIBs, KEMAT offers a selection of complementary product series for use in lubricant oils and greases.

Polytac

Proprietary additive blends of high molecular weight polyisobutenes and base oils.

Consult our Technical Data Sheets (on our website) to learn more about the product features and benefits, typical applications and technical performance:

- Polytac – Standard grade
- Polytac C – Grade approved by NSF for incidental food contact

Castor Oil

Typical Properties

Castor Oil Grade	Physical Form	Colour Gardner	Hydroxyl Value (*)	Saponification Value (*)	Acid Value (*)	Iodine Value (**)	Moisture %	Free Fatty Acid %
Refined PH Eur	Viscous Liquid	Max 2	Min 160	176 – 186	Max 0,8	82 – 90	Max 0,30	Max 0,4
First Special Grade (FSG)	Viscous Liquid	Max 4	Min 160	176 – 187	Max 2,0	82 – 90	Max 0,25	Max 1,0
Hydrogenated (HCO)	Flakes or Powder	Max 3	155 – 165	180 – 190	Max 5,0	Max 5	N/A	N/A

Linseed Oil

Typical Properties

Linseed Oil Grade	Physical Form	Colour Gardner	Viscosity at 20°C dPa.s	Density at 20°C g/ml	Acid Value (*)	Iodine Value (**)	Solid Content %	Biobased Content %
Processed 30	Viscous Liquid	Max 6	30	0,96	Max 9	120 – 140	100	100
Standard 60	Viscous Liquid	Max 7	60	0,96	Max 11	115 – 135	100	100
Standard 90	Viscous Liquid	Max 7	90	0,96	Max 10	110 – 130	100	100
Standard 120	Viscous Liquid	Max 7	120	0,96	Max 12	108 – 128	100	100
Standard 300	Viscous Liquid	Max 8	300	0,97	Max 13	105 – 125	100	100

(*) : mg KOH / g (**) : g I_2 / 100 g

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12-Hydroxystearic Acid (12-HSA)

Typical Properties

12-HSA Grade	Physical Form	Colour Gardner	Hydroxyl Value (*)	Saponification Value (*)	Acid Value (*)	Iodine Value (**)	Melting Point °C
12-HSA	Flakes or Powder	Max 6	Min 150	175 – 190	Min 175	Max 5	Min 70

Molybdenum Disulphide (MoS_2)

Typical Properties

MoS_2 Grade	Median Particle Size µm	Particle Size Range µm	Acid Insolubles wt %	Molybdenum Trioxide wt %	Acid Value (***)	Oil wt %	Carbon wt %	Water wt %
Technical	30	1 – 100	Max 0,5	Max 0,05	Max 0,05	Max 0,05	Max 1,5	Max 0,02
Technical Fine	6	0,5 – 20	Max 0,5	Max 0,05	Max 0,25	Max 0,40	Max 1,5	Max 0,05
Super Fine	1,5	0,5 – 8	Max 0,5	Max 0,15		Max 0,40	Max 1,5	Max 0,15

(***) : g I2 / 100 g at time of production

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Rubber Auxiliaries

Kemarub Natural & Synthetic Rubber

Natural Rubber (NR)

The main types of NR are, for example: Technically Specified Rubber (TSR), Ribbed Smoked Sheets (RSS) and Standard Malaysian Rubber (SMR). Properties: Combines high strength (tear and tensile); Tack: can stick to itself and other materials; High resistance to chipping, cutting and tearing. End User Applications: Tyres; Seals; Footwear; Conveyor belts; Mouldings.

Polyisoprene Synthetic Rubber (IR)

Polyisoprene Synthetic Rubber (IR) has the same formula as NR. It has the same chemical structure as NR, with good uncured tack, high tensile strength and high resilience. IR is often used in blends with polybutadiene and styrene-butadiene rubber (SBR).

Properties

- Good uncured tack
- High gum tensile strength
- High resilience
- High consistency
- Good processability

End User Applications

- Tyres
- Conveyor belts
- Footwear
- Adhesives
- Rubber bands

Styrene-Butadiene Rubber (SBR)

Styrene-Butadiene Rubber (SBR) is composed from a copolymer of styrene and butadiene. It is a widely used general purpose rubber with a considerable range of applications.

Properties

- Good abrasion resistance
- Economical resin to bind pigmented coatings
- Durability
- Reduced shrinkage
- Flexible

End User Applications

- Conveyor belts
- Gaskets
- Chewing gum
- Alternative to PVA
- Basement waterproofing systems

Nitrile Rubber (NBR / HNBR)

Nitrile rubber (NBR) and HNBR, a hydrogenated version of NBR, are copolymers of butadiene and acrylonitrile which are produced by emulsion polymerisation. The introduction of acrylonitrile into the polymer backbone creates oil resistance.

Properties

- Oil resistant
- Good abrasion resistance
- Excellent heat and oxidation stability
- Improved wear resistance
- Low temperature flexibility

End User Applications

- Roll for steel paper mills
- Conveyor belts
- Safety shoe soles
- O-rings and seals
- Hoses

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Butyl Rubber (IIR / BIIR / CIIR)

Butyl Rubber, also known as (IIR) is prepared by copolymerising small amounts of isoprene with polyisobutylene. Bromobutyl (BIIR) and Chlorobutyl (CIIR) are modified types containing 1.2% of bromine or chlorine to enhance cure compatibility in blends with other rubbers.

Properties

- Outstanding resistance to oxygen and ozone
- Weather resistance
- Flame resistance
- Heat resistance
- Low gas and moisture permeability

End User Applications

- Inner tubes of tyres
- Pharmaceutical closures
- Hoses, seals and membranes
- Conveyor belts
- Ball bladders for sporting goods

Polybutadiene Rubber (BR) high and low CIS

Polybutadiene Rubber (BR) is a polymerised butadiene. It is the most elastic synthetic rubber. BR blends with other polymers, for example NR and SBR.

Properties

- Excellent elastic properties
- High wear and strength
- Strong abrasion resistance (good tread wear)
- Low rolling resistance (good fuel economy)
- Good resistance to low temperatures

End User Applications

- Tyres
- Conveyor belts
- Cable insulation
- Golf balls (elastic core)
- Super balls

Ethylene Propylene Rubber (EPR / EPDM)

Ethylene Propylene Rubber (EPR) and Ethylene Propylene Diene Monomer (EPDM) are forms of non-polar synthetic rubbers. They have both speciality and general-purpose applications.

Properties

- Excellent ozone and weather resistance
- Electrical resistor
- Very good resistance to heat and oxidation
- Colour stable
- Resistance to polar solvents

End User Applications

- Window and car seals
- Garden appliances and hoses
- Self-amalgamating tape
- Roofing membrane
- Electrical insulation

Thermoplastic Elastomer (TPE)

A Thermoplastic Elastomer (TPE) is a type of thermoplastic polymer. Although it has the performance and properties of rubber, it is processed like plastic and is recyclable. At room temperature, it can be repeatedly stretched to twice its length with the ability to return to its original size when the stress is released.

Properties

- Dense rubber
- Slip resistance
- Excellent weather resistance
- Ozone resistance
- Elastomeric properties at room temperature

End User Applications

- Automotive parts
- Wire and cable insulation
- Polymer modification
- Adhesives
- Heating, Ventilation and Air Conditioning (HVAC)

Rubber Compounding Ingredients

KEMAT can supply Titanium Dioxide as well as the major types of Carbon Black in the following grades:

- N115
- N121
- N220
- N234
- N299
- N326
- N330
- N339
- N237
- N375
- N539
- N550
- N650
- N660
- N772

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KEMAT and BASF
Partners in Fuel Additives

Keropur Fuel Additives
KEMAT supplies a range of innovative fuel additives: the Keropur product series, developed and produced by BASF, the global leader in lubricant and fuel additive technology.

Low quality fuels can compromise vehicle operations. They reduce engine power, increase engine noise and affect fuel economy. Untreated fuels can lead to an excess of corrosion, injector fouling and harmful emissions. Keropur Fuel Additives prevent and remedy many engine problems related to the fuel quality. Keropur Fuel Additives reduce emissions, improve fuel handling, increase fuel economy, reduce deposits and protect against corrosion.

KEMAT and BASF offer tailor made fuel additive solutions in an easy-to-handle format helping fleets to maximize diesel and gasoline fuel performance and minimize fuel cost.

Keropur® G
Gasoline Additive

Keropur® D
Diesel Additive

Features and Benefits
- Can be added to any diesel or gasoline fuel
- Removes all existing deposits (clean-up) after first fuel filling
- Prevents new deposits (keep-clean) when used every three fuel fillings
- Improves fuel stability, including bio fuels
- Improves start-up
- Extends the life of the engine
- Reduces maintenance costs
- Lowers fuel consumption
- Reduces foam formation while fuel filling
- Reduces emissions

Performance benefits have been proven in a wide range of engine and on-road tests conducted by BASF's Competence Centre Fuels & Lubes in Ludwigshafen, Germany.

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APAO

Amorphous Poly Alpha Olefin

Amorphous Poly Alpha Olefin (APAO) is a copolymer made by the polymerization of propylene, ethylene, butene-1, etc. APAO can adjust the physical properties of products such as viscosity, softening point, and open time depending on the polymerization rate of each raw material. It is used in various fields covering personal hygiene items which have a high demand for eco-friendly materials, interior materials of automobiles, filters, special packaging, and furniture.

Types of APAO

APAO can be categorized into five product types depending on polymerization ratio.

1	Homopolymer	100% Propylene
2	Copolymer	Propylene - Ethylene
3	Copolymer	Propylene - Butene-1
4	Terpolymer	Propylene - Ethylene-Butene-1
5	Formulated APAO	100% Propylene

Hot Melt Adhesives

Hot melt adhesives can be found everywhere, and APAO hot melts are often used when an Ethylene-Vinyl Acetate (EVA) hot melt cannot meet all requirements. APAO technology is unique and is used in the production of special packaging to furniture manufacturing and automotive assembly.

APAO hot melt adhesives, also called Polyolefin Hot Melt adhesives, are designed to be a lower cost adhesive option for most product assembly applications. Polyolefin hot melts are often used as a lower cost replacement for Polyamide Hot Melt applications.

The benefits of using APAO in hot melt adhesives:

- offer resistance to corrosion and moisture, chemical inertness, and resistance to UV rays.
- have high heat resistance, while also being able to function over a wide range of temperatures.
- durable and reliable in both interior and exterior applications.

Features of APAO

- excellent adhesion
- excellent heat resistance
- excellent cold resistance
- low-cost
- easy adjustment of physical properties

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Typical Applications

- Automotive: Loadliner, Headliner; Headlamp Bonding; Sound Deadening
- Hygiene: Baby Diaper; Adult Incontinence; Feminine Care; Pet Training Pads
- Packaging: Corrugated Box, Speciality Packaging
- Product Assembly: Mattress; Furniture; Carpet Backing
- Wire & Cable: Filling & Flooding; Fiber Optic
- Others: Filtration; Polymer Modification; Pipe Wrap

APAO *a copolymer made by the polymerization of propylene, ethylene, butene-1, etc.*

Typical Properties

Product	Polymer type	Viscosity cPs	Softening point °C	Tensile Strength Mpa
RT 2115	Homopolymer	1,500	152	2.3
RT 2180	Homopolymer	8,000	157	2.6
RT 2215	Ethylene Copolymers	1,500	143	0.9
RT 2280	Ethylene Copolymers	8,000	146	1.1
RT 2315	Ethylene Copolymers	1,500	141	0.6
RT 2330	Ethylene Copolymers	3,000	141	0.8
RT 2535	Ethylene Copolymers	3,500	132	0.3
RT 2715	Ethylene Copolymers	1,500	110	0.6
RT 2730	Ethylene Copolymers	3,000	110	0.6
RT 2780	Ethylene Copolymers	8,000	110	0.7
RT 5250 P	Terpolymer	27,000	161	1.2
RT 51200 P	Terpolymer	120,000	165	1.5

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EPO

Ethylene-Propylene Oligomer
Ethylene-Propylene Oligomer (EPO) is a liquid polymer product that selectively polymerizes ethylene and propylene with metallocene catalyst. It is a synthetic oil with an ethylene-propylene polymer structure.

Using EPO delivers fuel efficiency and durability through superior oxidation stability, low-temperature resistance, and shear stability, therefore increase cost competitiveness.

Characteristics
EPO has various characteristics and advantages:

High Viscosity Index	Viscosity index varying from 150 to 300. Its high VI improves and conserves the viscosity index in a variety of lubricants.
Excellent Shear Stability	It has outstanding shear strength even after long exposures to mechanical movements, which contributes to extending the lifetime of end products.
Chemical Stability	Chemically stable and hardly oxidizes in the air due to its exceptional oxidation stability to light, UV, and air.
Non-toxic	It is a high-purity, non-toxic product with little sulphur and metal content.
Excellent Thickening Power	It shows excellent viscosity-enhancing properties when mixed with mineral oils.

Features of EPO

- **High quality synthetic oil**
  Improves energy efficiency and durability through high viscosity index, low temperature resistance and heat/oxidation stability.
- **Enhanced lubricant performance**
  Lubricant additive that can improve shear stability.
- **Environmental-friendly and Non-toxic**
  REACH and NSF certified (H-1, HX-1)
  LuSC listed, our additives can be used in lubricants with Ecolabel certification

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Physical Properties

- **Specific Gravity and Density**
  The specific gravity and density of EPO is between 0.84 and 0.85 and 40~2000 (@100°C) each. The higher the molecular weight, the higher the density; The higher the temperature, the lower the density.
- **Molecular Weight**
  The number average molecular weight (Mn) of EPO ranges between 1,900 and 7,200 while its polydispersity index ranges from 1,5 to 2 leading to stable and homogenous.
- **Viscosity**
  EPO has a wide kinematic viscosity range of 40 to 2,000 cSt at 100°C. It varies by temperature and molecular weight, higher molecular weight and lower temperature lead to increased viscosity.
- **Viscosity Index**
  EPO has a high viscosity index varying from 150 to 300. As the viscosity increases, so does the viscosity index. Its higher viscosity index enables it to maintain consistent viscosity at a wide range of temperatures.
- **Flash Point & Fire Point**
  The flash point of EPO is at least 265°C and even higher as viscosity increases, proving reliable heat-resistance.
- **Pour Point**
  EPO is non-crystalline and has a lower pour point, showing an excellent advantage at low cold temperatures such as -37°C.
- **Colour**
  EPO is colourless and has reliable colour stability. Its APHA colour (Pt/Co scale) is 20 or lower.

Packaging

EPO is available in three types of packages as described below.

Drum (open/closed)	ISO Container	IBC Container
Net weight 170kg (gross weight 190kg)	24kl (19MT)	820kg (877kg with container)

Shelf Life

Kemat's supplier's drum packaging warranty is two years from the date of manufacture if the product is unopened and the specified handling and storage methods on the Safety Data Sheets are followed. For mor information, please contact us via email.

Heating Temperature

The following table shows Kemat's recommendation for the use of a heating box. We strongly recommend that the following table is used, and that temperatures are not exceeded if using different heating tools.

	DS 40	DS 100	DS 600	DS 1100	DS 2000
Drum	266°F (130°C)	266°F (130°C)	302°F (150°C)	302°F (150°C)	302°F (150°C)
ISO Container	266°F (130°C)	266°F (130°C)	302°F (150°C)	302°F (150°C)	302°F (150°C)

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Typical Applications

Viscosity Index Improver (VII)
EPO improves and conserves the viscosity index of a variety of lubricants: automotive/industrial gear oil, hydraulic fluid, compressor oil, etc. EPO has a high viscosity index varying from 150 to 300. As the viscosity increases, so does the index. Its higher viscosity index enables it to maintain a consistent viscosity at a wide range of temperatures.

Automotive Gear Oil – Viscosity Modifier
EPO is widely adopted as a viscosity modifier of automotive gear oil (differential oil/transmission oil) because of its excellent viscosity index control, thickening power, low-temperature property and shear strength. In particular, its higher viscosity index greatly enhances durability, and its lower wear property helps improve vehicle fuel economy.

Industrial Gear Oil / Hydraulic Oil / Compressor Oil – Viscosity Modifier
EPO is suitable as a viscosity modifier of highly viscous industrial gear oil due to its superior viscosity index, higher thickening power and improved film thickness. Stable properties and lower volatility prevent degradation due to long exposures or contamination from moisture or other impurities.

Grease – High Viscosity Synthetic Base Stock
EPO has similar physical properties to Group IV PAO and therefore the colour change will barely occur in a long term use as the viscosity index and the thickening power of the product is high with superior oxidation stability.

Rubber (TPE, EPDM) – Extrusion Oil / Compound Process Oil
EPO has a higher molecular weight than general process aids. It can improve extrusion processability, permanent compression set, weather resistance and mechanical strength of the finished products when used as a plasticizer or flexibilizer. Also, it has excellent compatibility due to its structural similarity with EPDM.

Paint and Coating – Defoamer
EPO is suitable as a defoaming agent for paints, and shows optimized performance in solvent based and non-solvent based urethane and epoxy coatings. Adding a small amount of EPO can deliver a smooth and clean surface.

Others
EPO can be used in various applications including wire/cable jelly, cosmetics, mould release for polyurethane, and insulating oil additives. Custom products are available through close collaboration between R&D and production.

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Typical Properties

EPO

Liquid polymer product that selectively polymerizes ethylene and propylene with metallocene catalyst

EPO	Molecular Weight	Kinematic Viscosity cSt		Flash Point °C		Colour
	Mn	@ 40°C	@ 100°C	Cleveland Open Cup	Pensky-Martens Closed Cup	ALPHA
DS 40	1,900	435	40	260	230	Max 20
DS 100	2,800	1,400	100	265	244	Max 20
DS 600	5,300	10,500	600	285	270	Max 20
DS 1100	6,400	20,500	1,100	285	270	Max 20
DS 2000	7,200	39,500	2,000	285	270	Max 20

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KEMITO

Services

Flexible service options, tailor-made to support your business
KEMITO is a full service provider for all ISO tank and packaged good needs, supplying safe, reliable and economical logistics for a wide range of chemicals throughout Europe as well as all over the world. KEMITO offers repacking as well as tailor-made packing, comprehensive solutions for all ISO tank needs and economical logistics. The friendly team at KEMITO speaks ten languages, offering outstanding customer support. Most of all, they really care about the service and experience they give.

Comprehensive solutions for all ISO tank and packed good needs
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Flexible Logistics
Flexible service options, tailor-made to support your business.

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Specialist Services

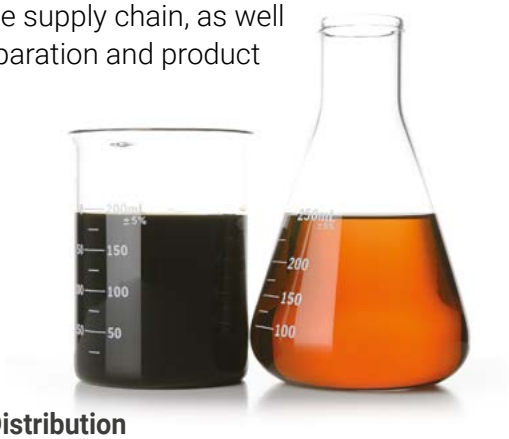
Drumming and repacking including the filling of all kinds of bundles like cans, drums and containers. Bundle volumes can vary from 1 litre cans up to 1,000 litre IBCs, and we handle full container loads (FCL) as well as less-than-container loads (LCL).

Blending including blending different liquids or diluting solids in liquids; heating solids to enable pumping; sampling and filtering; confidential recipes; customs clearance; repackaging and refilling of solid and liquid products.

ISO tank services clean, repair, steam heat ISO tanks.

Sourcing to establish new and dependable product channels.

Administration and coordination by one single point of contact in the supply chain, as well as product preparation and product conditioning.



Transport and Distribution

Safe, prompt, reliable and affordable transport is the hub of our service. We organise and oversee everything relating to the transportation of your products. Tracked at every stage, from shipment to delivery: whether it's by road, rail, sea or air. Owning our own transport fleet keeps costs down.

Warehousing and Storage

We can store ISO tank containers loaded with chemicals in specialised storage facilities for an unlimited period. We have our own permanent bulk storage facilities in North Western and Central Europe, with distribution centres in Belgium, France, Italy, the Netherlands, Turkey and the United Kingdom.

Our wide range of packaging: bulk (glycol heated) tank containers, IBCs and drum packaging as well as flexi-bags and trucks, allows us to offer the optimal solution to suit your needs. Whether you are a small start-up company just breaking into the market, or a large company seeking new opportunities, outsourcing can be an excellent strategy for survival, giving more flexibility as well as reducing risk and minimising costs.

Freight Forwarding

Our logistics team specializes in freight forwarding as well as the handling of chemicals and the logistics of ISO tanks to worldwide destinations.

The team is skilled in dealing with exporting, importing, international shipping, processes, customs; paperwork and all regulations involved with international trade.

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