OILS AND LUBRICANTS
FOR MOBILE TECHNOLOGY

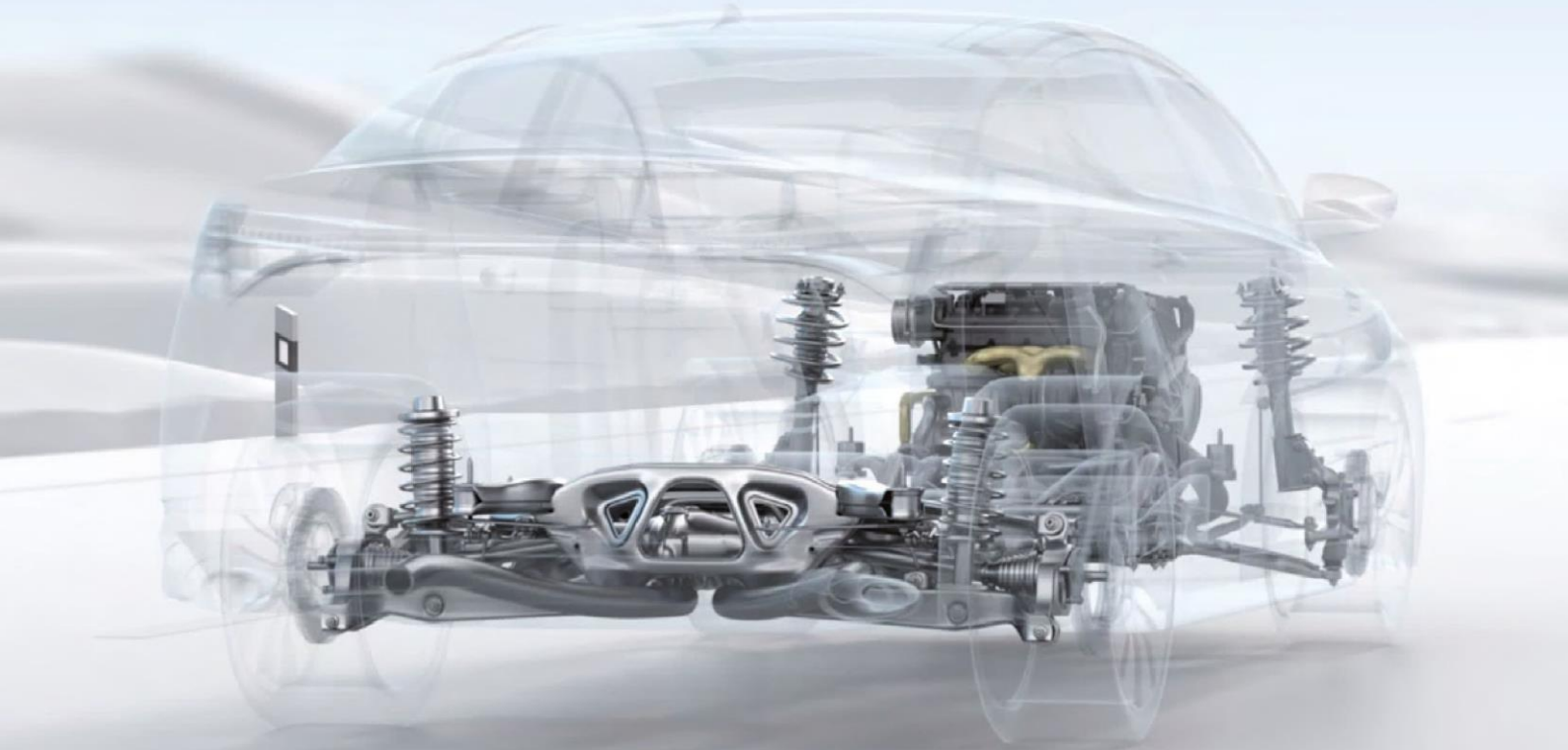
PARAMO
Since 1889

made in PARAMO
MOGUL

PARAMO

Since 1889

Joint-stock company **PARAMO,** with its more than hundred and thirty year tradition of producing powerful lubrication oils, is inseparably linked to the history of the production of the **MOGUL** oils. In the Czech Republic, the **MOGUL** brand has become a synonym to the word oil during the many years customers have been able to buy the MOGUL products. The current **MOGUL** oils are not only comparable to the best oils of other world manufacturers, but their parameters often surpass them.



History

The history of the Pardubice refinery starts in Vienna, where David Fanto used to sell kerosine in his little store. He was doing well, so he decided to open a his own plant for kerosine distillation and refining from crude oil. A perfect place he found for his intention was Pardubice. This industrial city had plenty of water supply and ideal transport conditions thanks to its location along a railway. The first boilers and pipelines for the future Fanto refinery were installed in the spring of 1889. The Fanto oils of all kinds had soon started to replacing the generally respected American products not only in the Austro-Hungarian Empire but also abroad. In 1907, the company became a joint-stock company with a capital of 12 million crowns. The company owned plants in Hungary, branches in Paris, crude oil mines in Boryslav in Galicia, extensive fleet of tanks, cured oil tankers and hydro-pumping plants.

The history of the Kolín plant dates back to 1900. Similarly to the Pardubice refinery, the key attributes for selecting the location included sufficient water supply (the Labe River) and railroad connection. Both plants also established a close cooperation. The nearby Pardubice Fanto refinery moved some of its foremen to Kolín to help with starting the new refinery. Furthermore, some of the semi-finished products from the Kolín refinery were further processed in the Fanto plant.

Both refineries merged in the 1920's, while the central company headquarters was built in Prague in Smíchov. The company started building a network of its own gas stations and producing motor oils for cars. These oils were packed in small packages under the Fantolin brand name.

In 1927, the Kolín plant started making the legendary **MOGUL** oil. The main customer was the network of the Bratři Zikmundové gas stations. Oils with the **MOGUL** brand have been successfully produced until today.

Both refineries were affected by bombing at the end of World War II. Nevertheless, both of them started their production shortly after 1945 again. Their production significantly increased in the 1960's and 1970's after the plants were connected to the Družba crude oil pipeline and after the implemented modernization of the production facilities. In 1970, **MOGUL SUPER** oil was introduced to the market. Many people remember its characteristic golden package.

After 1989, the Pardubice as well as the Kolín refineries operated as two independent companies. Once both of these companies became members of the Unipetrol Group, **KORAMO Kolín** and **PARAMO Pardubice** merged. In 2003, **PARAMO** became their successor, thus strengthening its position on the domestic as well as international markets. **Joint-stock company PARAMO followed in the steps of the responsible work of the previous generations** and invested tens of millions of crowns into modernizing production and liquidating old environmental burdens. As a member of the Unipetrol Group, **PARAMO** will continue to be a key oil producer and distributor in the Czech Republic and Slovakia and will keep advancing the Czech brand of **MOGUL**.

Innovations

MOGUL oils utilize the latest advanced technologies of synthetic base oils and additives, thus enhancing motor power, while being considerate of the environment. The assortment is extensive - for example, synthetic and semi-synthetic MOGUL EXTREME motor oils, which provide for an excellent startup ability at very low freezing temperatures, limit the so-called cold starts and significantly reduce wear and tear of the motors. The **MOGUL EXTREME** oils comply with the requirements for an increased fuel efficiency and thus also with the environmental operation requirements. This line also includes oils with extended oil change intervals and oils for PD motors.

MOGUL 5W-50 EXTREME SPORT is designated for engines of racing cars. Some racers who use this oil in their special racing cars include Roman Kresta, winner of multiple rally titles of the International Championship of the Czech Republic, young and talented racer Jan Černý, or Roman Častoral, rallycross European champion, and other racing teams that participate in rally and other races. In 2011, a new **MOGUL MOTO oil line for today's powerful motorcycles of all brands** was introduced on the market**.**

Low SAPS oils with a low ash volume are designated for the most modern engines with particle filters used in truck and bus diesel engines exposed to extreme loads. The oils of the **MOGUL DIESEL line comply with the strict EURO IV and V emission limits.** They also provide for very long oil exchange periods.

Apart from the **MOGUL** motor oil line, **PARAMO** also traditionally specializes in the production of other lubrication and procedural oils, construction-insulation asphalts and road asphalts, paraffines and waxes, and other refinery products. It utilizes the obtained intermediate products for the production of base and lubrication oils with a low volume of sulphur. **PARAMO** is also involved in the development and innovation of procedural oils. European tire manufacturers are interested in modified aromatic extracts of the TDAE type or softeners of the MES type. They are procedural oils, free of undesirable polyaromatic hydrocarbons. Thanks to these Pardubice products, which are used as softeners for the production of tires, no undesirable substances are released in the air during operation.

BRAND

Brand value

Tradition, innovation, quality, favourable price and availability - those are the key success factors of the **MOGUL** brand. Based on independent researches, **MOGUL is the most famous and used lubrication brand on the Czech market. PARAMO is maintaining an approximate 25% of the market in the area of final lubricants,** including its main retail brand MOGUL. The overall company export amounts to more than 50%.

PARAMO focuses on cooperation with successful motor sport teams. Quality of this line was confirmed by, for example, the Czech national team at the International Six Days Enduro in Germany in 2012. **PARAMO was awarded the prestigious PETROLawards prize in the Product category for its MOGUL MOTO line.**

In 2014 and in the following years, PARAMO was awarded the CZECHSUPERBRANDS prize for its MOGUL brand. The prize is awarded by the Brand Counsil based on strict and exactly defined criteria.
All oils of the **MOGUL** brand comply with the strict criteria of the applicable international standards, including car manufacturer standards (such as the VW, Ford, MB and other groups). **PARAMO** provides free business and technical presale and post-sale service for all its products. The service is focused on the selection of proper lubricants and their correct application. **PARAMO** also provides consultations to its customers, advising them how to properly use oils and how to monitor the given quality parameters during operation.

MOGUL oils are designated for customers who take care of their own cars and machines, but also for large transportation companies, car repair shops, industry and agriculture.

Socially responsible conduct

Developing and producing products with minimal risks of negative impacts on the environment is the priority of **PARAMO**. That is why the company has, since 1993, spent more than 60 million crowns on liquidating old environmental burdens caused by bombing during World War II and by environmentally harmful behaviour of the state-owned company prior to privatization.

PARAMO claims its responsibility for observing the Responsible Care in Chemistry program. PARAMO is the fifth company in the Czech Republic that received the Sustainable Development Prize for fulfilling the principles defined at the UN Summit in Rio de Janeiro. The company is also a holder of certificates that confirm a proper application and utilization of the given quality management systems, environmental management and occupational health and safety.

Brand and numbers

- The company currently produces more than **150 types of oil**
- In 1931, **MOGUL** made an appearance in the legendary **Powder and Petrol movie** by the famous couple Voskovec and Werich
- **Jarek Nohavica as well as Ivan Mládek** used the word **MOGUL** in their songs
- **The annual production of the one-litre oil packages** placed side by side could border the entire **road from Pardubice to Prague**
- The company annually produces approximately **80 million litres of oil**
- Pursuant to independent surveys, spontaneous **awareness of the brand is more than 70%** (induced awareness amounts to 95%)
- Pursuant to independent surveys, **1/3 of the Czech drivers** uses the **MOGUL** brand

made in PARAMO

MOGUL

Viscosity classification of motor oils

Viscosity classification of motor oils is determined by the SAE specification (Society of Automotive Engineers, USA). It characterizes the oil viscosity and temperature characteristics and it is marked by corresponding numbers – furthermore, oils suitable for winter use are additionally marked with the letter W (Winter).

It includes:

- six classes of **"winter"** oils (0W, 5W, 10W, 15W, 20W and 25W)
- eight classes of **"summer"** oils (8, 12, 16, 20, 30, 40, 50 and 60).

Note:
It applies to both groups that the greater the SAE class-characterization number, the more viscous the oil.

Performance classification of motor oils

Performance specification characterizes immediate as well as long-term motor oil characteristics for various forms of operational loads. Various characteristics are assessed. They include oxidation stability, evaporation ability, protection against wear and tear and against deposit formation, corrosion protection, fuel savings, etc.
The following standards are used for marking the performance categories of motor oils:

a. ACEA (Association des Constructeurs Européens d' Automobiles, EU) classification
b. API (American Petroleum Institute, USA) classification
c. company standards of engine and car manufacturers (VW, MB, MAN, VOLVO and TATRA)

ACEA classification

ACEA - Association des Constructeurs Européens d' Automobiles - in 1991, in replaced CCMC - Committee of Common Market Automobile Constructors. It was founded in 1972 as a response to the fact the API specifications are not fully applicable to European engine types since their designs differ from American engines. Since 2004, the ACEA classification divides motor oils in the following three groups:

- oils for spark-ignition and light combustion-ignition engines, marked "**A/B"**;
- oils compatible with catalytic convertors for spark-ignition and light combustion-ignition engines, marked **"C"**;
- oils for highly powerful combustion-ignition motors **"E".**

OIL SPECIFICATIONS

Viscosity classes of motor oils pursuant to SAE J300

Viscosity class SAE	Characteristics at low temperatures				Characteristics at high temperatures		
	Dynamic viscosity		Pumpability		Kinematic viscosity at 100 °C		High shear **
	(mPa.s) max. at °C		(mPa.s) max. at °C *		min. ($mm^2.s^{-1}$)	max. ($mm^2.s^{-1}$)	min. (mPa.s)
0W	6,200	-35	60,000	-40	3.8		
5W	6,600	-30	60,000	-35	3.8		
10W	7,000	-25	60,000	-30	4.1		
15W	7,000	-20	60,000	-25	5.6		
20W	9,500	-15	60,000	-20	5.6		
25W	13,000	-10	60,000	-15	9.3		
8					4.0	< 6.1	1.7
12					5.0	< 7.1	2.0
16					6.1	< 8.2	2.3
20					6.9	< 9.3	2.6
30					9.3	< 12.5	2.9
40a					12.5	< 16.3	3.5
40b					12.5	< 16.3	3.7
50					16.3	< 21.9	3.7
60					21.9	< 26.1	3.7

a) 0W-40, 5W-40 and 10W-40
b) 15W-40, 20W-40, 25W-40 and 40

* limit pumpability temperature
** at 150 °C

Comparison of the specific parameters

Oils for spark-ignition and combustion-ignition engines of cars and light utility vehicles

ACEA	HTHSV at 150 °C mPa.s *	TBN mgKOH/g	Sulphated ash %weight	Sulphur volume %weight	Phosphorus volume %weight	Compatible with:		
						TWC GDF/DPF	DPF	SCR EGR
A1/B1	≥ 2.9 to ≤ 3.5; xW-20: 2.6 min.	≥ 8.0	≤ 1.3	-	-	-	-	-
A3/B3	≥ 3.5	≥ 8.0	≥ 0.9 to ≤ 1.5	-	-	-	-	-
A3/B4	≥ 3.5	≥ 10.0	≥ 1.0 to ≤ 1.6	-	-	-	-	-
A5/B5	≥ 2.9 to ≤ 3.5	≥ 8.0	≤ 1.6	-	-	-	-	-

ACEA - comparison of the specific parameters

Oils for spark-ignition and combustion-ignition engines of cars and light utility vehicles, compatible with catalytic converters

ACEA	HTHSV at 150 °C mPa.s *	TBN mgKOH/g	Sulphated ash %weight	Sulphur volume %weight	Phosphorus volume %weight	Compatible with:		
						TWC GDF/DPF	DPF	SCR EGR
C1	≥ 2.9	-	≤ 0.5	≤ 0.2	≤ 0.05	x	-	-
C2	≥ 2.9	-	≤ 0.8	≤ 0.3	≤ 0.09	x	-	-
C3	≥ 3.5	≥ 6.0	≤ 0.8	≤ 0.3	≥ 0.07 to ≤ 0.09	x	-	-
C4	≥ 3.5	≥ 6.0	≤ 0.5	≤ 0.2	≤ 0.09	x	-	-
C5	≥ 2.6 < 2.9	≥ 6.0	≤ 0.8	≤ 0.3	≥ 0.07 to ≤ 0.09	x	-	-

Oils for high-performance combustion-ignition engines of trucks, buses, etc.

E4	≥ 3.5	≥ 12	≤ 2.0	-	-	-	-	***
E6 **	≥ 3.5	≥ 7	≤ 1.0	≤ 0.3	≤ 0.08	-	x	x
E7	≥ 3.5	≥ 9	≤ 2.0	-	-	-	-	x
E9 **	≥ 3.5	≥ 7	≤ 1.0	≤ 0.4	≤ 0.12	-	x	x

***** viscosity at a high temperature and high shear stability
****** oils of the L-SAPS type
******* for some engines

Explanatory notes:
GPF/DPF - Gasoline/Diesel Particulate Filter
TWC - Three Way Catalyst
EGR - Exhaust Gas Recirculation
SCR - Selective Catalytic Reduction, NOx - modification of the composition of the exhaust gases by urea (AdBlue agent)

Oils compatible with catalytic convertors - for spark-ignition and light combustion-ignition engines

C1 Oils designated for being used with GPF/DPF and TWC filters in high-performance engines that require low-viscosity oils with the so-called Lowest SAPS (chemical limits) and with a viscosity at a high temperature and high shear (HTHSV) greater than 2.9 mPa.s. The oils extend the lifespan of filters and catalytic converters and reduce fuel consumption. They are suitable for specifically designed engines.

C2 Oils designated for being used with GPF/DPF and TWC filters in high-performance engines designed for low-viscosity oils with the so-called Mid SAPS and HTHSV greater than 2.9 mPa.s. The oils extend the lifespan of filters and catalytic converters and reduce fuel consumption. They are suitable for specifically designed engines.

C3 Oils designated for being used with GPF/DPF and TWC filters in high-performance engines that require oils with the so-called Mid SAPS level. The oils extend the lifespan of filters and catalytic converters. They are suitable for specifically designed engines.

C4 Oils designated for being used with GPF/DPF and TWC filters in high-performance engines that require the so-called Low SAPS and HTHSV greater than 3.5 mPa.s. The oils extend the lifespan of filters and catalytic converters. They are suitable for specifically designed engines.

C5 Oils designated for being used with GPF/DPF and TWC filters in high-performance engines designed for low-viscosity oils with the so-called Mid SAPS, with requirements for greater fuel savings and HTHSV of at least 2.6 to 2.9 mPa.s. The oils extend the lifespan of filters and catalytic converters and allow for extended oil exchange periods. They are suitable for specifically designed engines.

OIL SPECIFICATIONS

Oils for combustion-ignition engines of trucks

E6 The oils provide an excellent protection of the cylinders against wear and tear and soot. They are recommended for high-performance engines that comply with the Euro IV to Euro VI emission limits and that are designed for work in hard conditions, for example, extended oil exchange intervals, pursuant to the given manufacturer recommendations. They are suitable for engines furnished with recirculation of exhaust gases with or without diesel particulate filters and for engines with the SCR system. ACEA E6 is specifically recommended for engines with diesel particulate filters. It is qualified in combination with fuels with a low volume of sulphur (max. 50 ppm). Nevertheless, always observe the corresponding manufacturer recommendations.

E7 The oils effectively protect the cleanliness of pistons and cylinder polishing. Moreover, they provide an improved protection against wear and tear and soot. They are recommended for high-performance engines that comply with the Euro I to Euro V emission limits and that are designed for work in hard conditions, for example, extended oil exchange intervals, pursuant to the given manufacturer recommendations. They are suitable for engines without diesel particulate filters and for a majority of engines furnished with recirculation of exhaust gases or a SCR system, pursuant to the given manufacturer recommendations.

E9 The oils effectively protect the cleanliness of pistons and cylinder polishing. Furthermore, they provide an improved protection against wear and tear, deposits and soot. They are recommended for high-performance engines that comply with the Euro IV to Euro VI emission limits and that are designed for work in hard conditions, for example, extended oil exchange intervals, pursuant to the given manufacturer recommendations. They are suitable for engines furnished with recirculation of exhaust gases (EGR) or a SCR system, pursuant to the given manufacturer recommendations. They are particularly recommended for engines with diesel particulate filters in combination with fuels with a low volume of sulphur. Nevertheless, always observe the corresponding manufacturer recommendations.

API classification

This standard classifies motor oils based on their use, i.e. motor oils for spark-ignition (petrol) engines, marked with the letter “S” (Service), and motor oils for combustion-ignition (diesel) engines, marked with the letter “C” (Commercial). Most oils can be used for both of the stated motor types. These oils are thus marked with a combination of both letters, for example, SL/CF.

The following API performance classes are currently used the most:

Performance classes for spark-ignition engines

SJ Oils for engines made in 2001 and older.

SL Oils that exceed the increased API SJ fuel savings with a possibility of extended change intervals.

SM Oils of the highest quality that exceed API SL by an increased oxidation stability and better protection against wear and tear and deposits. In effect since 2004.

SN Oils for modern engines. Their purpose is to reduce fuel consumption, to regulate emissions and to protect turboblowers. The oils have a greater compatibility with the combustion products treatment systems. They also provide protection to engines that use fuels that contain ethanol and the E85 fuel. In effect since 2011.

Performance classes for combustion-ignition engines

CH-4 Oils for high-speed engines exposed to the highest loads, operating in the most demanding road and off-road conditions. Introduced in 1998.

CI-4 Introduced in 2002. Oils for high-speed engines exposed to high loads, with recirculation of exhaust gases (EGR), which comply with the emission limits that came into effect in 2004.

CJ-4 Oils for four-stroke, supercharged combustion-ignition engines produced since 2010, which comply with the given exhaust gases emission standards. For diesel engines with a low sulphur volume and engines equipped with diesel particulate filters and advanced injection systems.

CK-4 Oils for high-speed, four-stroke, supercharged combustion-ignition engines exposed to high loads, which comply with the emission standards for 2017 and with TIER 4. Oils with an increased protection against oxidation, engine wear and tear, and oil degradation, and with improved shear stability, which ensures cleaner engines, particularly when it comes to pistons. For diesel engines with a low sulphur volume and engines equipped with diesel particulate filters and advanced injection systems. From the performance perspective, the CK-4 oils exceed the CJ-4, CI-4 and CH-4 oils and can effectively lubricate engines that require this specification.

Performance classes for combustion-ignition engines – new Fuel Economy Benefits category

FA-4 For certain xW-30 oils, designated for special, high-speed, combustion-ignition four-stroke engines that comply with the emission standards and greenhouse gases (GHG) for 2017. HTHSV of the oils is within the range of 2.9 - 3.2 mPa.s. For diesel engines with a low sulphur volume (up to 15 ppm) and engines equipped with diesel particulate filters and advanced injection systems. The API FA-4 oils cannot be replaced by and are not retroactively compatible with API CK-4, CJ-4, CI-4 and CH-4.

Viscosity classification of transmission oils

For assessing viscosity characteristics of transmission oils, the SAE (Society of Automotive Engineers, USA) specification is used. This standard uses four winter classes for the oil classification purposes. They are marked with a number and the letter **"W"** (Winter) and five summer classes marked with a number.

- **Winter classes:** 70W, 75W, 80W and 85W.
- **Summer classes:** 80, 85, 90, 140 and 250.

Note:
It applies to both groups that the greater the SAE class-characterization number, the more viscous the oil.

Performance classification of transmission oils

The API (American Petroleum Institute, USA) classification is used for marking individual performance categories of transmission oils. Performance class markings consist of the letters "**GL**" (Gear Lubricant) and a number that defines the given performance level. There is a total of six of them.

The following are the currently most used performance classes:

GL-4 Oils with a high volume of additives, particularly designated for manual transmissions and hypoid gears exposed to low loads;
GL-5 Oils designated for hypoid gears exposed to high loads, which operate in the most demanding operation conditions and which are exposed to variable impact loading;
MT-1 Oils for manual as well as unsynchronized transmissions of trucks exposed to high operation loads.

Despite of the fact that the API GL-5 oil is of a higher performance class than API GL-4, it is not suitable for being used for manual transmissions since the synchronous parts can become stuck and the transmission damaged.

Viscosity classes of transmission oils pursuant to SAE J306

SAE level	Max. temperature for a dynamic viscosity of 150 Pa.s (°C)	Kinematic viscosity at 100 °C	
		min. (mm^2/s)	max. (mm^2/s)
70W	-55	4.1	-
75W	-40	4.1	-
80W	-26	7.0	-
85W	-12	11.0	-
80	-	7.0	< 11
85	-	11.0	< 13.5
90	-	13.5	< 24
140	-	24.0	< 41
250	-	41.0	-

MOTOR OILS

MOGUL EXTREME motor oils

Trading name	SAE	Specification
MOGUL 0W-20 EXTREME LF IV	0W-20	Corresponds to: VW 508.00/509.00
MOGUL 0W-30 EXTREME LF II	0W-30	Corresponds to: ACEA A5/B5, VW 503.00/506.00/506.01
MOGUL 0W-30 EXTREME C2	0W-30	Corresponds to: ACEA C1, C2, PSA B71 2312/B71 2302
MOGUL 5W-20 EXTREME A1/B1	5W-20	Corresponds to: ACEA A1/B1, Ford WSS-M2C 948-B
MOGUL 5W-30 EXTREME LF III	5W-30	Corresponds to: ACEA C3, VW 504.00/507.00, MB 229.51, BMW Longlife-04, Porsche C30
MOGUL 5W-30 EXTREME F	5W-30	Corresponds to: ACEA A1/B1, A5/B5, API SL/CF, Ford WSS-M2C 913-C/D
MOGUL 5W-30 EXTREME C2	5W-30	Corresponds to: ACEA C2, PSA B71 2290
MOGUL 5W-30 EXTREME C4	5W-30	Corresponds to: ACEA C4, Renault RN0720
Synthetic, easy running motor oils designated for modern petrol and diesel engines equipped with emission-reduction and exhalation systems (GPF/DPF, SCR, EGR, etc.), which require the so-called L-SAPS oils. They allow for extended oil exchange intervals, fuel savings and limitation of exhaust gases emissions They are also suitable for motors that use LPG. *		
MOGUL 5W-40 EXTREME PD	5W-40	Approbation: ACEA C3, VW 502.00/505.00/505.01, MB-Approval 229.31, Corresponds to: Porsche A40, GM Dexos 2, Renault RN 0700/0710, Ford WSS-M2C 917A
MOGUL 5W-40 EXTREME PD M	5W-40	Corresponds to: ACEA C3, VW 502.00/505.01, MB 229.51, BMW Longlife-04, Porsche, Ford WSS-M2C 917A
Synthetic motor oils designated for petrol and especially diesel engines with PD (pump-nozzle) injection with a fixed service interval, including GPF/DPF diesel particulate filters. They are also suitable for motors that use LPG.		
MOGUL 5W-50 EXTREME SPORT	5W-50	Corresponds to: API SL/CF
MOGUL 10W-60 EXTREME SPORT	10W-60	Corresponds to: API SL/CF, VW 501.01/505.00
Synthetic motor oils particularly designated for petrol and diesel engines exposed to high temperatures, i.e. sport and competition vehicles, where a high oil viscosity resp. guaranteed engine lubrication at high oil operation temperatures is required. These oils are recommended by Roman Kresta and Roman Častoral. *		
MOGUL 10W-40EXTREME	10W-40	Approbation: ACEA A3/B4, API SN/SM/CF, VW 502.00/505.00, Mercedes-Benz 229.1, Renault RN 700, Corresponds to: Fiat 9.55535 D2, Fiat 9.55535 G2
MOGUL 15W-40EXTREME	15W-40	Corresponds to: ACEA A3/B3, API SL/CF, VW 505.00
Semi-synthetic, respectively crude oi universal motor oil for modern, highly powerful petrol and diesel engines. They are also suitable for motors that use LPG. *		

MOTOR OILS

MOGUL RACING motor oils

Trading name	SAE	Specification
MOGUL RACING 5W-30	5W-30	Corresponds to: ACEA C3, VW 504.00/507.00, MB 229.51
MOGUL RACING 5W-30 F	5W-30	Corresponds to: API SL, Ford WSS-M2C 913B, ILSAC GF-3
MOGUL RACING	5W-40	Corresponds to: API SM/CF, VW 502.00/505.00, MB 229.3, BMW LL-01, GM-LL-B-025, Porsche A40, Renault RN 710/700
MOGUL GX-FE	10W-40	Corresponds to: API SL/CF, VW 501.00/505.00, MB 229.1
MOGUL GX FELICIA	15W-40	Corresponds to: API SL/CF, VW 505.00, MB 229.1
Universal line of extremely powerful motor oils for a wide range of a vehicle fleet. They are also suitable for motors that use LPG. *		

MOGUL SPEED motor oils

Trading name	SAE	Specification
MOGUL SPEED 5W-30	5W-30	Corresponds to: VW 504.00/507.00, API SM/CF
MOGUL SPEED 5W-40	5W-40	Corresponds to: API SM/CF
MOGUL SPEED 10W-40	10W-40	Corresponds to: API SL/CF
MOGUL SPEED 15W-40	15W-40	Corresponds to: API SF/CD
Economical line of motor oils. *		

MOTOR OILS

Motor oils for the L-SAPS (low-temperature) diesel engines

Trading name	SAE	Specification
MOGUL DIESEL L-SAPS 5W-30	5W-30	Corresponds to: ACEA E6/E7/E9, API CJ-4/SN, MB 228.31/228.51, MAN M3477/3677/3271-1, Volvo VDS-3/VDS-4, Renault RGD/RXD, CAT ECF-3, MTU Type 3,1, Cummins CES 20081, Deutz DQC IV-10 LA, JASO DH-2
MOGUL DIESEL L-SAPS 10W-40	10W-40	Approbation: ACEA E6/E7, API CI-4, MAN M3477, MB-Approval 228.51, Volvo VDS-3, MTU Type 3.1, MACK EO-N, Deutz DQC-III-10 LA, Cummins CES 20076/77, Renault RVI RLD-2 Corresponds to: MAN M 3271-1, DAF
MOGUL DIESEL L-SAPS 10W-40 M	10W-40	Corresponds to: ACEA E6/E9/E7, API CI-4, MAN M3477, MB-228.51, Volvo VDS-3, MTU Type 3.1, Deutz DQC-IV-10 LA, Cummins CES 20076/77, Renault RLD-2/RDX
MOGUL DIESEL L-SAPS 10W-30	10W-30	Corresponds to: ACEA E9/E7, API CJ-4/SM, MB 228.31, Scania Low Ash, Renault RVI RLD-3, MACK EO-0 Premium Plus
MOGUL DIESEL L-SAPS 15W-40	15W-40	Approbation: ACEA E9/E7, API CJ-4/SM, MB-Approval 228.31, Volvo VDS-4 Corresponds to: MAN M3575, MTU Type 2.1, Cummins CES 20081, Renault VI RLD-3, Caterpillar ECF-1a/ECF-3, Detroit Diesel 93K218, MACK EO-0 Premium Plus
Motor oils particularly designated for diesel engines that require the so-called Low-SAPS oils (low volume of sulphate ahs, phosphorus and sulphur). They are suitable for modern diesel engines equipped with EGR, SCR or SCRT devices and especially with a diesel particulate filter (DPF). The oils allow for compliance with the Euro IV, V and Euro VI emission limits and they allow for achieving of very long oil exchange periods. *		

MOGUL DIESEL CNG	10W-40	Corresponds to: ACEA E9/E7/E6/E4, API CJ-4, MB 228.51, MAN M3477, Volvo VDS-4, Renault RVI RLD 2,RLD 3, Scania Low Ash
Motor oil particularly developed for lubricating truck and bus motors exposed to thermal loads, which use compressed natural gas (CNG) as their fuel. It is even suitable for the demanding city traffic and especially buses. The oil has a very high TBN (high alkaline oil reserve) value.		

Motor oils for diesel engines

Trading name	SAE	Specification
MOGUL DIESEL ULTRA	5W-30	Approbation: ACEA E4/E7, MB-Approval 228.5, Volvo VDS-3, Renault VI RLD-2, MACK EO-N, Corresponds to: MAN M3277, MTU Type 3, Renault RVI RXD/RLD, Scania LDF-2, DAF Extended drain
MOGUL DIESEL DTT PLUS	10W-40	Approbation: ACEA E4/E7, API CI-4, MB-Approval 228.5, MAN M3277, ZETOR, TATRA TDS 30/12, Corresponds to: Volvo VDS-3, Scania LDF-2, MTU Type 3, Renault RVI RXD/RLD-2, Cummins CES 20077/78, DAF Extended drain
MOGUL DIESEL DTT PLUS M	10W-40	Corresponds to: ACEA E4, MB 228.5, MAN M3277, MTU Type 3
MOGUL OPTIMAL	10W-40	Corresponds to: ACEA E7,A3/B3/B4, API CI-4, MB 228.3, MB 229.1, MAN M3275-1, Volvo VDS-3, MTU Type 2, Renault Truck RLD-2, Scania LDF-2, Cummins CES 20077/78, MACK EO-N, Deutz DQC III-10, JASO DH-1, GLOBAL DH-1
Semi-synthetic motor oils designated for lubricating highly supercharged diesel engines of trucks and utility vehicles, buses, construction technology, etc. They offer a long oil exchange periods. They allow for complying with the Euro IV and V emission limits. They are not suitable for engines with DPF filters. *		

MOGUL DIESEL DTT EXTRA	15W-40	Corresponds to: ACEA E7/E5/E3/B4/B3/A3, API CI-4/SL, MB 228.3, MB 229.1, MAN M3275-1, Volvo VDS-3, Cummins CES 20076/77/78, Renault VI RLD, RLD-2, CAT ECF-1a, ECF-2, MACK EO-M Plus, EO-N, Scania (Euro III a IV; 60 000 km), MTU Type 2, Iveco, DAF EUR 3, Deutz DQC-III-10, Detroit Diesel 93K215, Tedom 258.3, Avia 712, D407, D421.76, D421.85, VW 505.00
MOGUL DIESEL DTT EXTRA M	15W-40	Corresponds to: ACEA E7/B4/B3/A3, API CI-4/SL, MB 228.3, MB 229.1, CAT ECF-1a, Cummins CES 20076/77, MACK EO-M Plus, Scania (Euro III a IV; 60 000 km), DAF EUR 3, Iveco, Deutz DQC-III-05, Detroit Diesel 7SE 270, VW 505.00
MOGUL DIESEL DTT	15W-40	Corresponds to: ACEA E3, API CG-4/SL, MB 228.3, MAN M3275-1, Volvo VDS-2, Renault VI RD, MTU Type 2, Tatra TDS 30/16, Avia, Tedom 285.3
MOGUL DIESEL DT	15W-40	Corresponds to: ACEA E2, API CG-4/SL, MB 228.1, MAN 271, Volvo VDS, MTU Type 1, Tatra TDS 30/12, Avia, Tedom 285.2, ZETOR
MOGUL DIESEL DT 20W-50	20W-50	Corresponds to: ACEA E2, API CG-4/SF, MB 228.1, MAN 271, Volvo VDS
MOGUL DIESEL DT S30	30	Corresponds to: ACEA E2, API CG-4/SL, MB 228.0, MAN 270, Volvo VDS
MOGUL M7ADS III 15W-40	15W-40	Corresponds to: API CF-4/SG
MOGUL M7ADS III 20W-50	20W-50	Corresponds to: API CF-4/SG
Crude oil motor oils for highly supercharged diesel engines of trucks, buses, locomotives, boats, and heavy mobile machines for construction, forestry, agriculture, etc. MOGUL DIESEL DT S30 is a motor oil particularly designated for equipment that requires a powerful, single-level SAE 30 oil. *		

MOTOR OILS

Special motor oils

Trading name	SAE	Specification
MOGUL MARINE	40	Corresponds to: API CD, Approved for the Sulzer diesel engines
MOGUL MARINE TBN 40	40	Corresponds to: API CF
Special motor oils particularly designated for stationary diesel engines of electric backup power supplies - MOGUL MARINE. MOGUL MARINE TBN 40 is especially designated for special diesel engines that use highly sulphurous fuels (engines of maritime boats etc.). The oils has a high TBN 40 value - neutralizes acidic combustion products from the fuel. *		

Motor oils for older vehicles

Trading name	SAE	Specification
MOGUL SUPER STABIL 15W-40	15W-40	Corresponds to: API SF/CD
MOGUL SUPER 15W-50	15W-50	Corresponds to: API SE/CC
MOGUL SPECIAL 20W-30	20W-30	Corresponds to: API SC/CB
MOGUL M6ADS II PLUS	30	Corresponds to: API SF/CD
MOGUL M9ADV	40	Corresponds to: API CB
MOGUL M6AD	40	Corresponds to: API SC/CB
MOGULM6A	30	Corresponds to: API SB
Motor oils for lubricating petrol and diesel engines with low to medium requirements for the lubricant performance level. *		

Oils for two-stroke engines

Trading name	SAE	Specification
MOGUL TSF	-	Corresponds to: API TC, JASO FD, ISO-L-EGD, TISI
Semi-synthetic motor oil with a reduced smoke output for high-speed, two-stroke engines exposed to high thermal loads - for example, power saws, brush cutters, motorcycles, etc. The oil contains a diluting component and the so-called PIB, which eliminates pollution of the ignition plugs and the combustion area. *		

MOGUL TS	40	Corresponds to: API TC, JASO FC
MOGUL 2T	40	Corresponds to: API TB
Motor oils for two-stroke petrol engines of motorcycles, cars, agricultural and forestry machines, etc. MOGUL 2T is designated for two-stroke engines with lower requirements for the oil usable characteristics.		

Motorcycle oils

Trading name	SAE	Specification
MOGUL MOTO 4T 5W-40	5W-40	Corresponds to: API SM, JASO MA 2
MOGUL MOTO 4T 10W-40	10W-40	Corresponds to: API SM, JASO MA 2
MOGUL MOTO 4T 10W-50	10W-50	Corresponds to: API SM, JASO MA 2
MOGUL MOTO 4T 15W-40	15W-40	Corresponds to: API SM, JASO MA 2
MOGUL MOTO 4T 20W-50	20W-50	Corresponds to: API SM, JASO MA 2
Motor oils designated for lubricating four-stroke engines of sport motorcycles and four-wheelers, when a common oil filling is used for lubricating the engine and the transmission, include the wet clutch. Thanks to their high kinetic viscosity, the MOGUL MOTO 4T SAE 10W-50 and 20W-50 oils are particularly suitable for engines exposed to high temperature loads. *		

MOGUL MOTO 2T FD	-	Corresponds to: API TC, JASO FD, Rotax 853, ISO-L-EGD
Fully synthetic ester oil for two-stroke, high-speed engines of scooters (including snowmobiles), two-stroke motorcycles and other technology that uses oil and petrol mixtures or a batching pump for lubrication. The recommended mixing ratio is 1:50 or pursuant to the given manufacturer recommendations. *		

MOGUL MOTO TRANS 75W-90	75W-90	Corresponds to: API GL-4/GL-5
MOGUL MOTO TRANS 80W-90	80W-90	Corresponds to: API GL-4/GL-5
Transmission oils particularly designated for transmission mechanisms of modern motorcycles and four-wheelers exposed to high loads. They provide for an error-free shifting and clutch functions. *		

Oils for garden machinery

Trading name	SAE / ISO VG	Specification
MOGUL ALFA 5W-40	5W-40	Corresponds to: API SM/CF
MOGUL ALFA 4T	10W-30	Corresponds to: API SL/CF
MOGUL ALFA	30	Corresponds to: API SJ/CF
Motor oils for four-stroke, high-speed petrol and diesel engines of garden, agricultural and communal technologies that require oils of the given viscosity class SAE. *		

MOGUL ALFA 2T	-	Corresponds to: API TC, JASO FD, ISO-L-EGD, TISI
Semi-synthetic motor oil with a reduced smoke output for high-speed, two-stroke engines exposed to high thermal loads - for example, power saws, brush cutters, motorcycles, etc. The oil contains a diluting component and the so-called PIB, which eliminates pollution of the ignition plugs and the combustion area. *		

MOGUL ALFA HM 22	ISO VG 22	ISO 6743/4 HM, DIN 51524 část 2 HLP
Hydraulic oil designated for high-pressure, hydrostatic hydraulic mechanisms of garden and agricultural technologies that require the ISO VG 22 oil. It is designated for, for example, hydraulic timber splitting machines.		

MOGUL ALFA HOBBY	ISO VG 100	
MOGUL ALFA BIO 68	ISO VG 68	
Oil designated for oil-loosing lubrications. Thanks to its good adhesion characteristics, they are suitable for lubricating chains and power saw blades.		

Oils for tractors and construction technology

Trading name	SAE	Specification
MOGUL TRAKTOL STOU	10W-30	Approbation: ZETOR, Corresponds to: API CF/CF-4/SF, API GL-4, MB 228.1, MAN M271, Ford M2C 159-B, Massey Ferguson CMS M1139/44/45, John Deere JDM J27, Allison C-4, ZF TE-ML 06B/06C/06D
Universal oil for tractors of the STOU type. It is also designated for lubricating diesel engines, including supercharged engines, mechanical gears shifted manually as well as under pressure, hydraulic systems, and terminal drives, including the so-called wet brakes. It allows for a simplified assortment of the necessary lubricants. *		

MOGUL TRAKTOL UTTO 10W-30	10W-30, 80W	Corresponds to: API GL-4, ZETOR, John Deere J20C, Massey Ferguson CMS M1141, CMS M1143, Ford M2C 86 C, CNH MAT 3525, ZF TE-ML 03E, 05F
MOGUL TRAKTOL UTTO 80W	80W	Corresponds to: API GL-4, ZETOR, John Deere J20C, Massey Ferguson CMS M1141, CMS M1143, Ford M2C 86 C, CNH MAT 3525, ZF TE-ML 03E, 05F
Oils designated for lubricating transmission units of modern tractors of the UTTO type. They are suitable as a unified lubrication oil for mechanical gears (shifted manually as well as under pressure - “powershift”), hydrostatic systems and the so-called wet brakes. They allow for a simplified assortment of the necessary lubricants. They are not designated for lubricating engines! *		

MOGUL HYDRO 10W	10W	Corresponds to: API CF/CF-2, Caterpillar TO-4, Komatsu KES 07.868.1, Allison C-4, ZF TE-ML 03C/07F
MOGUL HYDRO 30	30	Corresponds to: API CF/CF-2, Caterpillar TO-4, Komatsu KES 07.868.1, Allison C-4, ZF TE-ML 03C/07F
Oils for hydraulic systems of heavy construction machines (wheel and track excavators, loaders, dozers, dumpers, etc.). They are used for lubricating hydrostatic as well as hydrodynamic mechanisms, the so-called wet brakes, clutches, terminal drives and gears of the stated technology, which require SAE 10W or SAE 30 oils. It is the so-called TDTO liquid (for transmissions and driving systems). *		

TRANSMISSION OILS

MOGUL SYNTRANS transmission oils

Trading name	SAE	Specification
MOGUL SYNTRANS 75W-90 PLUS	75W-90	Corresponds to: API GL-4, GL-5, MT-1, MAN M3343 S, MB 235.8, Scania STO 1:0, ZF TE-ML 02B, 05B, 12B, 16F, 17B, 19C, 21B
MOGUL SYNTRANS 75W-140 H	75W-140	Corresponds to: API GL-5
MOGUL SYNTRANS 75W-90 HYP	75W-90	Corresponds to: API GL-5, Approbation: TATRA TDS 100/40
MOGUL SYNTRANS 75W-90	75W-90	Corresponds to: API GL-4+
MOGUL SYNTRANS 75W-80	75W-80	Corresponds to: API GL-4
Synthetic transmission oils particularly designated for lubricating a wide spectrum of transmission mechanisms of modern trucks, cars and other technologies exposed to extremely high loads, which require the above stated classifications and specifications. *		

MOGUL TRANS hypoid transmission oils

Trading name	SAE	Specification
MOGUL TRANS 80W-90 PLUS	80W-90	Corresponds to: API GL-4, GL-5, MT-1, MAN M3343 M, MB 235.0, Scania STO 1:0, DAF Transmission Axle, Iveco Axle, Renault Axle, ZF TE-ML 02B, 05A, 07A, 12E, 16B/C/D, 17B, 19B, 21A
MOGUL TRANS 80W-140 H	80W-140	Corresponds to: API GL-5
MOGUL TRANS 85W-140 H	85W-140	Corresponds to: API GL-5, ZF TE-ML 05A, 07A, 12A, MIL-L-2105D
MOGULTRANS 80W-90H	80W-90	Corresponds to: API GL-5, MAN 342 typ M1
MOGUL TRANS LS 80W-90 H	80W-90	Corresponds to: API GL-5, Limited Slip
MOGUL TRANS 90H	90	Corresponds to: API GL-5, MAN 342 typ M1
MOGUL TRANS 80H	80W	Corresponds to: API GL-5
MOGUL TRANS 90 HT	90	Corresponds to: API GL-5, ČKD TATRA
Crude oil transmission oils particularly designated for lubricating a wide spectrum of hypoid transmission mechanisms of modern trucks, cars and other technologies exposed to extremely high loads, which require performance level API GL-5. The MOGUL TRANS LS 80W-90 H transmission oil is specifically designated for transmissions that require Limited Slip lubrication. *		

MOGUL TRANS transmission oils

Trading name	SAE	Specification
MOGUL TRANS 85W-140	85W-140	Corresponds to: API GL-4
MOGUL TRANS 80W-90	80W-90	Corresponds to: API GL-4, ZF TE-ML 02A, 08A
MOGUL TRANS 90	90	Corresponds to: API GL-4
MOGUL TRANS 80	80W	Corresponds to: API GL-4, MAN 341 typ E1, Z1
MOGUL TRANS 75W	75W	Corresponds to: API GL-4, VW 726Y
Crude oil transmission oils particularly designated for lubricating a wide spectrum of transmission mechanisms of modern trucks, cars and other technologies exposed to loads, which require performance level API GL-4.*		

MOGUL TRANS ATF oils for automatic transmissions

Trading name	SAE	Specification
MOGUL TRANS ATF D II	-	Corresponds to: GM Dexron IID, Allison C-4, Ford Mercon, Voith G607, ZF TE-ML 11A
MOGUL TRANS ATF D III	-	Corresponds to: GM Dexron III H, Allison C-4/TES 389, Ford Mercon, Ford M2C 138-J and 166-H, Caterpillar TO-2, Voith 55.6335, 55.6336, MB 236.1,236.5, 236.6, 236.7, MAN 339 Type Z-1, V1 and V2, Chrysler MS-9602, MS-7176, Volvo 97340, 97341, ZF TE-ML 02F, 04D, 09, 11A, 14A, 17C
Special transmission oils designated as operation liquids for automatic transmissions (ATF) of cars, trucks, buses and other mobile machines that require the stated specifications. *		

OTHER OILS AND LIQUIDS

Oils for gas engines

Trading name	SAE	Specification
MOGUL GAS	15W-40	Corresponds to: API CF, TEDOM 281.1, TEDOM 281.2
MOGUL GAS 40	40	Corresponds to: API CF, TEDOM 281.1
MOGUL GAS B40	40	Corresponds to: API CF, Caterpillar, Waukesha, MWM, Approbation: GE Jenbacher - engines: Types 2 and 3, Type 4 (Versions A and B) using the A and B fuel types
Crude oil motor oils particularly designated for engines that use natural gas (CNG, LNG), LPG and some purified biogases. MOGULGAS 40 is particularly designated for stationary engines. MOGULGAS B40 is designated for engines of cogeneration units that incinerate biogas. The oils has an increased TBN value - neutralizes acidic combustion products from the fuel. *		

Absorber oils

Trading name	ISO VG	Specification
MOGUL SILENCE 15	15	ISO 6743/4 HV, DIN 51 524 part 3 HVLP, AFNOR NFE 48 603 HV, ATESO
It is particularly designated for piston absorbers of cars and trucks, hydraulic lifters, break load regulators, etc. It is also suitable for high-pressure hydrostatic mechanisms of mobile and stationary devices exposed to high mechanical and thermal loads. Thanks to its high viscosity index, viscosity dependency on temperature is reduced. *		

Car radiator liquids

Trading name	Standards, approvals, specifications
PLATINUM COOLANT G11	PN-C 40007:2000, ASTM D 3306-03, British Standard BS 6580
Providing protection against corrosion and cavitation for up to 100 thousand km or for an operation time of 3 years. It is resistant to freezing at temperatures of up to -35 °C . It provides a perfect engine protection against overheating. *	

PLATINUM COOLANT G12	VW TL 774-F (G12 +)
When in the cooling system, the liquid forms a very thin protection coat that protects against corrosion and cavitation during operation for up to 250 thousand km or 5 years. It is resistant to freezing at temperatures of up to -37 °C . It provides a perfect engine protection against overheating. *	

PLATINUM COOLANT G13	VW TL 774-G (G12 + +)
Designated for cars of the Volkswagen Group (Škoda, Seat, Audi, VW). When in the cooling system, the liquid forms a very thin protection coat that protects against corrosion and cavitation during operation for up to 250 thousand km or 5 years. It is resistant to freezing at temperatures of up to -37 °C . It provides a perfect engine protection against overheating and corrosion. It does not contain toxic nitrites, amines or phosphates. *	

MOGUL plastic lubricants

Trading name	NLGI	Stabilizer	Base oil viscosity (mm^2/s)	Operation temperature (°C)	Classification ISO 6743	Classification DIN 51502
MOGUL CALSUL 2 WR	2	Calcium sulphonate complex	200	-25 to 150 (180)	BDIB 2	KP2N-25
High-pressure plastic lubricant designated for lubricating antifriction and slide bearings, particularly in demanding conditions; fittings exposed to extreme loads and fittings operating in water (including salt water) and at high temperatures for prolonged periods of time (lubricating undercarriages that pass through water, excavators, off-road vehicles, etc.).						
MOGUL LC 2	2	Lithium complex	210	-30 to 150 (180)	CDIB 2	KP2N-30
Multipurpose, high-temperature, high-pressure plastic lubricant designated for lubricating antifriction and slide bearings, particularly in demanding conditions; fittings exposed to extreme loads and fittings operating at high temperatures for prolonged periods of time.						
MOGUL LA 2	2	Lithium	120	-30 to 120	CCEB 2	KP2K-30
Universal, high-pressure plastic lubricant designated for lubricating antifriction and slide bearings (especially long-term fillings) of cars, buses and other mobile technologies.						
MOGUL LA 00	00	Lithium	45	-35 to 100	CBEB00	GP00G-30
Semiliquid, high-pressure plastic lubricant specifically designated for being used in central lubrication systems of trucks and buses with long grease lines. It has a good pumpability even at low temperatures.						
MOGUL LVT 2 M	2	Lithium	200	-25 to 120	BCEB 2	KFP2K-20
High-pressure plastic lubricant with an increased volume of MoS2 and a high base oil viscosity. It is particularly designated for lubricating slide, but also antifriction bearings exposed to extreme loads (lubricating pegs of excavators in connection with the demolition hammer etc.). It is also suitable when the so-called “emergency” lubricant characteristics are required.						
MOGUL G3	3	Calcium	50	-30 to 70	CAHB 3	KF3C-30
Plastic lubricant particularly designated for slide and antifriction slow-running bearings that can work in a wet environment (turntables, slide-out arms, etc.). It contains graphite.						
MOGUL A00	00	Aluminium	350	-20 to 90	BBHA 00	G00G-20
Highly adhesive, ductile lubricant particularly designated for lubricating slide bearings of mobile technologies (greasing lubricant); generally designated for bearings exposed to an intense impact of water (for example, vertical pegs) or some slow-running transmissions etc.						

Note:
* The product is classified as hazardous pursuant to Directive of the European Parliament and Council No. 1272/2008 (CLP).
More information can be found on the current safety sheet at www.mogul.cz

NOTES

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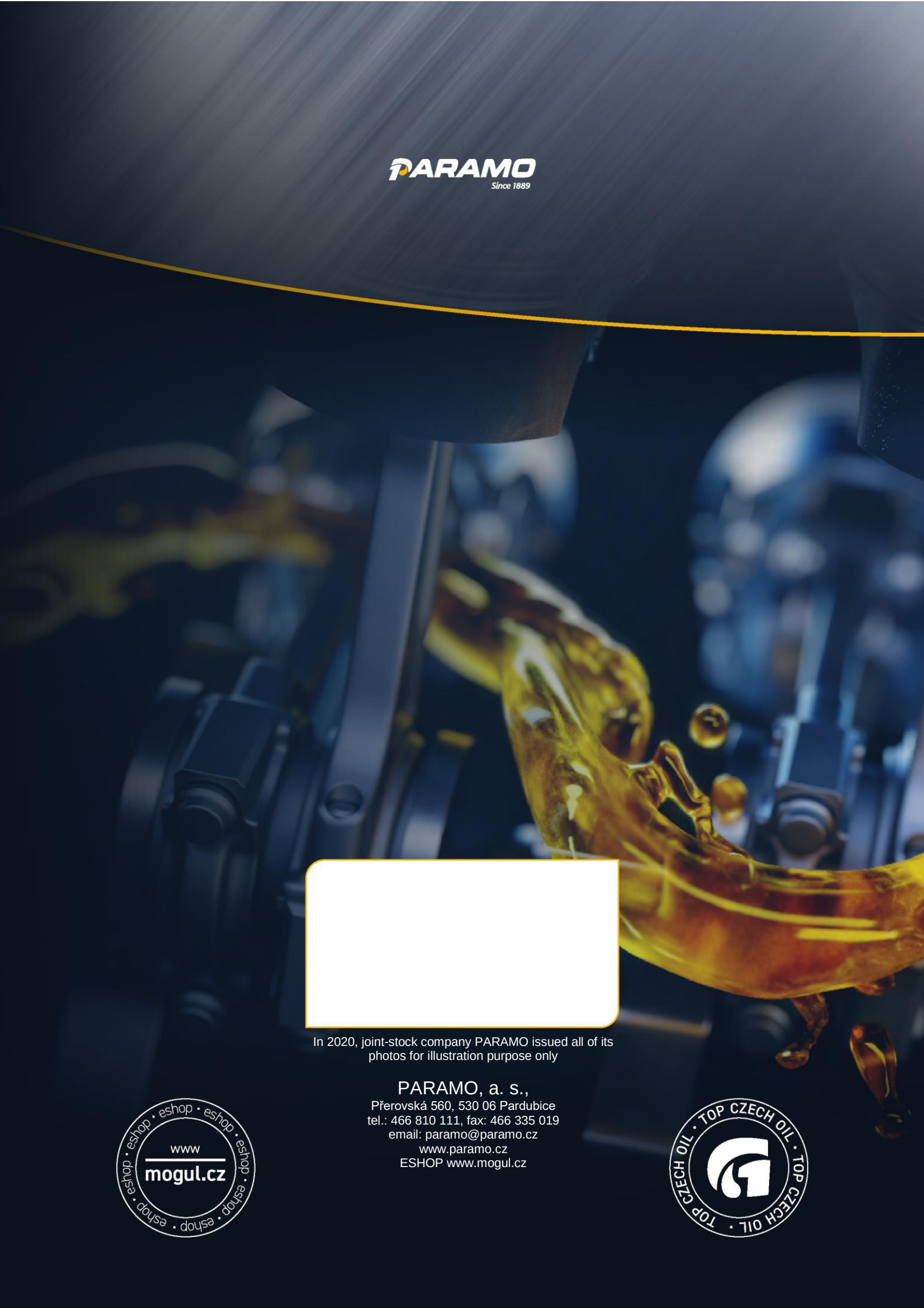

In 2020, joint-stock company PARAMO issued all of its photos for illustration purpose only

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