



# LUBEVISION®

The Kroon-Oil B.V. corporate magazine full of news and knowledge related to lubricants.

## ➤ AMBITIOUS RALLY TALENT IN A CITROEN DS3-R3

KEVIN DEMAERSCHALK

## ➤ HOW ABOUT MOTOR OIL SPECIFICATIONS?

BASIC TRIBOLOGY PART III

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BRAND PORTAL

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MP MOTORSPORT

### PRODUCT UPDATE

NEW HEAVY DUTY PRODUCT | BICYCLE RANGE AND MORE!

### CUSTOMER SATISFACTION SURVEY

A POSITIVE RESULT



# LUBEVISION®

Lubevision® is the Kroon-Oil B.V. corporate magazine that focuses on sharing technical information related to lubricants and publishing news about products and services. Lubevision is published in Dutch, English and French. Nothing from this issue may be copied in any way whatsoever without written permission from Kroon-Oil B.V.

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Being able to move with market developments has never been as important as it is now.

Looking ahead and anticipating everything is our motto for 2015! With all the economies of scale in the wholesale market caused by mergers and takeovers, nothing is certain any more. In the garage and agricultural sectors too, many forces are causing a shift, a strong trend towards reducing maintenance costs and technological developments that affect the need for lubricants. If you add to that the current global economic trends, you can imagine that intensive policy discussions are ongoing in many businesses. But turbulence means movement, and movement provides opportunities. That sits well with our company and we are confident that the current market will only help to further optimize our entire organization.

In turbulent times, our core values are more important than ever. Reliability, the quality of our product and organization, empathy and saleability are the most important traits in this respect. All of these have also been embedded in our DNA for decades now.

As part of our ISO certification, we recently held an extensive customer satisfaction survey. This revealed that our customers value Kroon-Oil highly, precisely due to our core values. That's a great affirmation. However, it doesn't mean that we're sitting back and thinking all is good. We are still very busy working on further improvements to our products, our services and our reputation. We also continue to keep a highly critical eye on our sales channels and price acceptance within those channels.

We launched the Kroon-Oil website in mid-2014. It appears that many users had to get used to the new way of searching on our website. However, we have since received very positive feedback. Never before have users been able to reach the right advice so quickly and easily, and we are proud of the fact that around 150,000 recommendations were made via our website last month. We will shortly be updating our website to include search tips and further optimization of the recommendation page itself.

In this issue of Lubevision, you can read about our experiences of working with MP Motorsport, the only Dutch GP2 team. We are continuing this collaboration in 2015 and will be taking a more prominent role within the team. Alongside the team from Kobus Tuning, which is taking a gap year this year in anticipation of a new and promising car, we will be partnering with Kevin

## 'WE ARE STILL VERY BUSY WORKING ON FURTHER IMPROVEMENTS TO OUR PRODUCTS, OUR SERVICES AND OUR REPUTATION.'

Demaerschalk. Belgian fans are keeping a close and expectant eye on this young rally talent who is set to make a bid for the R3 title in a new Citroën DS3 R3. You can read all about it on page 8.

We also have much to report in the area of product development. We are introducing a new bicycle range, with a completely new look to the basic containers and updates to various products. We will also soon be launching a new product especially for the manual transmissions used on Mercedes-Benz trucks and buses.

In this edition of Lubevision, you can also find the third and last (for now) installment of Basic Tribology. In this third part, we take a deeper look at modern lubricant specifications. What about viscosity, and what's the story now with the expanded specifications from ACEA and API? You can read all about it starting from page 10.

We hope you enjoy reading this new Lubevision.

# PRODUCT UPDATE

The Kroon-Oil product range is continuously tested and regularly adjusted based on most recent developments. The emphasis is on improvement and progress within this context. We can always offer the latest products and full technical advice on lubrication because of our innovative product policy.

## ► BICYCLE RANGE

Bicycle products have been a key part of our range since day one. The range has recently been augmented with our Xtreme products, a special range for sports cyclists. This range includes all the necessary products for the optimum lubrication and powerful cleaning of parts.

The range offers various lubricants covering all weather conditions and there is even a biodegradable variant. In addition, all cleaning products are biodegradable. Xtreme is suitable for mountain bikes, BMX and racing bikes but can equally be used with city and touring bikes.

In line with the Xtreme range, existing aerosols, pump dispensers and products in 100 ml bottles have also been given a completely new look.



## ► ELVADO LSP 5W-30

Another product that can claim a new specification is Elvado LSP 5W-30. This motor oil is primarily intended for Mazda cars fitted with a particulate filter and now meets the ACEA C2 specification!

This new specification means that the product meets the demanding low SAPS limits. In low SAPS oils sulfur, phosphorus and metallic additives are replaced by additives using newer technology. Thanks to its low SAPS characteristics, Elvado has no harmful effect on the operation of the exhaust gas aftertreatment systems fitted to modern, environmentally-friendly engines.

Suitable for Mazda engines and other makes that require ACEA C2 specification.

**Available in the following pack sizes:**

1 L	33482
5 L	33495
20 L	33500
60 L	33501
208 L	33502





## ➤ HELAR 0W-40

The formula of Helar 0W-40 has been improved once again! Thanks to the changes to its composition, this high-grade, fully synthetic motor oil now meets the API SN specification.

### **Suitable for winter conditions.**

Its low viscosity makes Helar 0W-40 particularly suitable for problem-free and fast cold starting, especially in cold, winter conditions. Because it effectively reduces engine wear, rotating parts will also last longer.

### **Safe and reliable**

Helar 0W-40 copes exceptionally well with the long oil change intervals of today, for added security. The product has high levels of technical reliability, providing a powerful lubricating film under the severest of operating conditions.

Helar 0W-40 is kind to catalytic converters, has good cleaning properties and helps to keep emissions low.

### **Available in the following pack sizes:**

<b>1 L</b>	02226
<b>5 L</b>	02343
<b>20 L</b>	57019
<b>60 L</b>	12176
<b>208 L</b>	12272



## ➤ AVANZA MSP 0W-30

Modern petrol and diesel engines demand modern products! Avanza MSP 0W-30 has a special mid-SAPS formula which extends the lifetime of the particulate filters and / or catalytic converters fitted to petrol and diesel engines in cars and vans.

Among other things, the product is extremely suitable for the latest PSA models and other makes that demand ACEA C2 specifications. (Tip: for full information on the specifications, read the Tribology article on page 10 too). The synthetic base oil combined with advanced additives provides benefits that include fuel economy, less combustion residues, longer life for particulate filters and catalytic converters, and longer oil change intervals. The 0W-30 viscosity guarantees smooth cold starting and a secure lubricating film at high operating temperatures.

### **Available in the following pack sizes:**

<b>1 L</b>	35941
<b>5 L</b>	35942
<b>20 L</b>	35943
<b>60 L</b>	35944
<b>208 L</b>	35945



## ► GEARSYNTH HS 75W-90

Gearsynth HS 75W-90 is the new, high-grade transmission oil for use in manual transmissions and other gearboxes used on Mercedes-Benz trucks and buses.

For most Mercedes-Benz truck and bus transmissions, a transmission oil that meets the MB 235.11 specification is the only way to provide the necessary quality. Gearsynth HS 75W-90 meets this specification.

Furthermore, this high-grade product can also be used in all applications where the manufacturer requires one of the following specifications: API GL-4, MAN 341 TYPE Z2, MAN 341 Type E1, ZF-TE ML 16A, 17A, 19A and 19C.

### Available in the following pack sizes:

<b>20 L</b>	32067
<b>60 L</b>	32068
<b>208 L</b>	32069



## ► THE BASIC DRUM

We introduced a completely new design in the middle of 2014 to replace the old black and yellow drum. Products in 208 litre drums and those in 60 litre drums are now supplied in the new drums.

The design:

- Has a high quality and luxury appearance thanks to the combination of gloss black and silver
- The yellow detailing links well with the Kroon-Oil image and the existing full color container



# 'REPAIR WITHOUT ANY TOOL'

CREATE MORE WORKSHOP TRAFFIC!



- Poor gear changing
- Banging
- Slipping clutches
- Fluctuating rpm
- Increased fuel consumption
- Malfunctioning of kick-down
- Refusal of the automatic gear box

As many as 90% of the gear changing complaints with automatic transmission are caused by this pollution due to normal wear and usage.

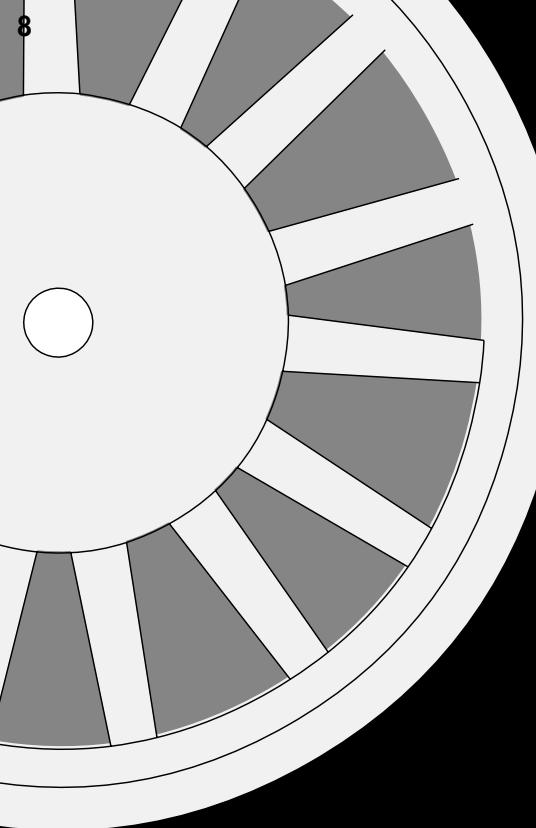
The PrimeFlush method enables an advanced and innovative way to flush, clean and refresh the oil in automatic transmissions and power steering systems. The complete oil circuit is provided with new ATF. In most cases, the symptoms will disappear without a trace.

For more information you can contact our sales team, [sales@kroon-oil.nl](mailto:sales@kroon-oil.nl).



**PRIMEFLUSH**  
POWERED BY KROON-OIL  
**OLIO VECCHIO**





# DEMAERSCHALK

AMBITIOUS RALLY TALENT GOES FOR THE TITLE IN A CITROËN DS3-R3

Kroon-Oil has supported Dutch rally star Hermen Kobus for some time. Awaiting an extremely powerful new car, Hermen won't be starting out on the rally course until mid-2015. That's why Kroon-Oil decided very recently to conclude an additional agreement to support a Belgian rally driver.

Kevin Demaerschalk won the BRC Junior Award in 2014. In 2015, he's set to have a serious go at the title in the R3 class of the Belgian Rally Championship. This season, his Citroën DS3 R3 Max will be fully lubricated with Kroon-Oil lubricants that have more than proven themselves in the Kobus Tuning stables.

## ➤ KEVIN DEMAERSCHALK

Kevin began his driving career at the age of 7 in karting competitions, winning a number of titles in both the Belgian and European championships. After karts, he soon found an opportunity to take part in the Belgian Formula Renault championship (single-seaters), a mandatory step on the onward road.

Kevin took his first steps into rallying in 2010 when he entered the Ford Fiesta Trophy Cup. Securing the vice-championship in his debut year, he quickly proved that he was made of the right stuff.

In 2011, he was offered an amazing opportunity to enter the Citroën Racing Trophy Cup. That's a discipline that should not be underestimated. His talent enabled Kevin to mix it up with the front runners. Once again, he finished in 2nd place and received the BFO Award Trophy. He was then awarded the "Rookie Trophy of the Year" title, which is delivered with the RACB Award. As the icing on the cake, he also joined the RACB National Team and since then has been aided by a

team of professionals and once again given the chance to learn a great deal.

He's planning great progress in his sporting career for 2015 and will be entering the Belgian Rally Championship, consisting of 9 races. He'll be spending the whole season sitting next to Bram Eelbode, a highly experienced navigator. They are to meet the challenge with a Citroën DS3 R3 Max backed by CITROËN RACING to promote the car on Belgian territory.

## 'BECOMING VICE-CHAMPION IN HIS DEBUT YEAR, HE QUICKLY PROVED THAT HE WAS MADE OF THE RIGHT STUFF.'

## ➤ BRAM EELBODE

Navigator Bram Eelbode also has an impressive record in rallying. He began his career at Flemish level with Willy Cools in 1998. Bram then served as navigator to Kris Princen from 2007 to 2012. Together, they won 2 titles in the French Clio Cup and one in the European Clio Cup. Bram has been sitting alongside Kevin since 2014: 'We worked well together from the very start. I get on well with Kevin off the track, and that is definitely a good thing for our racing performance,' explains Bram.

'At the moment, we're still running the R3 configuration. Over the course of the year, we will definitely buy the Max kit, but that won't happen in time for the first race.'

'Our aim is to finish as high as possible in the R3 class each time. The competition is definitely tough because we won't be using the Max kit initially, but even so, I am convinced that we will be able to have a really good go against the other

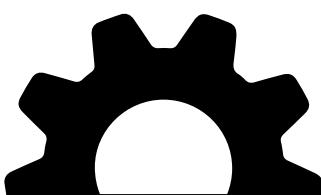
DS3s and the Renault Clio R3T. Renault launched its two latest versions of the Clio last year. These are particularly successful in France, but we should still be able to be competitive with our latest evolution. In the Condroz, for example, we had already pulled out a great lead over the Clios when we had to retire for technical reasons.'



#### ➤ MY RACING YVES MATTON

We are also working with the highly professional team headed by Yves Matton (MY Racing), which takes care of servicing. In the meantime, they have developed the car and have a lot of expertise.

You can follow the team's operations over the coming season via the Kroon-Oil Facebook page.



## DS3 R3-MAX TECHNICAL SPECIFICATIONS

### CHASSIS

**Bodywork** DS3 THP 150 with specific roof-mounted air intake and rear-view mirrors

### ENGINE

Type	EP6 CDT - four-cylinder, direct injection turbo engine
Capacity	1,598 cc
Maximum power	234bhp at 4,750rpm
Maximum torque	430Nm at 3,000rpm
Specific output	146.4bhp/litre

### SUSPENSION

**Front** McPherson  
**Back** H-shaped axles

### TRANSMISSION

**Type** Front-wheel drive  
**Gearbox** Six-speed sequential, electronically controlled with steering wheel-mounted paddle  
**Differential** Self-locking type ZF differential

# SPECIFICATIONS

## BASIC TRIBOLOGY

### PART III



Tribology is the science and engineering of interacting surfaces in relative motion which includes complex topics such as the principles of lubrication, friction and wear. It is a specialization that we have been happy to share with you in many ways. This includes providing professional product recommendations, technical training and different types of technical documentation. This is why we have made room in this and previous editions of Lubevision to address some of the most frequently asked questions regarding tribology. In this edition, we take a closer look at SAE viscosity classifications and the API and ACEA motor oil specifications.

#### SAE CLASSIFICATION

SAE (Society of Automotive Engineers) is an American body that internationally specifies viscosity classes for the automotive industry. The viscosity (or thickness) of oil depends on the temperature and is thus not constant. In short, cold oil is thick and warm oil is thin. That's why it is important to reach international agreements and set rules to ensure that everyone is 'speaking the same language' on a global level when it comes to the viscosity of motor oils. The SAE J300 motor oil standard is a digital coding system that can be used to classify motor oils based on viscosity characteristics. The SAE numbers are therefore not, as many think, precise measured values that will directly tell you the viscosity of the oil. See the attached table for a complete overview of all current SAE classes.

As you will see from the table, the SAE J300 motor oil standard consists of the following SAE classes: 0W, 5W, 10W, 15W, 20W, 25W, 8, 12, 16, 20, 30, 40, 50, and 60. In general, the higher the number, the thicker the oil. The 'W-classes' (with W standing for Winter) are intended for use in low ambient temperatures and classes without the W are intended for use in higher ambient temperatures.

For the 'warm' oils (classes without W in the code), the viscosity measured at 100°C must fall within a minimum and maximum value. These values can be found in the table. Furthermore, the 'warm' oils have to undergo a high temperature high shear test, a stringent test that measures the strength of the lubricating film under very

SAE class	CCS viscosity cP/ <sup>°</sup> C	Pumping limit temperature, °C	Viscosity CSt/100 °C		HTHS cP***
			min	max	
0 W	6.200/-35	-40	3.8	—	
5 W	6.600/-30	-35	3.8	—	
10 W	7.000/-25	-30	4.1	—	
15 W	7.000/-20	-25	5.6	—	
20 W	9.500/-15	-20	5.6	—	
25 W	13.000/-10	-15	9.3	—	
8			4.0	< 9.3	1.7
12			5.0	< 7.1	2.0
16			6.1	< 8.2	2.3
20			5.6	< 9.3	2.6
30			9.3	< 12.5	2.9
40			12.5	< 16.3	2.9*
40			12.5	< 16.3	3.7**
50			16.3	< 21.9	3.7
60			21.9	< 26.1	3.7

\*1 Viscosity classes SAE 0W-40, 5W-40 and 10W-40.

\*2 Viscosity classes SAE 15W-40, 20W-40, 25W-40 and 40.

\*\*\*) Minimal viscosity at 150°C in HTHS test.



hot conditions (150°C). The minimum values for each class can be found in the table.

For the 'Winter' oils (with the letter W in their classification), limit temperatures for both flow properties and viscosity under cold conditions are supplemented by a minimum viscosity at 100°C (see table). The lower the number before the W, the more stringent the 'cold temperature' requirements. The measurement of viscosity under cold conditions is based on the cold crank simulator (CCS) test. The temperature limit for flow properties describes the lowest temperature at which the system is still able to pump the oil through the lubrication system. It can be regarded as the lowest temperature for a safe cold start.

Most motor oils available today meet the viscosity requirements for both high and low temperatures and are known as multigrade motor oils. Multigrade motor oils are clearly identifiable within the SAE scheme because they have a number both before and after the W, for example SAE 5W-30. The oil in the example thus meets both the 'cold' requirements of SAE 5W and the 'warm' requirements of SAE 30.

## API SPECIFICATIONS

API stands for: American Petroleum Institute. This is an American organization whose responsibilities include specifying the quality of automotive oils. API's specifications differentiate between petrol and diesel engines.

- Specifications for petrol engines are identified by the letter S.
- Specifications for diesel engines are identified by the letter C.

A second letter indicates the quality level. The higher the letter of the alphabet, the higher the quality. For example, an motor oil with the quality code SN is of higher quality than one with the quality code SM. Within certain limits, the higher specifications are backwards compatible with the lower specifications. In this example, therefore, it is possible to use a higher quality API SN oil without problems when a lower API SM quality is specified.

## PETROL MOTOR OILS

### **SA, SB, SC, SD, SE**

Old specifications that may be required for old vehicles from WWII to 1980.

### **SF**

Introduced in 1980. Improved oxidation stability in comparison with API SE and anti-wear properties. Quality compatible with wet clutches used on motorcycles. Backwards compatible with API SC, SD and SE.

### **SG**

Introduced in 1989. Improved performance when it comes to cleaning properties, oxidation stability and anti-wear properties in comparison with earlier specifications.

### **SH**

Introduced in 1992. Comparable to SG with additional testing in which the oil is tested for volatility, filterability and foaming.

### **SJ**

Introduced in 1996. Developed to take into account stricter emission regulations and the addition of the low viscosity SAE 0W-20 and SAE 5W-20 grades.

### **SL**

Introduced in 2001. Developed to take into account lower fuel consumption, better protection for catalytic converters and other emission-limiting components and longer oil life. New tests and significantly more stringent requirements in comparison to SJ.

### **SM**

Introduced in 2005. Improved performance in comparison to SL in the following areas: protection against wear and contamination, improved properties at low temperatures throughout the life of the oil and better resistance to oxidation.

### **SN**

The newest class was introduced in 2010. Stricter requirements than SM in the field of compatibility with regard to seals and exhaust gas aftertreatment systems, sludge formation and improved protection against deposits on pistons at high temperatures.

## DIESEL MOTOR OILS

### CA, CB, CC, CD

These are old classifications that may be required for old vehicles from WWII to 1984.

### CE

Introduced in 1984, especially for turbocharged diesel engines working under heavy loads. Improved performance over CD in the areas of oil consumption, oil thickening, protection against deposits on pistons and better anti-wear properties.

### CF

Introduced in 1994 for indirect injection diesel engines, with or without turbos, working under heavy loads. Developed to pay extra attention to engines running on diesel fuels containing high levels of sulfur. For these engines, the oil must provide better protection against piston fouling, wear and copper corrosion.

### CF-2

Specification especially for 2-stroke diesel engines.

### CF-4

Introduced in 1990, improved oil quality to replace the CE class.

### CG-4

Introduced in 1994. Specially developed for heavy duty diesel engines running on low-sulfur diesel fuels and expected to meet the stricter American emission regulations of 1994. Backwards compatible with API CF-4.

### CH-4

Introduced in 1998. Specially developed for heavy duty diesel engines running on low-sulfur diesel fuels and expected to meet the stricter American emission regulations of 1998. Backwards compatible with API CF-4 and CG-4.

### CI-4

Introduced in 2002 for heavy duty diesel engines with EGR that meet the 2004 American emission regulations. Backwards compatible with API CF-4, CG-4 and CH-4.

### CJ-4

Introduced in 2006 for the new generation of heavy duty diesel engines with low emissions to meet the strict 2006 American emission regulations. Primarily aimed at engines running on low-sulfur fuels and which may be fitted with new exhaust gas aftertreatment systems.

## ACEA SPECIFICATIONS

A system has also been developed for the European market: ACEA, European Automobile Manufacturers Association (Association des Constructeurs Européens d'Automobile). The ACEA classification is better suited to modern European vehicles and the European climate. Up to 2004, the ACEA classification system had three categories for motor oils.

- **A-specifications** for petrol engines.
- **B-specifications** for diesel engines in cars and vans
- **E-specifications** for heavy duty diesel engines in trucks and buses.

Classes A and B were merged in 2004 to create class A/B. Class C was introduced in addition, intended for petrol and diesel engines in light vehicles fitted with an EGR system and / or exhaust gas aftertreatment system (particulate filter or catalytic converter). Class C motor oils are known as low SAPS oils and must contain less sulfur, phosphorus and sulfate than conventional products. The chemical compounds mentioned above have a specific negative effect on the life of particulate filters and catalytic converters.

### ACEA specifications for cars and vans

#### A1 / B1

Known as fuel economy oils, with low friction and low high temperature high shear (HTHS), intended for petrol and diesel engines in light vehicles. The use of A1/B1 oils is not permitted in some engines. Consult the vehicle user guide if in any doubt.

#### A2 / B2

Standard quality intended for normal use and normal oil change intervals. This classification is mainly used in older vehicles. This older A2 / B2 specification is no longer valid and can safely be replaced with A3 / B4 class oils.

#### A3 / B3

Oils intended for high powered petrol and diesel engines working under heavy loads. Suitable for extended oil change intervals, if specified by the manufacturer. This specification is now no longer valid and can safely be replaced with A3 / B4 class oils.

#### A3 / B4

Similar to the A3 / B3 class, but taking into account the additional requirements for direct injection diesel engines. Backwards compatible with the superseded A2 / B2 and A3 / B3 qualities.

#### A5 / B5

Fuel-efficient oil comparable with A1 / B1, but with improved properties to overcome 'shearing', evaporation and sticking piston rings at high temperatures. This means that this quality is also suitable for extended oil change intervals.





many engine manufacturers have developed their own specifications. Manufacturers such as Volkswagen, BMW, Ford, Mercedes-Benz, Opel, Renault and PSA demand that only motor oils that meet their own motor oil specifications are used. In general, the car manufacturers use one of the ACEA qualities as their basis for developing their own specifications. The motor oils then have to pass a range of strict laboratory and practical tests using the manufacturers' own engines.

## ACEA specifications for heavy duty diesel engines

### E2

Standard motor oil for heavy diesel engines and normal use. Not suitable for Euro 4 and extended oil change intervals.

### E3

Motor oil for heavy duty diesel engines in heavy use. Suitable for extended oil change intervals. This quality has now been replaced and superseded by E5.

### E4

Special high performance motor oil for heavy diesel engines and very heavy use. Extended oil change intervals possible. Suitable for Euro 2, Euro 3 and Euro 4 engines, with or without EGR system.

### E5

Improved version and successor to E3. This quality has now been replaced and superseded by E7.

### E6

Low SAPS motor oils for modern high performance diesel engines with EGR, with or without particulate filters (DPF) and / or selective catalyst reduction catalytic converters with AdBlue (SCR). Suitable for extended oil change intervals. Specially intended for European diesel engines that have to meet Euro 4, Euro 5 or Euro 6 emission regulations.

### E7

Improved version and successor to E5. Special high performance diesel motor oil for engines with EGR and / or SCR. Suitable for Euro 2, Euro 3, Euro 4 and some Euro 5 engines, with extended oil change intervals. Not suitable for engines with DPF. E7 can also be used in older engines that specify E3 or E5.

### E9

Low SAPS motor oils for modern high performance diesel engines with EGR, with or without particulate filters (DPF) and / or selective catalyst reduction catalytic converters with AdBlue (SCR). E9 is largely based on the American API CJ-4 specification. The most important differences from E6 are the less stringent SAPS limits and mid-length oil change intervals. Suitable for Euro 3, Euro 4, Euro 5 and Euro 6 engines.

## ACEA low SAPS specifications for cars with exhaust gas aftertreatment systems.

### C1

Fuel-efficient motor oils with low HTHS (min. 2.9 mPas). To protect particulate filters and catalytic converters, this class has strict chemical limits for sulfur ( $\leq 0.2\%$ ), phosphorus ( $\leq 500\text{ppm}$ ) and sulfate ash ( $\leq 0.5\%$ ).

### C2

Comparable to C1, but less strict chemical limits for sulfur ( $\leq 0.3\%$ ), phosphorus ( $\leq 800\text{ppm}$ ) and sulfate ash ( $\leq 0.8\%$ ).

### C3

Low SAPS oil for petrol and diesel engines working under heavy loads. The same SAPS level as for C2, but less demanding requirements with regard to fuel efficiency and a minimum HTHS of 3.5 mPas.

### C4

Low SAPS oil comparable to C3, but with the SAPS level of C1.

In addition to the general API and ACEA classifications,



# MP MOTORSPORT

## HIGH PERFORMANCE LUBRICANTS IN ACTION

In edition 16 of Lubevision, you read about the collaboration between Kroon-Oil and the only Dutch GP2 team, MP Motorsport. In this sequel, we take a deeper look at the technical aspects of this joint venture.

2013 was the debut year in GP2 for MP Motorsport. MP is the only Dutch team in this class, an important stepping stone on the way to Formula 1. The MP Motorsport mechanics are talented professionals with many years of experience in motorsport, both in GP2 and other formulas. Since 2014, the team has been using high quality Kroon-Oil lubricants in a range of classes.

In addition to GP2, MP Motorsport also competes in the Eurocup and the Northern European Cup for Formula Renault 2.0. That's why the team combined its strengths with the well-known British team Manor Motorsport in 2012. The team competes as Manor MP Motorsport in Formula Renault 2.0.

### ➤ EYE FOR TALENT

The team had a number of talented drivers under its wing over recent years. Shining examples include Lewis Hamilton, Kimi Räikkönen, Bas Lammers, Will Stevens, Ricardo van der Ende, Nigel Melker, Paul Di Resta, Oliver Jarvis and Oliver Rowland. The successful careers of these drivers say a lot about the views of Manor MP Motorsport on training and talent development and the professional way in which Manor MP prepares its cars.

This enormous drive and professionalism are an outstanding match for our own philosophy and make up one of the reasons for our collaboration. This creates a great interplay between our expertise in the field of lubricants on one hand, and the team's

broad experience at the highest levels of motorsport on the other. Regular contact with the team's engineers quickly taught us that lubricants play a crucial role in the car's performance.

**'THIS ENORMOUS DRIVE AND PROFESSIONALISM IS AN OUTSTANDING MATCH FOR OUR OWN PHILOSOPHY.'**





## ► FOCUS ON GREASE

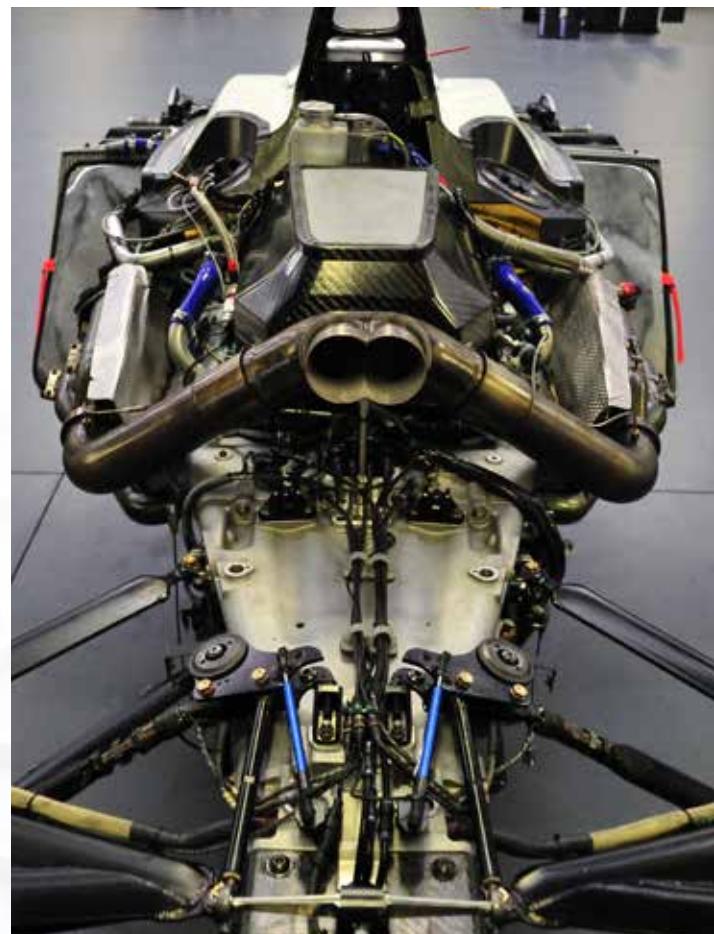
For our R&D department, the great challenge was to look specifically at the lubricants currently used and investigate where any further gains could be achieved. We paid particular attention to the greases used for wheel bearings, drive shafts and brake cylinders.

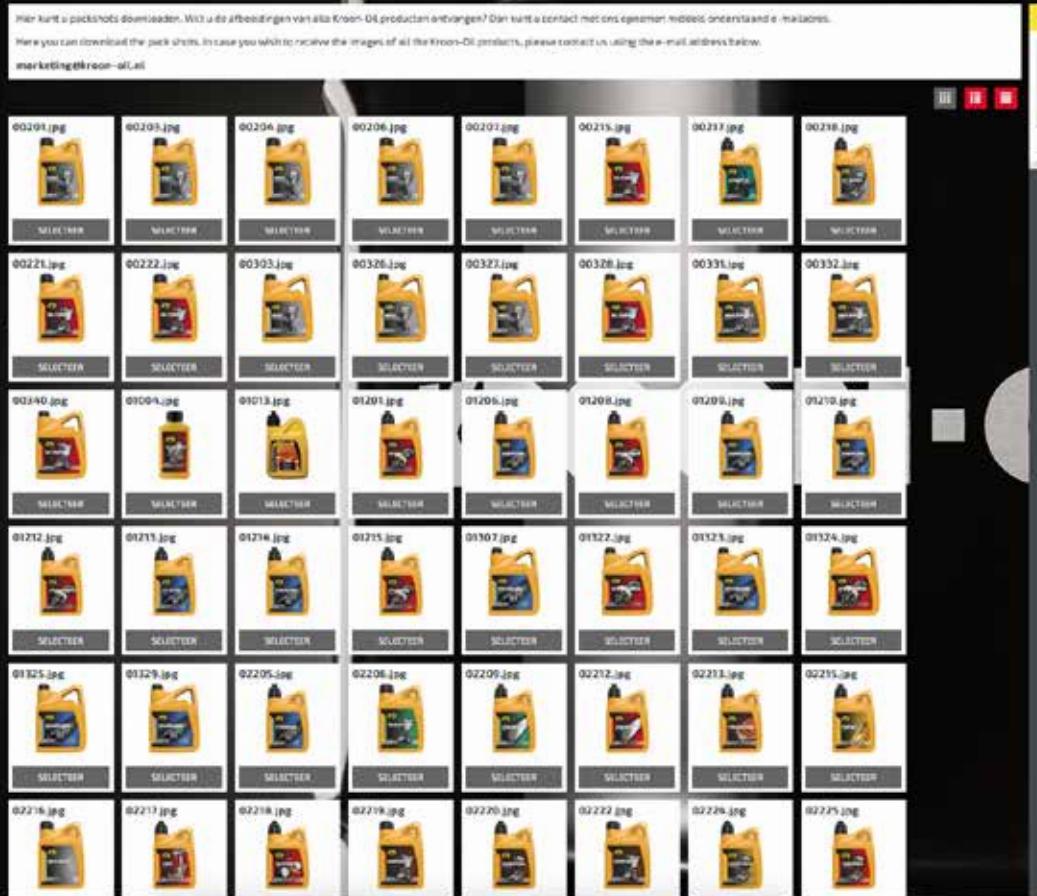
With the latest additive technologies and top quality synthetic base oils, we tried to find an optimum compromise between very low friction and good reliability. These are very complicated and intensive projects, but when everything falls into place it is also very rewarding. A driver who rolls into the pits after a test session with a broad grin on his face. It tells us that he can brake a fraction later because the braking system reacts even faster because we have managed to reduce the friction in the brake cylinders even further, it's why we do it. That's how our successful involvement in rallying and GP2 improves our reputation as well as providing a fantastic opportunity to test lubricants at the highest levels of motorsport. We feed that knowledge back into the development and refinement of both new and existing lubricants for more everyday vehicles.

## ► THE CHALLENGE LIES WITH THE LUBRICANTS

Naturally, the reliability of the material is extremely important, but reducing friction is at least equally important too. This is especially so because GP2 is a homologated class, in which all the teams use the same technology. The restrictions imposed limit technical freedom. The car used by all the teams is a Dallara GP2 with a Mechachrome 4.0 V8 engine. The engine develops 612 hp and 500 Nm of torque. The transmission is a GearTek sequential gearbox and brakes are from Hitco. Pirelli supplies the tyres for GP2, just as it does for Formula 1. All the teams have to work with the same motor oil. However, other components may be chosen more freely. Because all the cars are identical and the technical freedoms are severely limited, it becomes clear that the challenges for further optimization lie with areas such as lubrication. A reliable car with the lowest possible friction, an experienced and well-oiled organization and, of course, a talented driver, can make that vital difference.

**'A RELIABLE CAR WITH THE LOWEST POSSIBLE FRICTION, AN EXPERIENCED AND WELL-OILED ORGANIZATION AND, OF COURSE, A TALENTED DRIVER, CAN MAKE THAT VITAL DIFFERENCE.'**





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You can find the brand portal at **WWW.KROON-OIL.COM** at the bottom of the page headed 'More'. Click on the link to go directly to the portal, there's no need to log in.

You can download a number of images from the brand portal, but you can also put together a collection that you can then download in one go. What's more, access is unlimited, 24 hours a day, 7 days a week.



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# KROON-OIL B.V.

## CUSTOMER SATISFACTION SURVEY

You may well have found it in your inbox in December 2014: the invitation to take part in the Kroon-Oil B.V. customer satisfaction survey. Investigating what our customers think of the quality of our products and services enables us to continue improving and to retain our associated ISO certification. Regular sampling is also essential for our business operations.

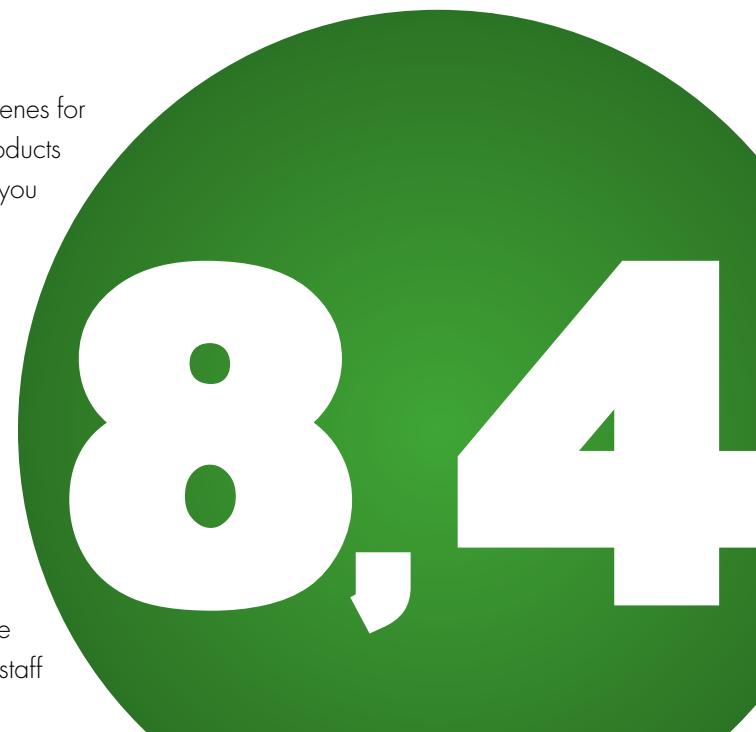
The survey covered subjects that have been in our organization's genes for years, such as the reliability of the organization, quality of our products and service, reaction speed and supply reliability. We then asked you to give Kroon-Oil B.V. a general grade.

As a company, we were pleasantly surprised with the number of responses to the survey, a sign that customer involvement is high. We were even more pleased with the final grade; 8.4 out of 10! A result that makes us very proud!

A result like this is not a reason to sit back and relax, we are still working to develop and improve. Instead, it means that we have a good picture of your wishes and we can respond to them. We will take the feedback from this survey into account for future developments. Furthermore, it is also a lovely compliment to the staff who may be answering your calls every day.

We would like to thank you all warmly for your participation and hope to see an equally high response to future surveys.

Did you miss the survey, and/or do you have any suggested improvements? We look forward to hearing from you!



*All those who participated in the survey were entered into a draw for an iPhone 6. Ms Kitty Raaymakers, who works for Tinnemans Automaterialen, is the lucky winner! She received the phone and a bouquet of flowers from Justin Janssen of Kroon-Oil B.V.*

# THE NEW KROON-OIL WEBSITE

## ONLINE ADVICE AT A HIGHER LEVEL

E.g. Focus 1.8 2009 or X5 30d 2011



### KROON-OIL, THE PIONEER

Almost 20 years ago, we had a clear vision of applications for lubricants. This vision was based on two starting points:

- The increasing diversification of lubricants: In those years, there was a trend towards demand for ever more specific lubricants. This was a consequence of the fact that lubricants are increasingly becoming design components.
- The arrival of the internet.

These starting points made us realize that the question for the future was: 'How can a specialist determine which oil should be used where?' And that question proved to be entirely accurate in the 20 years that followed. At that time, it was still very common to distribute posters and books of recommendations to technical specialists. Instead, Kroon-Oil opted to invest over the years in digital systems to provide more efficient, accurate and complete advice.

The first version of the recommendation application was developed in-house. Months of data collection, resulted in an advice database that was initially distributed on CD-ROM. This was soon followed by the very first online advice database on the market. In subsequent years, we have

always invested a great deal in further development of this important tool. Contrary to common practice, we always took care of the maintenance and presentation of the data in-house. This has been managed with the support of an excellent web development partner. More than 15 years after the introduction of the first online advice tool, we introduced a completely new website in the middle of last year. And that was another new innovation: a search technology inspired by Google.

### NEW WEBSITE

The development of the new platform began with a detailed usage analysis of kroon-oil.com. With almost 6,000 visitors per day, we were able to draw relevant conclusions from visitor behavior. More than 80 % of visitors mainly use the advice database. A truly central position for product advice on our new site was therefore very obvious. A number of useful and much-used functions such as the catalogue and the dealer finder were also given a clearly visible place on the site. On the other hand, other information is further down on the page.

The whole website is responsively designed, which means that the site is just as good to use on any device you can

# 'OVER 150,000 RECOMMENDATIONS PER MONTH'



# 'THE BEST TIP WE CAN GIVE IS TO ALWAYS SEARCH BY MODEL AND YEAR'

imagine. From desktop to smartphone. The site recognizes the user's device and is automatically optimized. Other smart features are used in the search and language recognition functions. And if you choose a manual search once, you will initially be offered that option on any subsequent visit.

## FAMILIARIZATION

Users are becoming familiar with the search function, as shown by the feedback we have received. We have taken all your tips and comments into account and have made further optimizations in recent months.

As well as searching by registration number (for NL registrations), users can also search using the "Make & Model" option. The number plate input box then changes to a search field. This can be used to enter a range of search terms. It works just like Google: the more refined the terms, the better the result. The best tip we can give is to always search by model and year.

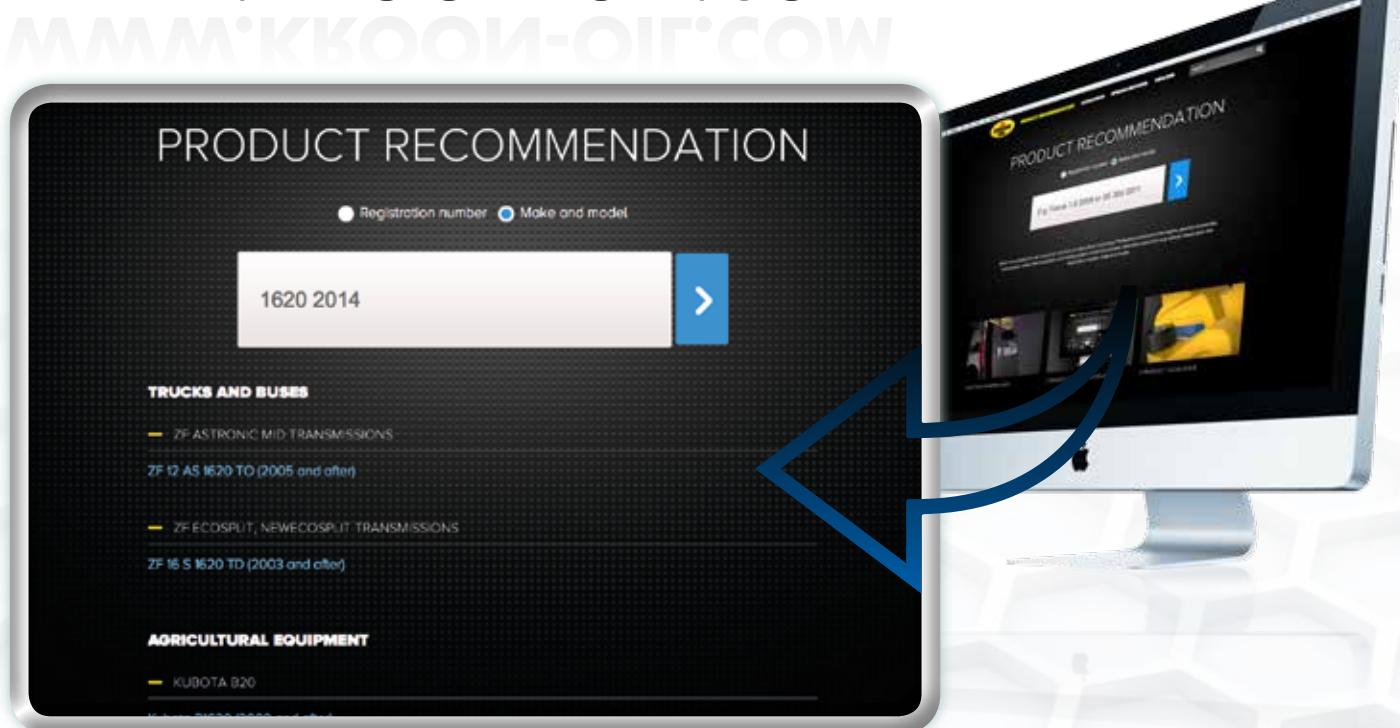
The make of the vehicle is then completely superfluous. 'Focus 1.8 2009' produces a direct result. You can also search the

database for trucks, buses, engines, generators, compressors, earth moving machinery, etc. Users receive much more direct advice in comparison with all existing systems. Instead of taking 5 or more clicks to find the advice required, in most cases it only takes 1 click to reach the desired result. At the top of the web page, there is a small search box that searches the entire site. Users can search directly for specific products using a name or part number, for example.

## OVER 150,000 RECOMMENDATIONS PER MONTH

Meanwhile, we have made over 150,000 recommendations per month via our website. That's one sign that many people have found their way to the site and that its sound product advice meets a great need worldwide. In line with the growth of Kroon-Oil around the world, the website is currently available in 8 languages and that number is set to rise in the future.

# WWW.KROON-OIL.COM



HIGH PERFORMANCE LUBRICANTS  
**TOP DRIVERS RELY  
ON TOP QUALITY**



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