使用製日本テクノロジー

花火ルブ

HANABI
LUBE
JAPAN

HANABI,
as powerful as fireworks.

HANABI (花火) is a Japanese word meaning "fireworks," composed of the characters for "flower" (花) and "fire" (火), literally translating to "fire blooming like a flower." This term goes beyond simply meaning fireworksit has become a cultural symbol and emotional memory representing the Japanese summer.

The HANABI brand embodies the image of these fireworks, delivering a powerful yet beautiful performance to the world. We pursue the passion and energy that bloom at the pinnacle of technology, striving for a light that is sustainable, not just momentary. HANABI is more than a lubricant manufacturer; it is a flame of sustainable innovation connecting industry,echnology, and the environment.

Global HANABI

HANABI, as a brand opening new horizons in lubrication technology, develops lubrication solutions that achieve both a sustainable future and high performance by overcoming existing limits through precise engineering and scientific approaches.
We deliver optimized performance across various fields such as mobility, manufacturing, and energy, meeting both efficiency and environmental friendliness throughout the industry.

HANABI
LUBE

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Technology that Enriches the Earth and the Future

Sustainable performance, for the future of our planet - this is HANABI's promise.

HANABI is reducing CO_2 emissions in its manufacturing processes and developing lubricants made from plant-based and renewable raw materials. The company has acquired ISO 14001 certification and complies with global ESG standards.

HYUNDAI · HYUNDAI MOBIS · KIA · HYUNDAI DOOSAN INFRACORE · VOLVO · Ford · TOYOTA · RENAULT

Mission

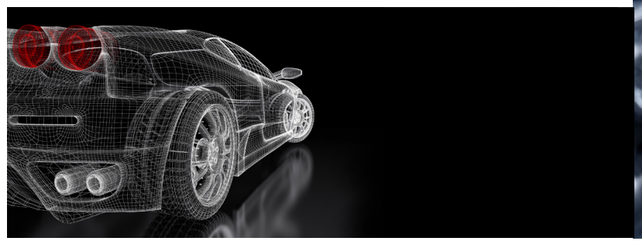
HANABI leads innovation in Korea's lubricant and chemical industries with accumulated technology and quality, establishing itself as a premium brand setting new standards in the global market.

Vision

Through technology, we make the world move more sustainably and efficiently. HANABI drives the future of industry with high-performance lubrication technology and leads global environmental standards.

Core Value

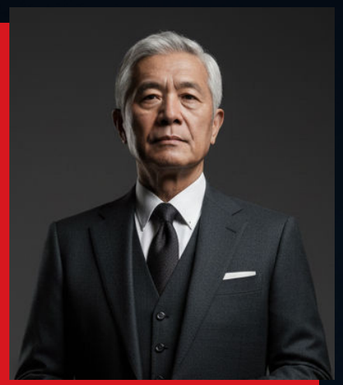
With advanced lubrication technology and eco-friendly solutions, we pioneer sustainable industrial innovation while building trust through customer-centric tailored services and global-standard quality.



R & D

Research PhDs

The core raw material that defines Hanabi's lubricant quality



Dr. Hitoshi Hamaguchi

Diploma of the Membership
Imperial College, London

■ Note

Society of Automotive Engineers (USA)
Society of Automotive Engineers, Japan
Japan Society of Tribologists
Japan Lubricating Oil Society
Japan Construction Machinery Association
Japan Petroleum Institute
Petroleum Association of Japan
Japan Automobile Manufacturers Association
Japan Automobile Standard Organization
Small Engine Technology Conference
Tribology for Vehicle Transmission

■ Industrial Activities

Role	Activity
Member	ISO TC28 Domestic Committee at PAJ [1981-1989]
Member	Engine Oil Subcommittee (JAMA/PAJ) [1983-1989]
Chairman	Two Cycle Engine Oil WG (JAMA/PAJ) [1991-1994]
Chairman	Lubricants International Survey Committee at JALOS [1991-2000]
Chairman	WG for Shear Stability Test Method at JASO ATF Sub-committee [1997-2012]
Member	Organizing Committee for 1999 TVT Symposium at Yokohama, Japan [1998-1999]
Sub-Leader	WG for Lubricants for Construction Machine at SAE Steering Committee for Asia [1999-2011]
Vice Chairman	Fuels & Lubricants Technical Committee at JCMA [1999-]
Member	Organizing Committee for 2002 TVT Symposium at Toyota City, Japan [2000-2002]
Member	Next Generation Vehicle-Energy Committee of JSAE [2001-2012]
Sub-Leader	WG for establishing quality assessment system of ILSAC ATF in Japan (JAMA/PAJ) [2001-2002]
Session Organizer	Organizing Committee for 2003 SAE/JSAE F&L Meeting in Yokohama, Japan [2001-2003]
Session Organizer	Organizing Committee for 2004 GFC/SAE F&L Meeting in Toulouse, France [2002-2004]
Advisor	Organizing Committee for 2005 TVT Symposium at Tsukuba, Japan [2003-2005]
Member	JAMA/PAJ JASO DH-1 Promotion Task Force [2004-2009]
Session Organizer	Organizing Committee for 2007 SAE/JSAE F&L Meeting in Kyoto, Japan [2005-2007]
Chairman	Market Monitoring Panel for DH-1 On-File System (JAMA/PAJ) [2005-2012]
Chairman	Technical Exhibition Committee for World Tribology Congress IV in Kyoto, Japan [2006-2009]
Chairman	Fuel Economy Engine Oil Promotion Task Force at JSAE/SAE Asia joint WG [2006-2012]
Editor	Lubrication of Industrial Vehicles published by JAST [2009-2012]
Member	JAMA Engine Oil Seminar Taskforce [2009-]
Session Organizer	Session Organizer for 2011 SAE/JSAE F&L Meeting in Kyoto, Japan [2009-2011]
Member	Fuels & Lubricants Committee for SETC 2011 in Sapporo, Japan [2010-2011]
Member	Boundary Lubrication Research Group at JAST [2011-]
Member	Engine Lubrication Research Group at JAST [2012-]
Member	Tribology of Transmission Research Group at JAST [2012-]

Dr. Yasuhiro Murakami

Fellow, Society of Automotive Engineers of Japan: JSAE

■ Industrial Activities

Activity
Organizer of JASO Engine Oil Subcommittee at JSAE (Society of Automotive Engineers of Japan)
Chairman of ATF Subcommittee at JAMA (Japan Automobile Manufacturers Association)
Vice Chair of ATF Subcommittee at ILSAC
Chairman of JASO ATF Subcommittee at JSAE
Director of Kanto and Tokai Branches of JSAE
Director and Controller of JAST (Japanese Society of Tribologists)
Chairman of Research Committee for Tribology of Transmission at JAST
Tribology Supervisor at JAST
Fellow of JSAE
Member of Steering Committee of Senior Club at Kanto Branch of JSME (Japan Society of Mechanical Engineers)

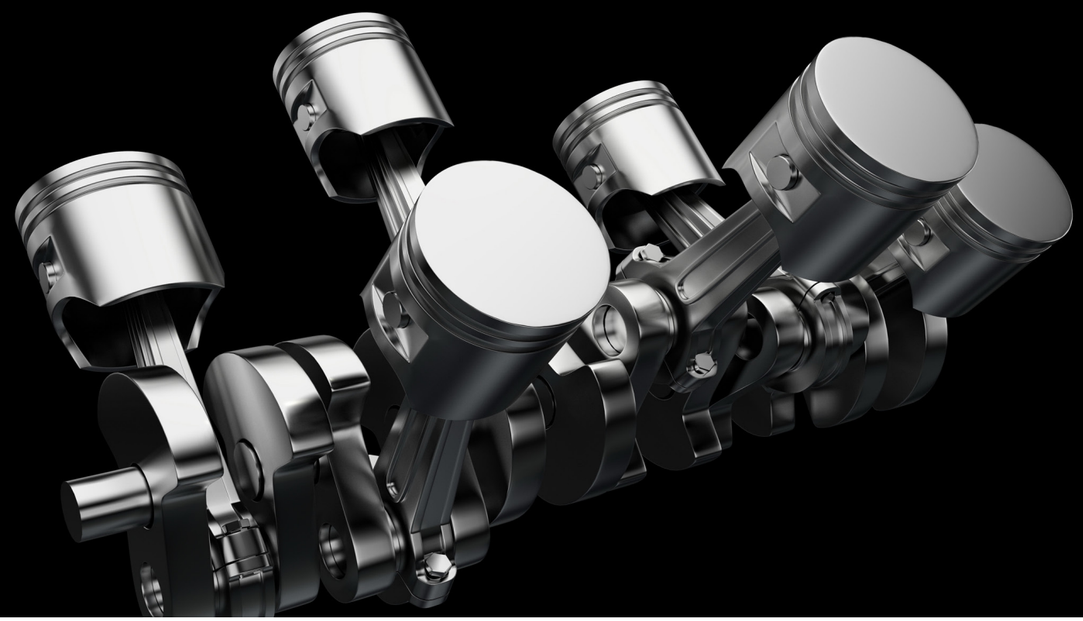
Dr. Takashi Kaimai

PhD. from Lubrication Laboratory of Imperial College, London

■ Profession

April 1974	Entered the Technical Research Center of Nippon Mining Co., Ltd. (predecessor of ENEOS Corp.).
Aug. '76 - Sep. '80	Test & Research Laboratory at the Mizushima refinery of Nippon Mining.
Oct. '80 - Jan. '83	Basic research on Tribology at the Imperial College of Science & Technology.
Feb. '83 - Oct. '92	Research Engineer at the Technical Research Center of Nippon Mining.
November 1992	Company name changed to Nikko-Kyoseki Co., Ltd.
Nov. '92 - Jun. '99	Research Manager at the Kyodo Oil Technical Research Center of Nikko-Kyoseki Co., Ltd.
July 1999	Company name changed to Japan Energy Corp.
Jul. '99 - Apr. '09	Principal Research Engineer at the Lubricant Laboratory of Japan Energy Corp.
May '09 - Jun. '10	Extended employment with Japan Energy Corp.
July 2010	Japan Energy Corp. merged with Nippon Oil Co., Ltd. and changed to JX Energy Corp.
Jul. '10 - Mar. '15	Lubricant Planning Dept. At Headquarters of JX Energy Corp.
Apr. '15 - May '20	Working part-time as Senior Advisor at the Consultation Room of JX Energy Corp.
June 2020	Company name has changed to ENEOS Corp.
Jun. '20 - present	Working part-time as Senior Advisor at the Consultation Room of ENEOS Corp.

Group III
These oils are greatly hydrocracked.
This longer process is designed to achieve a purer base oil.
Although made from crude oil, Group III base oils are sometimes described as synthesized hydrocarbons, or synthetic technology.



Group I
Group I base oils are solvent-refined – a simpler refining process.
The most cost-effective base oils on the market.

Group II
Manufactured by hydrocracking – a complex refining process. Group II base oils have better antioxidation properties than Group I.
They also have a clearer color. Group II base oils are becoming very common on the market today.

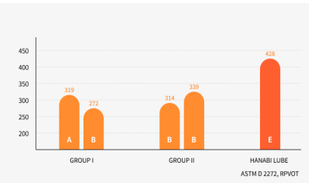
Group III
These oils are greatly hydrocracked.
This longer process is designed to achieve a purer base oil.
Although made from crude oil, Group III base oils are sometimes described as synthesized hydrocarbons, or synthetic technology.

Group IV
Group IV base oils are poly-alpha-olefins (PAOs). These synthetic base oils are made through a process called synthesizing.
They have a much broader temperature range and are great for use in extreme cold conditions and high heat applications.

Group V
Group V base oils are classified as all other base oils, including phosphate ester, PAG, polyol ester, bio-lubes. These base oils are at times mixed with other base stocks to enhance the oil's properties.Esters are common Group V base oils used in different lubricant formulations to improve the properties of the existing base oil.

Eco-friendly development

High Oxidation Stability



Low Volatility

TABLE. API base oil groups

	Group I	Group II	Group III	Group IV	Group V
Saturates	< 90%	≥ 90%	≥ 90%	Polyalpha olefins (PAO)	All base oils not in Groups I, II, III, IV (e,g, esters, vegetable oil, etc.)
	and/or	and	and		
Sulfur	> 0.03%	≤ 0.03%	≤ 0.03%		
	and	and	and		
Viscosity Index	≥ 80 < 120	≥ 80 <120	≥ 120		

Factory

State-of-the-art facilities ensuring the highest production quality

As a specialized lubricant manufacturer, we operate every stage of production — from raw material intake to blending, filling, and dispatch — under a fully standardized system. With state-of-the-art facilities and a skilled technical workforce, we provide a broad product lineup including industrial, automotive, and specialty lubricants with consistent reliability. Guided by an uncompromising commitment to quality, we move forward every single day.

Precision Process. Unwavering Quality. Driving Industry Forward.

We deliver high-quality lubricants and maintenance services to customers worldwide. We provide advanced technology and innovative solutions through continuous research and development, focusing on providing complete lubrication solutions for a wide range of industries, and we also contribute to environmental protection through sustainable production and lubricant recycling as part of an environmentally friendly company.

R&D Center for the development of innovative technologies and eco-friendly chemicals

- End-to-end process control from raw material intake through blending, QC, filling, and shipment
- Strict ISO-based quality standards with full inspection prior to every shipment
- Proprietary blending technology refined through decades of expertise and ongoing R&D
- Stable high-volume production system maximizing on-time delivery for every customer
- Full compliance with environmental regulations and commitment to low-carbon manufacturing

MANUFACTURED CONTROL SOLUTION

Product Manufacturing Process

Step 1

Delivery of raw materials

All crude oil and raw materials are delivered to major production plant pipelines via ships and trucking.

Step 2

Raw materials storage

Each tank is connected to the production shop with a separate pipeline to minimize flushing of the entire network.

Step 3

Lube oil blending

Three automatic blenders : Simultaneous metering blender up to handle larger quantities.

Step 4

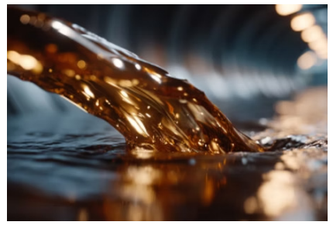
Laboratory

The laboratory is equipped according to the latest standards to ensure quality control at all production stages

Step 5

Pouring and Packing

Five lines: one for 1L, 4L, and 20L cans each plus two lines for filling 200-liter drums.



Step 6

Storage facilities

8,000 pallet positions plus five truck loading docks.

HANABI LUBE PPODUCT LINE-UP

PASSENGER CAR PREMIUM

HANABI Lube PAO1

HANABI Lube PAO A3/B4

HANABI Lube PAO C3

PASSENGER CAR

HANABI Lube JX SQ

HANABI Lube JX SP

HANABI Lube JX A3/B4

HANABI Lube DX RV

HANABI Lube DX C3

COMMERCIAL VEHICLE

HANABI Lube HDX CI-4

HANABI Lube HDX CH-4

HANABI Lube HD CF-4

HANABI Lube HD CF-4

TRANSMISSION & AXLE

HANABI Lube ATF DX-III

HANABI Lube ATF DX-VI

HANABI Lube ATF Multi

HANABI Lube CVTF

HANABI Lube DCTF

HANABI Lube Gear GL-5

MOTORCYCLE

HANABI Lube Motorcycle 4T

HANABI Lube Motorcycle 2T

HYDRAULIC FLUID

HANABI Lube Hydraulic HL

HANABI Lube Hydraulic HM

HANABI LUBE

PASSENGER CAR

HANABI Lube PAO1

HANABI Lube PAO A3/B4

HANABI Lube PAO C3

HANABI Lube JX SQ

HANABI Lube JX SP

HANABI Lube JX A3/B4

HANABI Lube DX RV

HANABI Lube DX C3

100% PAO

Fully Synthetic

HANABI Lube PAO 1

Premium gasoline engine oil for Maximum performance by 100% PAO boosting Technology

OVERVIEW

HANABI Lube PAO 1 is formulated with 100% PAO (Poly Alpha Olefin) base oil, designed for passenger vehicles powered by gasoline, diesel, or LPG engines equipped with after-treatment systems such as EGR and DPF. The product delivers excellent thermal and oxidative stability, ensures smooth cold-start performance, and offers comprehensive engine protection.

PRODUCT APPLICATIONS

- Suitable for all gasoline, diesel, and LPG-powered passenger vehicles
- Compatible with DOHC, turbocharged, and direct injection engines, as well as vehicles equipped with catalytic converters
- Recommended for diesel vehicles equipped with after-treatment devices, including EGR and DPF systems

PERFORMANCE LEVEL

- ACEA C3, API SN/CF, MB 229.31/229.51, BMW Long Life-04, VW 502.00/505.00

CUSTOMER BENEFITS

Maximizes engine life

The thermal stability of the synthetic base stock makes low temperature viscosity properties like CCS, and MRV better and provides greater high temperature viscosity property like HTHS. The premium anti-wear and anti-friction additives minimizes wear and friction in all parts of engines.

Maximizes power and performance

The selected detergent and dispersant additives keep performing maximum power and cleanness with superiorly reducing deposits on the ring belt and the piston skirt under severe operating conditions. Special friction modifiers are used to minimize friction on the engine surfaces with great fuel economy property.

Low oil consumption

The high shear stability of engine oil maintains oil viscosity for longer time and reduces the volatility of oil under severe conditions in order to prevent oil consumption.

Longer equipment life

The additives for tribofilm formation (anti-wear, anti-friction, extreme pressure) reduce wears and frictions and protect surfaces of engine parts to use engine longer.

Lower impact emissions

Highly advanced additive formulation makes the SAPS (Sulfated Ash, Phosphorus, Sulfur) lower to reduce harmful exhaust emissions with significantly increasing DPF service life.

REMARKS

SAE Grade	0W-40
Kinematic Viscosity, mm^2/s @ 40°C	79.7
Kinematic Viscosity, mm^2/s @ 100°C	14.0
Viscosity Index	182
Pour Point °C	-42
Flash Point °C	246
Package (Liters)	1T, 4T, 200

PAO INTENSIFYING

HANABI NUBE
PAO INTENSIFYING TECH

Powerful & Comfort Driving

PAO intesifying Technology of HANABI Lube PAO provides a Maximum fuel economy, oil drain & protection powered by PAO(Poly Alpha Olefin)

Fully Synthetic

HANABI Lube PAO A3/B4

Premium gasoline engine oil for Maximum performance by PAO boosting

OVERVIEW

HANABI Lube PAO A3/B4 is formulated with PAO (Poly Alpha Olefin) and highly refined hydrotreated base oils, suitable for passenger cars, RVs, light trucks, and SUVs running on gasoline, diesel, or LPG engines. Its outstanding oxidation and thermal stability deliver extended oil service life. The formulation meets the engine oil specifications required by European automakers including Volkswagen, BMW, and Mercedes-Benz.

PRODUCT APPLICATIONS

- Suitable for all vehicles with gasoline, diesel, or LPG engines
- Especially well-suited for vehicles operating in modern stop-start traffic conditions
- Compatible with DOHC, turbocharged, direct injection, and catalytic converter-equipped vehicles

PERFORMANCE LEVEL

- ACEA A3/B4, API SN, MB 229.3, BMW Long Life-01, VW 501.01/502.00 / 505.00, GM-LL-B-025

CUSTOMER BENEFITS

Excellent Base Oil Combination

PAO and VHVI Base Stocks based fully synthetic engine oil provides great low temperature and high temperature viscosity properties, oxidation stability, and thermal stability.

Extends Oil Drain Interval

Minimizing viscosity loss during using engine oil extends oil drain interval

Strengthens Engine Durability

The advanced additives for detergents and dispersants strengthen engine durability through reducing some sludge and combustion deposits inside engine.

REMARKS

SAE Grade	0W-40
Kinematic Viscosity, mm^2/s @ 40°C	77.6
Kinematic Viscosity, mm^2/s @ 100°C	13.7
Viscosity Index	182
Pour Point °C	40.0
Package (Liters)	1T, 4T,200

Fully Synthetic

HANABI Lube PAO C3

Premium gasoline engine oil for Maximum performance by PAO boosting

OVERVIEW

HANABI Lube PAO C3 is formulated using PAO (Poly Alpha Olefin) and highly refined hydrotreated base oils, designed for passenger vehicles powered by gasoline, diesel, or LPG engines equipped with after-treatment systems such as EGR and DPF. It delivers excellent stability, ensures smooth cold-start performance, and provides thorough engine protection. The formulation meets the engine oil specifications required by European automakers including VW, BMW, and Mercedes-Benz.

PRODUCT APPLICATIONS

- Suitable for all gasoline-powered passenger cars
- Compatible with DOHC, turbocharged, and GDI engines
- Recommended for gasoline engines requiring API SN or ILSAC GF-5 specification oils

PERFORMANCE LEVEL

- ACEA C3, API SN/CF, MB 229.31/229.51, BMW Long Life-04, VW 502.00/505.00

CUSTOMER BENEFITS

Maximizes engine life

The thermal stability of the synthetic base stock makes low temperature viscosity properties like CCS, and MRV better and provides greater high temperature viscosity property like HTHS. The premium anti-wear and anti-friction additives minimizes wear and friction in all parts of engines.

Maximizes power and performance

The selected detergent and dispersant additives keep performing maximum power and cleanness with superiorly reducing deposits on the ring belt and the piston skirt under severe operating conditions. Special friction modifiers are used to minimize friction on the engine surfaces with great fuel economy property.

Low oil consumption

The high shear stability of engine oil maintains oil viscosity for longer time and reduces the volatility of oil under severe conditions in order to prevent oil consumption.

Longer equipment life

The additives for tribofilm formation (anti-wear, anti-friction, extreme pressure) reduce wears and frictions and protect surfaces of engine parts to use engine longer.

Lower impact emissions

Highly advanced additive formulation makes the SAPS (Sulfated Ash, Phosphorus, Sulfur) lower to reduce harmful exhaust emissions with significantly increasing DPF service life.

REMARKS

SAE Grade	5W-30
Kinematic Viscosity, mm^2/s @ 40°C	70.8
Kinematic Viscosity, mm^2/s @ 100°C	12.1
Viscosity Index	169
Pour Point °C	-39
Flash Point °C	236
Package (Liters)	1T, 4T, 200

Fully Synthetic

HANABI Lube JX SQ

Superior grade gasoline engine oil for Maximum performance

OVERVIEW

HANABI Lube JX SQ is formulated with synthetic base oil and suitable for all gasoline-powered passenger cars. It is compatible with the latest engine technologies, including turbocharged, DOHC, and GDI engines, and meets the performance requirements of API SQ and ILSAC GF-7A specifications. The API SQ standard was developed to address LSPI (Low-Speed Pre-Ignition) in T-GDI engines under more demanding conditions than GF-6, while advanced additive technology helps prevent timing chain wear across a range of harsh driving conditions and supports reduced CO2 emissions in line with the latest global emission regulations.

PRODUCT APPLICATIONS

- Suitable for all gasoline-powered passenger cars
- Designed to meet the latest global emission regulations
- Suitable for various types of hybrid vehicles
- Recommended for vehicles equipped with DOHC, turbocharger, or GDI engines requiring API SQ or ILSAC GF-7 specification oils

PERFORMANCE LEVEL

- API SQ
  ILSAC GF-7A (for 0W-20, 0W-30, 5W-30, 10W-30)
  ILSAC GF-7B (for 0W-16)

CUSTOMER BENEFITS

Timing Chain Wear Protection
Advanced additives protect timing chain against wear so that they may reduce power loss of engine and increase the life time of engine parts.

LSPI Prevention
Detergent additives containing magnesium efficiently restrain LSPI (Low Speed Pre-Ignition) that could damage T-GDI engines.

Enhanced Fuel Efficiency
Specifically designed anti friction additives minimize engine friction losses and improve fuel efficiency.

High Quality VHVI Base Stock
Superior low temperature properties of Group III base oil make the start-up of engines easy at low temperature. Excellent thermal stability and oxidation stability of VHVI base oil protect suppress oil degradation and sludge formation inside engine.

REMARKS

SAE Viscosity	0W-16	0W-20	0W-30	5W-20	5W-30
Kinematic Viscosity, mm^2/s @ 40°C	38.73	44.43	56.17	48.26	59.91
Kinematic Viscosity, mm^2/s @ 100°C	7.513	8.449	10.33	8.429	10.22
Viscosity Index	165	170	175	152	159
Pour Point, °C	-45	-45	-42	-40	3.07
Flash Point, COC, °C	230	234	232	264	244
HTHS	2.38	2.65	3.06	2.69	3.07
Package (Liters)	1T, 4T, 200	1T, 4T, 200	1T, 4T, 200	1T, 4T, 200	1T, 4T, 200

Fully Synthetic

HANABI Lube JX SP

Superior grade gasoline engine oil for Maximum performance

OVERVIEW

HANABI Lube JX SP is a high quality passenger car motor oil developed for modern gasoline direct injection (GDI) engines fitted with turbochargers. The specialized additives and high quality base oils in the product not only improves engine protection, fuel economy and oil life, but also provides protection against LSPI and timing chain wear.

PRODUCT APPLICATIONS

- Compatible with all gasoline-powered passenger vehicles
- Vehicles featuring DOHC, Turbocharger, or GDI engines are recommended to use API SP / ILSAC GF-6 certified engine oil
- Low-viscosity lubricants are recommended for hybrid vehicle applications

PERFORMANCE LEVEL

- API SP
  ILSAC GF-6A (for 0W-20, 0W-30, 5W-30, 10W-30)

CUSTOMER BENEFITS

Timing Chain Wear Protection

Advanced additives protect timing chain against wear so that they may reduce power loss of engine and increase the life time of engine parts.

LSPI Prevention

Detergent additives containing magnesium efficiently restrain LSPI (Low Speed Pre-Ignition) that could damage T-GDI engines.

Enhanced Fuel Efficiency

Specifically designed anti friction additives minimize engine friction losses and improve fuel efficiency.

High Quality VHVI Base Stock

Superior low temperature properties of Group III base oil make the start-up of engines easy at low temperature. Excellent thermal stability and oxidation stability of VHVI base oil protect suppress oil degradation and sludge formation inside engine.

REMARKS

SAE Viscosity	0W-16	0W-20	0W-30
Kinematic Viscosity, mm^2/s @ 40°C	37.8	44.9	55.9
Kinematic Viscosity, mm^2/s @ 100°C	7.3	8.5	10.3
Viscosity Index	162	170	175
Pour Point, °C	-40	-40	-40
Flash Point, COC, °C	228	226	226
Package (Liters)	1T, 4T, 200	1T, 4T, 200	1T, 4T, 200

SAE Viscosity	5W-20	5W-30	5W-40
Kinematic Viscosity, mm^2/s @ 40°C	49.2	64.8	87.2
Kinematic Viscosity, mm^2/s @ 100°C	8.7	11.1	14.1
Viscosity Index	155	164	167
Pour Point, °C	-37	-37	-37
Flash Point, COC, °C	242	234	234
Package (Liters)	1T, 4T, 200	1T, 4T, 200	1T, 4T, 200

SAE Viscosity	10W-30	10W-40	20W-50
Kinematic Viscosity, mm^2/s @ 40°C	69.6	98.46	167.0
Kinematic Viscosity, mm^2/s @ 100°C	11.0	15.05	11.0
Viscosity Index	149	161	149
Pour Point, °C	-31	-36	-31
Flash Point, COC, °C	256	246	256
Package (Liters)	1T, 4T, 200	1T, 4T, 200	1T, 4T, 200

Fully Synthetic

HANABI Lube JX A3/B4

Superior grade gasoline engine oil for Maximum performance

OVERVIEW

HANABI Lube JX A3/B4 is an advanced engine oil for light duty engines in high performance gasoline and diesel passenger vehicles. It is formulated with high quality base oils and advanced additives of high SAPS level, making it robust in performance and facilitating long drain intervals. The additive ensures performance in all operating conditions, for vehicles from North American, European and Japanese OEMs requiring such oils.

PRODUCT APPLICATIONS

- Suitable for gasoline and diesel-powered passenger cars, RVs, light trucks, and SUVs
- Especially well-suited for passenger vehicles frequently operating under modern start-stop driving conditions

PERFORMANCE LEVEL

- ACEA A3/B4, API SL (5W-30), API SN (0W-40, 5W-40, 10W-40), VW 502.00/505.00

CUSTOMER BENEFITS

Extended Oil Drainage Interval

Outstanding oxidation property prevents the engine oil from losing its viscosity and allows engine oil to be used for a long time.

Maximum engine life

Excellent detergent additives provide noticeable piston cleanliness and better sludge control, providing necessary engine protection and extend engine service life.

High Quality VHVI Base Stock

Superior low temperature properties of Group III base oil make the start-up of engines easy at low temperature. Excellent thermal stability and oxidation stability of VHVI base oil protect suppress oil degradation and sludge formation inside engine.

REMARKS

SAE Viscosity	0W-40	5W-30	5W-40	10W-40
Kinematic Viscosity, mm^2/s @ 40°C	76.3	71.2	91.7	86.4
Kinematic Viscosity, mm^2/s @ 100°C	13.3	12.0	15.1	13.1
Viscosity Index	178	166	174	151
Pour Point, °C	-43	-38	-39	-32
Flash Point, COC, °C	226	240	232	250
Package (Liters)	1T, 4T, 200	1T, 4T, 200	1T, 4T, 200	1T, 4T, 200

Fully Synthetic

HANABI Lube DX RV

Premium diesel engine oil
for Ultimate performance

OVERVIEW

HANABI Lube DX RV is a full synthetic engine oil formulated with Low SAPS technology, engineered to meet the latest ACEA C3 and API SP international specifications. It delivers outstanding lubrication performance across a broad temperature range, even under the most demanding operating conditions.

PRODUCT APPLICATIONS

- Passenger cars, RV, light truck, SUV with gasoline and diesel engine
- Especially well-suited for vehicles frequently operating under modern start-stop driving conditions
- Designed for vehicles equipped with DOHC, Turbocharger, CRDI, and catalytic converter systems
- Compatible with diesel vehicles featuring exhaust after-treatment systems, including EGR and DPF (Diesel Particulate Filter)

PERFORMANCE LEVEL

ACEA C3, API SP

CUSTOMER BENEFITS

Anti-Wear Property
Excellent wear protection maximizes the life time of engine and all its components.

Protection of After Treatment System
Advanced low SAPS additive technology extends the lifespan of the exhaust gas after-treatment system by preventing clogging of DPF.

Superior Low Temperature Performance
Using high quality Group III Base oil, it provides excellent low-temperature properties as producing quick and easy start-ups in cold weather.

Clean Technology
Outstanding detergent and dispersant additives provide prominent resistance for varnish at high temperature and for sludge deposit at low temperature.

REMARKS

SAE Grade	5W-30
Kinematic Viscosity, mm^2/s @ 40°C	72.9
Kinematic Viscosity, mm^2/s @ 100°C	11.8
Viscosity Index	158
Pour Point °C	-38
Flash Point °C	234
Package (Liters)	1T, 4T, 200

Fully Synthetic

HANABI Lube DX C3

Premium diesel engine oil
for Ultimate performance

OVERVIEW

HANABI Lube DX C3 is an engine oil formulated with advanced VHVI base oil and Low SAPS additive technology, developed in accordance with ACEA C category engine oil specifications. It is well-suited for passenger cars, SUVs, and RVs alike. Its proprietary additive technology minimizes sulfated ash content, effectively extending DPF service life while enhancing DPF performance — all without compromising engine durability.

PRODUCT APPLICATIONS

- Passenger cars with gasoline and diesel engine
- Designed for passenger vehicles equipped with DOHC, Turbocharger, CRDI, and catalytic converter systems
- Suitable for diesel vehicles featuring exhaust after-treatment devices, including EGR and DPF systems

PERFORMANCE LEVEL

ACEA C3-16, API SN/CF, MB 229.51/229.52, BMW Long Life-04, VW 502.00/505.00/505.01

CUSTOMER BENEFITS

Protection of After Treatment System
Advanced low SAPS additive technology extends the lifespan of the exhaust gas after-treatment system by preventing clogging of DPF..

Anti-Wear Property
Excellent wear protection maximizes the life time of engine and all its components.

Superior Low Temperature Performance
Using high quality Group III Base oil, it provides excellent low-temperature properties as producing quick and easy start-ups in cold weather.

Clean Technology
Outstanding detergent and dispersant additives provide prominent resistance for varnish at high temperature and for sludge deposit at low temperature.

REMARKS

SAE Grade	5W-30	5W-40
Kinematic Viscosity, mm^2/s @ 40°C	68.0	79.2
Kinematic Viscosity, mm^2/s @ 100°C	11.9	13.6
Viscosity Index	172	176
Pour Point °C	-36	-39
Flash Point °C	236	246
Package (Liters)	1T, 4T, 200	1T, 4T, 200

HANABI LUBE

COMMERCIAL VEHICLE

HANABI Lube HDX CI-4

HANABI Lube HDX CH-4

HANABI Lube HD CF-4

HANABI Lube HD CF

Fully Synthetic

HANABI Lube HDX CI-4

Premium diesel engine oil for heavy duty vehicles, Providing Ultimate performance

OVERVIEW

HANABI Lube HDX CI-4 is is high performance engine oil for heavy-duty diesel engines. It is formulated with high quality base oils and robust performance additives, for use in modern low emission diesel engines, including those with EGR. The additive ensures protection and good oil life for engines using low or high sulphur diesel fuel.

PRODUCT APPLICATIONS

- Suitable for all turbocharged and naturally aspirated diesel engines used in civil construction machinery, trucks, fishing vessels, locomotives, and buses
- Compatible with light trucks, RVs, SUVs, heavy trucks, and buses powered by diesel engines
- Particularly well-suited for modern engines equipped with exhaust after-treatment systems, including EGR and SCR

PERFORMANCE LEVEL

- ACEA E7, Volvo VDS-3, Cummins CES 20076/77/78, API CI-4/SL, Mack EO-M Plus, Caterpillar ECF-2/ECF-1-a, MB 228.3/229.1, Renault Truck RLD/RLD-2, DEUTZ DQC III-10, MTU 2, MAN M3275, Detroit Diesel 93K215/DHD-1

CUSTOMER BENEFITS

Minimizes Fleet Maintenance Costs

Exceptional soot dispersion keeps fuel soot in suspension, avoiding filter plugging, cylinder head sludge, abrasive polishing wear and oil thickening.

Minimizes Fleet Operating Costs

Excellent deposit control technology on valves and piston heads reduces oil consumption. Exceptional oxidation stability and soot-control extends oil drain interval and makes the components of the engine use longer.

Extends Engine Life to Overhaul

High level of anti-wear additive protects engine against wear, scratch, and scuffing of highly loaded parts operating under boundary lubrication conditions.

REMARKS

SAE Grade	10W-30	10W-40	15W-40	20W-50
Kinematic Viscosity, mm²/s @ 40°C	82.9	106.8	107.2	158.6
Kinematic Viscosity, mm²/s @ 100°C	12.5	15.6	14.5	19.1
Viscosity Index	147	155	139	137
Pour Point °C	-37	L-40	-29	-38
Flash Point °C	222	230	238	246
Package (Liters)	1T, 4T, 20, 200	1T, 4T, 20, 200	1T, 4T, 20, 200	1T, 4T, 20, 200

Fully Synthetic

HANABI Lube HDX CH-4

Premium diesel engine oil for heavy duty vehicles, Providing Ultimate performance

OVERVIEW

HANABI Lube HDX CH-4 is a premium-grade, multigrade, high-performance heavy-duty diesel engine oil specifically engineered to provide superior lubrication across a broad range of heavy-duty diesel engines. Formulated to meet API CH-4 and ACEA E7 performance requirements, it is designed to deliver reliable protection under the most severe operating conditions.

PRODUCT APPLICATIONS

- Suitable for all turbocharged and naturally aspirated diesel engines used in civil construction machinery, trucks, fishing vessels, and locomotives
- Compatible with stationary diesel engines used in power generation applications

PERFORMANCE LEVEL

- API CH-4/SJ, CI-4/SL, VOLVO VDS-3, Mack EO-N, Renault VI RLD-2, Cummins CES 20078, ACEA E7, MB 228.3, MAN 3275, Cummins CES 20076/77, CAT ECF-2/ECF-1-A, Global DHD-1

CUSTOMER BENEFITS

Minimizes Fleet Maintenance Costs

Exceptional soot dispersion keeps fuel soot in suspension, avoiding filter plugging, cylinder head sludge, abrasive polishing wear and oil thickening.

Minimizes Fleet Operating Costs

Excellent deposit control technology on valves and piston heads reduces oil consumption. Exceptional oxidation stability and soot-control extends oil drain interval and makes the components of the engine use longer.

Extends Engine Life to Overhaul

High level of anti-wear additive protects engine against wear, scratch, and scuffing of highly loaded parts operating under boundary lubrication conditions.

REMARKS

SAE Grade	10W-30	15W-40	20W-40	20W-50
Kinematic Viscosity, mm²/s @ 40°C	82.9	117.7	131.3	178.8
Kinematic Viscosity, mm²/s @ 100°C	12.5	15.8	15	20.3
Viscosity Index	147	142	116	133
Pour Point °C	-38	-40	-35	-33
Flash Point °C	222	226	244	232
Package (Liters)	1T, 4T, 20, 200	1T, 4T, 20, 200	1T, 4T, 20, 200	1T, 4T, 20, 200

Semi Synthetic

HANABI Lube HD CF-4

Premium diesel engine oil for heavy duty vehicles, Providing Ultimate performance

OVERVIEW

HANABI Lube HD CF-4 is a high-performance, multigrade heavy-duty diesel engine oil specifically engineered to provide superior lubrication across a broad range of heavy-duty diesel engines. Formulated to meet API CF-4 performance requirements, it is designed to deliver reliable protection under the most severe operating conditions.

PRODUCT APPLICATIONS

- Suitable for all turbocharged and naturally aspirated diesel engines used in civil construction machinery, trucks, fishing vessels, and locomotives
- Mixed fleets of both diesel and gasoline engines
- Formulated to meet API CF-4 specifications for modern low-emission engines operating on low-sulfur fuel

PERFORMANCE LEVEL

- API CF-4

CUSTOMER BENEFITS

Excellent Deposit Control

An advanced detergent/dispersant additive technology provides excellent deposit control to maintain power under the high temperature conditions.

Protects Surfaces of Engine Components

Highly effective detergent additive technology minimizes piston skirt deposits that can lead to bore grinding damage. An organo-metallic anti-wear additive technology forms a protective layer, named as tribofilm, on all metal contact surfaces, reducing engine wear in severe operating conditions.

Multi-Purpose Usage

The Mid SAPS heavy duty engine oil formulation is suitable to all turbocharged or normally aspirated diesel engines of civil works machines, trucks, fishing boats and locomotives.

REMARKS

SAE Grade	5W-30	10W30	15W-40	20W-50
Kinematic Viscosity, mm^2/s @ 40°C	65.4	70.7	121.5	171.7
Kinematic Viscosity, mm^2/s @ 100°C	10.9	10.9	16.0	19.3
Viscosity Index	158	144	139	128
Pour Point °C	-43	-40	-34	-32
Flash Point °C	228	228	234	250
Package (Liters)	1T, 4T, 20, 200	1T, 4T, 20, 200	1T, 4T, 20, 200	1T, 4T, 20, 200

HANABI Lube HD CF

Premium diesel engine oil for heavy duty vehicles, Providing Ultimate performance

OVERVIEW

HANABI Lube HD CF is a high-performance, multigrade heavy-duty diesel engine oil specifically engineered to provide superior lubrication across a broad range of heavy-duty diesel engines. Formulated to meet API CF performance requirements, it is designed to deliver reliable protection under the most severe operating conditions.

PRODUCT APPLICATIONS

- Suitable for all turbocharged and naturally aspirated diesel engines used in civil construction machinery, trucks, fishing vessels, and locomotives
- Mixed fleets of both diesel and gasoline engines
- Formulated to meet API CF specifications for modern low-emission engines operating on low-sulfur fuel

PERFORMANCE LEVEL

- API CF

CUSTOMER BENEFITS

Excellent Deposit Control

An advanced detergent/dispersant additive technology provides excellent deposit control to maintain power under the high temperature conditions.

Protects Surfaces of Engine Components

Highly effective detergent additive technology minimizes piston skirt deposits that can lead to bore grinding damage. An organo-metallic anti-wear additive technology forms a protective layer, named as tribofilm, on all metal contact surfaces, reducing engine wear in severe operating conditions.

Multi-Purpose Usage

The Mid SAPS heavy duty engine oil formulation is suitable to all turbocharged or normally aspirated diesel engines of civil works machines, trucks, fishing boats and locomotives.

REMARKS

SAE Grade	50	70
Kinematic Viscosity, mm^2/s @ 40°C	231.7	329.4
Kinematic Viscosity, mm^2/s @ 100°C	20.3	25.4
Viscosity Index	102	100
Pour Point °C	-16	-13
Flash Point °C	262	276
Package (Liters)	1T, 4T, 20, 200	1T, 4T, 20, 200

HANABI LUBE

TRANSMISSION & AXLE

HANABI Lube ATF DX-III

HANABI Lube ATF DX-VI

HANABI Lube ATF Multi

HANABI Lube CVTF

HANABI Lube DCTF

HANABI Lube Gear GL-5

Synthetic

HANABI Lube ATF DX-III

Premium Performance
Automatic Transmission Fluid

OVERVIEW

HANABI Lube ATF DX-III is a superior automatic transmission fluid developed for passenger vehicles equipped with automatic transmissions, offering enhanced performance over conventional ATF products. It is also well-suited for automatic transmissions featuring a lock-up clutch. The fluid delivers exceptional quality through its outstanding oxidation stability, excellent low-temperature fluidity, optimal tribological performance, and superior shear stability.

PRODUCT APPLICATIONS

- Suitable for use in all transmission systems of passenger cars, trucks, buses, and construction machinery where an ALLISON C-4 type fluid is specified
- Compatible with hydraulic systems requiring a GM DEXRON III type fluid

PERFORMANCE LEVEL

- GM : DEXRON®-II, IID, IIE, DEXRON®-IIIG, IIIH, TASA
- Ford : MERCON®, WSS M2C 138CJ, 166H, WSS M2C 922A1, 924A, FNR5
- Honda : ATF Ultra II, ATF-Z1(except in CVTs)
- Hyundai / Kia : SP-II, SP-III, SP-IV, SP-IV M, JWS 3314/9683, Red 1
- JASO : M315-2013 1A, M315-2013 2A • Allison : C-3 & C-4
- Mitsubishi : Diaqueen SP-II, SP-III, SP-IV, Diaqueen AW, Diaqueen J2
- Nissan : Matic Fluid C, D, J, K
- Suzuki : ATF, ATF HP, ATF 2326, ATF 2384K, JWS 3309, ATF 3314, ATF 3317
- Toyota : ATF D-II, D-III, ATF T-III, T-IV • Volvo : CE 97340
- VW : 5HP (19FL, 24A), G 055 025 A2(JWS 3309), TL 521 62
- ZF : TE-ML 09, 11A, 11B

CUSTOMER BENEFITS

Excellent Viscosity Performance

The very high viscosity index coupled with excellent viscosity stability during operation ensures no viscosity changes and thus prolongs the service life of the device.

Great Combination of Components

Oxidation stability and cleaning performance of base oils and additives prevent corrosion, rust, and sludge formation. High-quality base oils provide high foam stability, excellent low-temperature fluidity, good start operation in cold weather and high oxidation stability. The advanced friction modifiers provide more stable friction property.

REMARKS

Kinematic Viscosity, mm^2/s @ 40°C	35.1
Kinematic Viscosity, mm^2/s @ 100°C	7.48
Viscosity Index	228
Pour Point °C	-49
Flash Point °C	188
Package (Liters)	1T, 4T, 20, 200

Fully Synthetic

HANABI Lube ATF DX-VI

Premium Performance Low Viscosity
Automatic Transmission Fluid

OVERVIEW

HANABI Lube ATF DX-VI is a premium performance automatic transmission fluid for Hyundai automatic transmissions blended with synthetic base oils and advanced high-performance additives. Specially, it is designed to provide improved fuel efficiency and superior shudder control performance. It meets or exceeds the requirements of the latest OEM specifications such as Ford MERCON LV, Toyota WS, Nissan Matic S and Hyundai SP-IV/SP-IV-RR. It also fits most modern 6-speed automatic transmissions.

PRODUCT APPLICATIONS

- HANABI Lube ATF DX-VI is recommended for all GM vehicles manufactured from 2006 onwards that are equipped with automatic transmissions
- HANABI Lube ATF DX-VI is fully backward compatible and can be applied wherever DEXRON-II and/or DEXRON-III fluids are specified

PERFORMANCE LEVEL

- GM : DEXRON® VI, IIIG, IIIH, DEXRON® II, IID, IIE
- Toyota / Lexus : Type D-II, Type T, T-III, T-IV, Type WS (JWS 3324)
- VW / Audi :G 0520 533/055, G 052 025 (A2), G 052 990 (A2), G 055 025 (A2), G 055 540 (A2), G 060 162 (A1, A2, A6)
- ZF : Lifeguardfluid6, 8 , TE-ML 03D/04D/11A/14A/16L/17C
- BMW : ATF-3+, JWS 3309 (T-IV), LA2634, LT71141, 7045E, ETL-8072B, 83 22 0 142 516, 83 22 2 152 426, 83 22 2 305 397
- Mercedes / Daimler : MB 236.10/11/12/14/15, MB 236.3/41/5/6/7/8/81/9/91
- Suzuki : 3314, 3317 • Allison : TES-295/353/389
- Volvo : P/N 1161521, 1161540, 1161640
- Ford / Lincoln : WSS M2C 922A1, WSS M2C 924A
- Honda : ATF-Z1(except in CVTs), ATF Type 3.0/3.1
- Mazda : JWS 3317, Type T-IV, D-II, M-III, M-V, FZ, F-1
- Hyundai / Kia : SP-III, SP-IV, SP-IV RR, ATF Red-1K, JWS 3309 T-4, NWS 9638 T-5
- Mitsubishi : Diaqueen SK, AW, SP-IV , Diaqueen J2, J3 , Diaqueen ATF-PA
- Nissan : Matic-D, Matic-J, Matic-K, Matic-S, Matic-W
- JASO : M315-2013 1A-LV, Class 1A

CUSTOMER BENEFITS

Excellent Viscosity Performance

The very high viscosity index coupled with excellent viscosity stability during operation ensures no viscosity changes and thus prolongs the service life of the device.

Great Combination of Components

Oxidation stability and cleaning performance of base oils and additives prevent corrosion, rust, and sludge formation. High-quality base oils provide high foam stability, excellent low-temperature fluidity, good start operation in cold weather and high oxidation and shear stability. The advanced friction modifiers provide more stable friction property. Exceptional wear and corrosion performance make equipment life longer.

Smooth Shifting and Driving

Excellent friction performance which improves fuel efficiency and shudder control performance provides drivers with a comfort transmission shifting feeling.

REMARKS

Kinematic Viscosity, mm^2/s @ 40°C	29.5
Kinematic Viscosity, mm^2/s @ 100°C	6.0
Viscosity Index	159
Pour Point °C	-45
Flash Point °C	222
Package (Liters)	1T, 4T, 20, 200

Fully Synthetic

HANABI Lube ATF Multi

Premium Performance Multi-vehicle
Automatic Transmission Fluid

OVERVIEW

HANABI Lube ATF Multi is a high-performance, high-quality automatic transmission fluid blended of high-quality base oils with an advanced additive system. (Applicable to slip controlled locking clutches). It meets the requirements of a wide range of automatic transmission specifications requiring Hyundai SP-III, SP-IV, GM DEXRON® III, Ford MERCON®, Toyota T-IV and WS as well as the requirements of European OEMs such as Volvo CE 97340 and MB, BMW, VW, ZF. It also fits 4, 5, 6 and 8-speed automatic transmission specifications.

PRODUCT APPLICATIONS

- Compatible with a wide range of 4, 5, 6, 7, and 8-speed automatic gearboxes found in Asian, European, and American passenger vehicles
- Fluid change intervals and performance level requirements should be followed as specified in the vehicle owner's manual

PERFORMANCE LEVEL

- ATF(JWS 3309/3324), • Allison(C2/C3/C4/389),
- BMW(400 272/400 275/407 858/407 859/024 249/024 359/026 922/402 413/403 248/403 249/542 290/407 765/407 807),
- Chrysler/Dodge/Jeep(+/+2/+3/+4/AS68RC/SP-III),
- Mercedes/Daimler(MB 236.2/41/5/8/9/91/10/11/12/14/15),
- Ford/Lincoln/Mercury(2-QDX/2-QSM/5-QM/5-DM/8-QAW/9-QMMS/WSS-M2C9EE-A1),
- GM(II/IID/IIE/IIIG/IIIH/T-IV/Type A Suffix A), Honda(Z-1),
- Hyundai/Kia(Red-1K/T-4/SP-II/SP-III), • Isuzu(II/III),
- Jaguar(JLM 20238/20292/21044), • JASO(M315 1A), • MAN 339(A),
- Mazda(F1/JWS33317/9-QMM5/M-3/M-5/Type T-IV),
- Mitsubishi(J2/J3/SP-II/SP-III/SP-IV), • Nissan(402/Matic-D/J/K/W),
- Porsche(204 41/205 09/205 28/547 00), • PSA(169756),
- Renault(D2), • Saab(T-IV), • SSANGYONG(DSIH 5M-66),
- Subaru(HP), • Suzuki (3314/7), • Toyota(D-II/T/T-III/T-IV/WS),
- VW(052 055/052 162/052 990/055 025/000 162),
- Volvo(1161521/1161540/1161640), ZF(TE-ML 11A/B)

CUSTOMER BENEFITS

Excellent Viscosity Performance

The very high viscosity index coupled with excellent viscosity stability during operation ensures no viscosity changes and thus prolongs the service life of the device.

Great Combination of Components

Oxidation stability and cleaning performance of base oils and additives prevent corrosion, rust, and sludge formation. High-quality base oils provide high foam stability, excellent low-temperature fluidity, good start operation in cold weather and high oxidation and shear stability. The advanced friction modifiers provide more stable friction property. Exceptional wear and corrosion performance make equipment life longer.

Smooth Shifting and Driving

Excellent friction performance which improves fuel efficiency and shudder control performance provides drivers with a comfort transmission shifting feeling.

REMARKS

Kinematic Viscosity, mm^2/s @ 40°C	36.8
Kinematic Viscosity, mm^2/s @ 100°C	7.0
Viscosity Index	153
Pour Point °C	-46
Flash Point °C	232
Package (Liters)	1T, 4T, 20, 200

Fully Synthetic

HANABI Lube CVTF

Premium Performance Continuously
Variable Transmission Fluid

OVERVIEW

HANABI Lube CVTF is a premium quality continuously variable transmission fluid designed to meet all kinds of CVTs like push belt type CVTs and chain type CVTs. It is specifically designed to provide superior driving comfort, extended transmission life, longer service intervals, superior wear control and durability between belts and pulleys.

PRODUCT APPLICATIONS

- HANABI Lube CVTF is engineered for use across a broad range of continuously variable transmissions (CVTs)
- While it is miscible and compatible with conventional branded gear oils, mixing with other gear oils is not recommended

PERFORMANCE LEVEL

- Nissan : NS-1, NS-2, NS-2V, NS-3, N-CVT • Toyota : CVTF TC, CVTF FE
- Subaru : iCVT, ICVT FG, ECVT, Lineartronic chain CVT, CVT II, Lineartronic High Torque (HT)CVT, NS-2
- Suzuki : CVTF TC, CVTF 3320, CVTF4401, NS-2, CVTF Green 1 & 2, Green 1V
- Mitsubishi : CVTF-J1, CVTF-J4, J4+, CVTF ECO J4, SP-III (CVT model only)
- VW / Audi : TL 521 16 (G 052 516), TL 521 80 (G 052 180 A2), Audi Multitronic
- BMW : Mini Cooper EZL 799A, 83 22 0136 376, 83 22 0 429 154
- Honda : HMMF*, HCF2, Z-1* (CVT model only)
- Hyundai / Kia : CVT-J1, SP-III (CVT model only)
- JASO : M315-2013 1A(>6.5 cSt), M315-2013 2A(>6.5 cSt)
- Mazda : JWS 3320 • GM / Saturn : DEX-CVT, GM 1940713 and 1940714
- Chrysler / Jeep : NS-2, CVT+4

* Use in Honda CVT with starting clutch is not recommended

CUSTOMER BENEFITS

Excellent Viscosity Performance

The very high viscosity index coupled with excellent viscosity stability during operation ensures no viscosity changes and thus prolongs the service life of the device.

Great Combination of Components

Oxidation stability and cleaning performance of base oils and additives prevent corrosion, rust, and sludge formation. High-quality base oils provide high foam stability, excellent low-temperature fluidity, good start operation in cold weather and high oxidation and shear stability. The advanced friction modifiers provide more stable friction property. Exceptional wear and corrosion performance make equipment life longer.

Smooth Shifting and Driving

Excellent friction performance which improves fuel efficiency and shudder control performance provides drivers with a comfort transmission shifting feeling.

REMARKS

Kinematic Viscosity, mm^2/s @ 40°C	33. 68
Kinematic Viscosity, mm^2/s @ 100°C	7.08
Viscosity Index	180
Pour Point °C	-54
Flash Point °C	210
Package (Liters)	1T, 4T, 20, 200

Fully Synthetic

HANABI Lube DCTF

Premium Performance Dual Clutch Transmission Fluid

OVERVIEW

HANABI Lube DCTF is a high-performance premium Dual Clutch Transmission fluid to be used in a wide range of OEM vehicles equipped with European, Asian and American wet dual-clutch transmissions. It is formulated with synthetic base oils and advanced additive technologies in order to provide shudder free driving experience, longer fluid life, and fluid durability.

PRODUCT APPLICATIONS

- HANABI Lube DCTF is suitable for use in dual clutch transmissions incorporating synchronization mechanisms, gear sets, and hydraulic control systems
- It is not recommended for dry clutch DCT configurations

PERFORMANCE LEVEL

- VW / Audi : TL 052 182, TL 052 529, G 052 529 A2 or A6
- VW(Audi/Seat/Skoda) : 6-speed DCT
- BMW : 6-speed DCT, Drivelogic 7-speed(Getrag), DCTF-1
- Ford/Getrag/Nissan : Powershift 6-speed(GFT), M2C936A
- Mitsubishi : TC-SST 6-speed (GFT), MZ320065 Diaqueen SSTF-1
- Peuget / Citroen : DCS 6-speed(GFT), 9734.S2
- Volvo : Powershift 6-speed(GFT), 1161838, 1161839
- Chrysler : Powershift 6-speed(Getrag)
- Renault : EDC 6-speed(Getrag)
- ZF/Porsche : 999.917.080.00

CUSTOMER BENEFITS

Excellent Viscosity Performance

The very high viscosity index coupled with excellent viscosity stability during operation ensures no viscosity changes and thus prolongs the service life of the device.

Great Combination of Components

Oxidation stability and cleaning performance of base oils and additives prevent corrosion, rust, and sludge formation. High-quality base oils provide high foam stability, excellent low-temperature fluidity, good start operation in cold weather and high oxidation and shear stability. The advanced friction modifiers provide more stable friction property. Exceptional wear and corrosion performance make equipment life longer.

Smooth Shifting and Driving

Excellent friction performance which improves fuel efficiency and shudder control performance provides drivers with a comfort transmission shifting feeling.

REMARKS

Kinematic Viscosity, mm^2/s @ 40°C	34.7
Kinematic Viscosity, mm^2/s @ 100°C	7.1
Viscosity Index	171
Pour Point °C	L-40
Flash Point °C	214
Package (Liters)	1T, 4T, 20, 200

Fully Synthetic

HANABI Lube Gear GL-5

Premium Performance Manual Transmission and Axle Fluid

OVERVIEW

HANABI Lube Gear GL-5 is a high-performance, multipurpose, thermally stable automotive gear oil, that is, manual transmission fluid. It is suitable to all highly loaded gears (hypoid type gear applications, axles,final drivers, transfer cases and gearboxes) requiring API GL-5 specification.

PRODUCT APPLICATIONS

- Suitable for all heavily loaded gear applications (including hypoid gears, axles, final drives, transfer cases, and gearboxes) where API GL-5 performance level is required

PERFORMANCE LEVEL

- API GL-5
- US MIL-L-2105D
- ZF TE-ML 07A(75W-90)

CUSTOMER BENEFITS

Prolongs Equipment Life

Excellent wear and friction properties prevent wears and scratches on the surface of gear, extending equipment life. The combination of superior base oil and noticeable additives pprovide long oil service life by resisting oxidation and oil thickening as well as provide against corrosion of ferrous and non-ferrous components.

Less Deposit and Sludge Formation

Advanced detergent and anti-oxidant additives provide excellent equipment availability by avoiding failure due to deposit-induced seal wear and leakage.

Smooth Shifting

High-quality friction modifiers offer smooth shifting in manual transmissions by controlling glazing and coking of friction surfaces in synchronizing mechanisms.

REMARKS

SAE Grade	75W-90	80W-90	85W-90	85W-140
Kinematic Viscosity, mm^2/s @ 40°C	98.1	131.6	141.2	338.4
Kinematic Viscosity, mm^2/s @ 100°C	15.68	14.2	14.2	25.5
Viscosity Index	171	106	97	98
Pour Point °C	-45	-35	-26	-25
Flash Point °C	188	226	230	238
Package (Liters)	1, 4, 4T, 20, 200	1, 4, 4T, 20, 200	1, 4, 4T, 20, 200	1, 4, 4T, 20, 200

HANABI LUBE

MOTORCYCLE

HANABI Lube Motorcycle 4T

HANABI Lube Motorcycle 2T

Fully Synthetic

HANABI Lube Motorcycle 4T

Superior grade engine oil for four-stroke motorcycles

OVERVIEW

HANABI Lube Motorcycle 4T SN is a premium performing, shear-stable, multigrade motorcycle engine oil specifically designed for use in four-stroke motorcycles and portable power equipment requiring API SN Plus and JASO MA/MA2 standards, including high-output engines operating in harsh service conditions.

PRODUCT APPLICATIONS

- Suitable for all types of modern 4-stroke motorcycle engines across all cubic capacities, even under the most demanding operating conditions
- Designed to provide lubrication for gearboxes and oil-immersed (wet) clutch systems
- Compatible with motorcycles requiring API SN (and below) and JASO MA or MA2 specifications

PERFORMANCE LEVEL

- API SN PLUS
- JASO MA2

CUSTOMER BENEFITS

Prolongs Engine Life

Advanced organo-metallic anti-wear additives reduce wear on highly stressed engine components under severe operating conditions. This extends the life of the engine and engine parts.

Saves on Maintenance

High oxidation stability prevents oil breakdown under the extreme thermal stresses found in modern engines, allowing the lubricant to perform its key role in effectively protecting stressed components.

Lively Throttle Response

The highly effective detergent/dispersant additive technology controls the deposit of piston ring belt to release and accelerate effectively.

Good all-temperature protection

The viscosity index improver with high shear stability provides the robust viscosity to protect the bearing and the surface of engine components at the high temperature and the low temperature operation conditions with high rotational speeds.

REMARKS

Fully Synthetic

SAE Grade	10W-40	20W-50
Kinematic Viscosity, mm^2/s @ 40°C	90.6	164
Kinematic Viscosity, mm^2/s @ 100°C	14	18.3
Viscosity Index	159	124
Pour Point °C	-34	-25
Flash Point °C	244	248
Package (Liters)	1T	1T

HANABI Lube Motorcycle 2T

Superior grade engine oil for two-stroke motorcycles

OVERVIEW

HANABI Lube Motorcycle 2T is a high-performance two-stroke motorcycle oil formulated with low ash additives. It is pre-diluted with special solvents to ensure easy mixing with gasoline over a wide temperature range. It is clearly stained to help identify their presence in fuel/oil mixtures.

PRODUCT APPLICATIONS

- Satisfies for all types of two-stroke motorcycle engines across all cubic capacities, including motorcycles, scooters, and mopeds
- Designed for gearbox lubrication and oil-immersed clutch systems, as well as for pre-mixing with gasoline at the ratio specified by the engine manufacturer

PERFORMANCE LEVEL

JASO FC, API TC

CUSTOMER BENEFITS

Prolongs Engine Life

Special organic anti-wear additives reduce wear and scuffing on the surface of the engine parts as maximizing time between overhauls. The strong and efficient detergent additives ensure that they maximize engine life by controlling the deposits which lead to ring sticking.

Fluidity and Miscibility

It is pre-diluted to ensure a stable and homogeneous mixture with gasoline.

Complete Combustion

The advanced detergent additives ensure that the distribution system remains clean and engine retains its initial efficiency. The fuel/oil mixtures completely burn without leaving any sticky deposits. The special solvents and polymers additives help reduce exhaust smoke and emissions.

REMARKS

SAE Grade	20
Kinematic Viscosity, mm^2/s @ 40°C	47.6
Kinematic Viscosity, mm^2/s @ 100°C	8.1
Viscosity Index	142
Pour Point °C	-35
Flash Point °C	114
Package (Liters)	1T

HANABI LUBE

HYDRAULIC FLUID

HANABI Lube Hydraulic HL

HANABI Lube Hydraulic HM

Fully Synthetic

HANABI Lube Hydraulic HL

Rust & Oxidation Inhibited
Hydraulic Oil

OVERVIEW

HANABI Lube Hydraulic HL is a premium-quality hydraulic fluid comprised of purely refined base oil and additives for oxidation and corrosion protection, without any special additives to prevent wear in mixed friction. It is suitable for industrial equipment and circulatory machines that require corrosion protection, such as electric motor bearings, blowers, and compressors, as well as decelerators that do not require wear resistance or extreme pressure performance, and pumps that require rust and oxidation prevention performance.

PRODUCT APPLICATIONS

- Engineered for use in all types of hydraulic systems operating under high-pressure and standard temperature conditions, including machine tools, injection molding machines, presses, and other industrial equipment
- Well-suited for a wide range of additional applications where a versatile anti-wear lubricant is the preferred choice, such as lightly loaded gears, sliding bearings, and roller bearings

PERFORMANCE LEVEL

- DIN 51524 PART I (HL),
- ISO 11158 (HL Fluids),
- Cincinnati Machine P38/P54/P55

CUSTOMER BENEFITS

Longer Equipment Life

The properties about high shear stability and oxidation stability reduce the failure in high pressure and highly loaded hydraulic systems operating over a wide temperature range.

Reduced Downtime

Effective rust and oxidation inhibitors prevent varnishes and sludges from oil breakdown which can damage equipment surfaces & seals and the filter from clogging prematurely. In addition, high oxidation stability prevents oil thickening and deposit formation during use.

Trouble-Free Operation

Excellent hydrolytic stability and water separation properties provide excellent filterability even in the presence of water contamination. Excellent anti-foam and air release properties ensure smooth operation and system efficiency.

REMARKS

ISO VG	32	46	68
Kinematic Viscosity, mm^2/s @ 40°C	31.8	45.9	66.3
Kinematic Viscosity, mm^2/s @ 100°C	5.4	6.8	8.7
Viscosity Index	104	103	102
Pour Point °C	-38	-40	-38
Flash Point °C	216	228	238
Specific gravity	0.862	0.868	0.873
Package (Liters)	20	20	20

HANABI Lube Hydraulic HM

Premium Performance Antiwear
Hydraulic Fluid

OVERVIEW

HANABI Lube Hydraulic HM is a high-performance anti-wear hydraulic fluid formulated with high quality base fluids and additives. It can be used for a relatively long period of time compared to other anti-wear hydraulic oils because the system can be efficiently maintained with excellent cleanliness and excellent filtration.

PRODUCT APPLICATIONS

- Suitable for industrial hydraulic systems across a wide range of hydraulic power applications
- Ideal for applications where conventional products tend to generate sludge and deposit buildup
- Appropriate for any application requiring a high-performance, anti-wear lubricant

PERFORMANCE LEVEL

- ISO 11158 (HM),
- Eaton Vickers M-2950-S/I-286-S,
- JCMAS HK
- US Steel 127
- Denison HF-0 (Hybrid Pump)
- GM LS-2/LH-03/LH-04/LH-06
- DIN 51524 PART II
- Cincinnati Machine P68/P69/P70

CUSTOMER BENEFITS

Wide Temperature Application

Excellent oxidation stability prevents oil thickening and deposit formation in service period without the unscheduled hydraulic oil changes.

Longer Equipment Life

Special anti-wear additives keep the tribofilm strong even under high loads, protecting the surface and reducing wear.

Reduced Downtime

Effective rust and oxidation inhibitors prevent varnishes and sludges from oil breakdown which can damage equipment surfaces & seals and the filter from clogging prematurely. In addition, high oxidation stability prevents oil thickening and deposit formation during use.

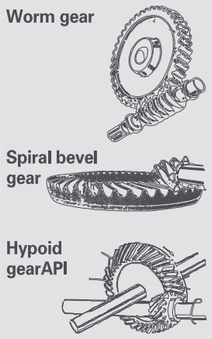
Trouble-Free Operation

Excellent hydrolytic stability and water separation properties provide excellent filterability even in the presence of water contamination. Excellent anti-foam and air release properties ensure smooth operation and system efficiency.

REMARKS

ISO VG	10	32	46	68	100	150	220
Kinematic Viscosity,mm^2/s@40°C	10	32	46	68	100	155	220
Kinematic Viscosity,mm^2/s@100°C	2.7	5.4	6.8	8.8	11.5	15.4	19.2
Viscosity Index	104	104	99	102	102	100	98
Pour Point °C	-57	-35	-37	-35	-28	-24	-20
Flash Point °C	178	218	228	238	258	266	266
Specific gravity	0.838	0.863	0.868	0.874	0.878	0.883	0.887
Package (Liters)	20,200	20,200	20,200	20,200	200	200	200

■ Performance Classification Gear Oil



GRADE	Type	APPLICATION
GL-1	Straight Mineral Oil	Truck manual transmissions
GL-2	Usually contains fatty materials	Worm gear drives, industrial gear oils
GL-3	Contains mild EP additives.	Manual Transmission and spiral bevel final drives
GL-4	Equivalent to obsolete Mil-L-2105 specification, usually satisfied with 50% of GL-5 additive level	Manual Transmissions, and Spiral bevel and hypoid gears in moderate service.
GL-5	Virtually equivalent to present Mil-L-2105D, Primary field service recommendation of most passenger	Moderate and severe service in hypoid and other types of gears. May also be used in manual transmissions car and truck builders worldwide

■ Viscosity Grades : SEA-Engine Oil

SAE J300 Jan. 2015 (SAE: Society of Automotive Engineers)

SAE Viscosity Grade	Low Temp. Cranking Vis., Max at Temp, cP at ℃	Low Temp. Pumping Vis., Max with no yield stress at Temp, cP at ℃	High Temp. Vis. cSt at 100℃		High Temp. High Shear Vis. At 150℃, cP
			Min.	Max.	
0W	6,200 at -35	60,000 at -40	3.8	-	-
5W	6,600 at -30	60,000 at -35	3.8	-	-
10W	7,000 at -25	60,000 at -30	4.1	-	-
15W	7,000 at -20	60,000 at -25	5.6	-	-
20W	9,500 at -15	60,000 at -20	5.6	-	-
25W	13,000 at -10	60,000 at -15	9.3	-	-
20	-	-	5.6	< 9.3	2.6
30	-	-	9.3	< 12.5	2.9
40	-	-	12.5	< 16.3	3.5 / 3.7
50	-	-	16.3	< 21.9	3.7
60	-	-	21.9	< 26.1	3.7

5W-30 is satisfied with the specification of 5W and 30 simultaneously.

■ Viscosity Grades : SEA-Gear Oil

(SAE J306 Feb. 2019)

SAE Viscosity Grade	Maximum Temperature for Viscosity of 150,000cP	Viscosity at 100℃, cSt	
		Min.	Max.
70W	-55	4.1	-
75W	-40	4.1	-
80W	-26	7.0	-
85W	-12	11.0	-
80	-	7.0	11.0
85	-	11.0	13.5
90	-	13.5	< 24.0
140	-	24.0	< 41.0
250	-	41.0	-

Multigrade: 75W-85W, 80W-90, 85W-140 etc.

■ Viscosity Grades :ISO-Industrial Oil

(ISO: International Organization for Standardization)

ISO Viscosity Grade	Viscosity at 40℃, cSt	
	Min.(-10%)	Max.(+10%)
32	28.8	35.2
46	41.4	50.6
68	61.2	74.8
100	90.0	110
150	135.0	165
220	198.0	242
~	~	~
1500	1350.0	1650
3200	2880.0	3520.0

API

The current and previous API Service Categories are listed below. Vehicle owners should refer to their owner's manuals before consulting these charts. Oils may have more than one performance level. For automotive gasoline engines, the latest engine oil service category includes the performance properties of each earlier category. If an automotive owner's manual calls for an API SJ or SL oil, an API SN oil will provide full protection. For diesel engines, the latest category usually - but not always - includes the performance properties of an earlier category.

■ Gasoline Engines

Catagory	Status	Service
SQ	Current	The introduction of API SQ happens concurrently with the establishment of ILSAC GF-7 criteria, produced by the International Lubricants Standardization and Approval Committee. While API and ILSAC standards usually maintain close coordination—as seen with API SQ and GF-7—API SQ will specifically handle very low viscosity ranges excluded from GF-7's scope. Owners of vehicles using GF-6 and API SP oils can expect full compatibility when transitioning to either GF-7 or API SQ products.
SP	Current	Introduced in May 2020, designed to provide protection against lowspeed pre-ignition(LSPI), timing chain wear protection, improved high temperature deposit protection for pistons and turbochargers, and more stringent sludge and varnish control. API SP with Resource Conserving matches ILSAC GF-6A by combining API SP performance with improved fuel economy, emission control system protection and protection of engines operating on ethanol-containing fuels up to E85.
SN	Current	For 2020 and older automotive engines.
SM	Current	For 2010 and older automotive engines.
SL	Current	For 2004 and older automotive engines.
SJ	Current	For 2001 and older automotive engines.
SH	Obsolete	CAUTION: Not suitable for use in most gasoline-powered automotive engines built after 1996. May not provide adequate protection against build-up of engine sludge, oxidation, or wear.
SG	Obsolete	CAUTION: Not suitable for use in most gasoline-powered automotive engines built after 1993. May not provide adequate protection against build-up of engine sludge, oxidation, or wear.
SF	Obsolete	CAUTION: Not suitable for use in most gasoline-powered automotive engines built after 1988. May not provide adequate protection against build-up of engine sludge.
SA - SE	Obsolete	WE do not produce this grade.

■ Diesel Engines

Catagory	Status	Service
CK-4	Current	API Service Category CK-4 describes oils for use in high-speed four-stroke cycle diesel engines designed to meet 2017 model year on-highway and Tier 4 non-road exhaust emission standards as well as for previous model year diesel engines. These oils are formulated for use in all applications with diesel fuels ranging in sulfur content up to 500 ppm (0.05% by weight). However, the use of these oils with greater than 15 ppm (0.0015% by weight) sulfur fuel may impact exhaust aftertreatment system durability and/or oil drain interval. These oils are especially effective at sustaining emission control system durability where particulate filters and other advanced aftertreatment systems are used. API CK-4 oils are designed to provide enhanced protection against oil oxidation, viscosity loss due to shear, and oil aeration as well as protection against catalyst poisoning, particulate filter blocking, engine wear, piston deposits, degradation of low- and high-temperature properties, and soot-related viscosity increase. API CK-4 oils exceed the performance criteria of API CJ-4, CI-4 with CI-4 PLUS, CI-4, and CH-4 and can effectively lubricate engines calling for those API Service Categories. When using CK-4 oil with higher than 15 ppm sulfur fuel, consult the engine manufacturer for service interval recommendations.
CJ-4	Current	For high-speed four-stroke cycle diesel engines designed to meet 2010 model year on-highway and Tier 4 non-road exhaust emission standards as well as for previous model year diesel engines. These oils are formulated for use in all applications with diesel fuels ranging in sulfur content up to 500 ppm (0.05% by weight). However, the use of these oils with greater than 15 ppm (0.0015% by weight) sulfur fuel may impact exhaust aftertreatment system durability and/or drain interval. API CJ-4 oils exceed the performance criteria of API CI-4 with CI-4 PLUS, CI-4, CH-4, CG-4 and CF-4 and can effectively lubricate engines calling for those API Service Categories. When using CJ-4 oil with higher than 15 ppm sulfur fuel, consult the engine manufacturer for service interval.
CI-4	Current	Introduced in 2002. For high-speed, four-stroke engines designed to meet 2004 exhaust emission standards implemented in 2002. CI-4 oils are formulated to sustain engine durability where exhaust gas recirculation (EGR) is used and are intended for use with diesel fuels ranging in sulfur content up to 0.5% weight. Can be used in place of CD, CE, CF-4, CG-4, and CH-4 oils. Some CI-4 oils may also qualify for the CI-4 PLUS designation.
CH-4	Current	Introduced in 1998. For high-speed, four-stroke engines designed to meet 1998 exhaust emission standards. CH-4 oils are specifically compounded for use with diesel fuels ranging in sulfur content up to 0.5% weight. Can be used in place of CD, CE, CF-4, and CG-4 oils.
CG-4	Current	Introduced in 1995. For Severe duty, high-speed, four-stroke engines using fuel with less than 0.5% weight sulfur. CG-4 oils are required for engines meeting 1994 emission standards. Can be used in place of CD, CE, and CF-4 oils.
CF-4	Current	Introduced in 1990. For high-speed, four-stroke, naturally aspirated and turbocharged engines. Can be used in place of CD, CE oils.
CF-2	Current	Introduced in 1994. For severe duty, two-stroke cycle engines. Can be used in place of CD-II oils.
CF	Current	Introduced in 1994. For off-road, indirect-injected and other diesel engines including those using fuel with over 0.5% weight sulfur. Can be used in place of CD oils.
CA - CE	Current	WE do not produce this grade.

Note: API intentionally omitted "SI" and "SK" from the sequence of categories. For more information about API's Engine Oil Program, visit our website at www.api.org/eolcs.

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American Petroleum Institute

ACEA

The European Automobile Manufacturers' Association (or Association des Constructeurs Européens d'Automobiles in French, hence the ACEA abbreviation) is an organization that represents the 15 most important European motor vehicle manufacturers. According to their statement, ACEA is an advocate for the automobile industry in Europe, representing manufacturers of passenger cars, vans, trucks and buses with production sites in the EU.

Among many other activities ACEA defines specifications for engine oils so called ACEA Oil Sequences. The sequences are usually updated every few years to include the latest developments in engine and lubricant technology. ACEA itself does not approve the oils, they set the standards and oil manufacturers may make performance claims for their products if those satisfy the relevant requirements.

Each set of Oil Sequences is designated for consumer use by a 2-part code comprising a letter to define the CLASS (e.g. C), and a number to define the CATEGORY (e.g. C1).
In addition, for industry use, each sequence has a two-digit number to identify the YEAR of implementation of that severity level (e.g. A3/B4-16)

The CLASS indicates oil intended for a general type of engines - currently there are:

- **A/B** : Gasoline and Light Duty Diesel Engines
- **C**: Catalyst compatible oils for Gasoline and Light Duty Diesel Engines with After treatment devices
- **E**: Heavy Duty Diesel Engines

Other classes may be added in future if, for example, Natural Gas Engines may prove to require oil characteristics which cannot readily be incorporated into existing classes.

■ A/B: Gasoline and Diesel Engine Oils - "High SAPS"

Catagory	Service
A3 / B3	Stable, stay-in-grade Engine Oil intended for use in Passenger Car & Light Duty Van Gasoline & Diesel Engines with extended drain intervals where specified by the Engine Manufacturer, and for severe operating conditions as defined by the Engine Manufacturer.
A3/B4	Stable, stay-in-grade Engine Oil intended for use at extended Drain Intervals in Passenger Car & Light Duty Van Gasoline & DI Diesel Engines, but also suitable for applications described under A3/B3.
A5/B5	Stable, stay-in-grade Engine Oil intended for use at extended Drain Intervals in Passenger Car & Light Duty Van Gasoline & Diesel Engines designed to be capable of using Low Viscosity Oils with HTHS Viscosity of 2.9 to 3.5 mPa s. These Oils are unsuitable for use in certain Engines - consult vehicle-OEM's owner's manual/ handbook in case of doubt.
A5/B5	Stable, stay-in-grade engine oil intended for use at extended oil drain intervals in passenger car and light-duty gasoline and DI diesel engines designed for low viscosity engine oils with HTHS viscosity of 2.9 to 3.5 mPa-s. Relative to A5/B5, these engine oils provide also low-speed pre-ignition and wear protection for turbocharged gasoline DI engines, as well as turbocharger compressor deposit (TCCD) protection for modern DI diesel engines. These engine oils are unsuitable for use in certain engines-consult manufacturers' owner manual/handbook in case of doubt.

■ C: Catalyst & GPF/DPF compatible Engine Oils for Gasoline & Diesel Engines - "Low SAPS"

Note: These Oils will increase the DPF/GPF and TWC life and maintain the Vehicle's Fuel Economy.
Warning: Some of these Categories may be unsuitable for use in certain Engine Types-consult the vehicle-OEM's owner's manual/handbook in case of doubt.

Catagory	Service
C1	Category is withdrawn with these ACEA Oil Sequences.
C2	Stable, stay-in-grade engine oil with mid-SAPS level, for aftertreatment system compatibility. Intended for use at extended oil drain intervals in passenger car and lightduty gasoline, and DI diesel engines designed for low-viscosity engine oils with a minimum HTHS viscosity of 2.9 mPa·s.
C3	Stable, stay-in-grade engine oil with mid-SAPS level, for aftertreatment system compatibility. Intended for use at extended oil drain intervals in passenger car and lightduty gasoline, and DI diesel engines designed for engine oils with HTHS viscosity of minimum 3.5 mPa·s.
C4	Stable, stay-in-grade engine oil with low-SAPS level, for aftertreatment system compatibility. Intended for use at extended oil drain intervals in passenger car and lightduty gasoline, and DI diesel engines designed for engine oils with HTHS viscosity of minimum 3.5 mPa.s.
C5	Stable, stay-in-grade engine oil for improved fuel economy, with mid-SAPS level, for aftertreatment system compatibility. Intended for use at extended oil drain intervals in passenger car and light-duty gasoline, and DI diesel engines designed and OEMapproved for engine oils with HTHS viscosity of minimum 2.6 mPa·s.
C6	Stable, stay-in-grade engine oil for improved fuel economy, with mid-SAPS level, for aftertreatment system compatibility. Intended for use at extended oil drain intervals in passenger car and light-duty gasoline, and DI diesel engines designed and OEMapproved for engine oils with HTHS viscosity of minimum 2.6 mPa·s. Relative to C5 these engine oils also provide low speed pre-ignition and wear protection for turbocharged gasoline DI engines as well as turbocharger compressor deposit (TCCD) protection for modern DI diesel engines.

• SAPS: Sulphated Ash, Phosphorus, Sulphur • HTHS: High Temperature High Shear Viscosity • DI: Direct Injection • DPF: Diesel Particle Filter
• GPF: Gasoline Particle Filter • TWC: Three-Way Catalyst

■ E: Heavy Duty Diesel Engine Oils Category

Catagory	Service
E4	Stable, stay-in-grade oil providing excellent control of piston cleanliness, wear, soot handling and lubricant stability. It is recommended for highly rated diesel engines meeting Euro I, Euro II, Euro III, Euro IV and Euro V emission requirements and running under very severe conditions, e.g. significantly extended oil drain intervals according to the manufacturer's recommendations. It is suitable for engines without particulate filters, and for some EGR engines and some engines fitted with SCR NOX reduction systems. However, recommendations may differ between engine manufacturers so driver manuals and/or dealers shall be consulted if in doubt.
E6	Stable, stay-in-grade oil providing excellent control of piston cleanliness, wear, soot handling and lubricant stability. It is recommended for highly rated diesel engines meeting Euro I, Euro II, Euro III, Euro IV, Euro V and Euro VI emission requirements and running under very severe conditions, e.g. significantly extended oil drain intervals according to the manufacturer's recommendations. It is suitable for EGR engines, with or without particulate filters, and for engines fitted with SCR NOX reduction systems. E6 quality is strongly recommended for engines fitted with particulate filters and is designed for use in combination with low sulphur diesel fuel. However, recommendations may differ between engine manufacturers so driver manuals and/or dealers shall be consulted if in doubt.
E7	Stable, stay-in-grade oil providing effective control with respect to piston cleanliness and bore polishing. It further provides excellent wear control, soot handling and lubricant stability. It is recommended for highly rated diesel engines meeting Euro I, Euro II, Euro III, Euro IV and Euro V emission requirements and running under severe conditions, e.g. extended oil drain intervals according to the manufacturer's recommendations. It is suitable for engines without particulate filters, and for most EGR engines and most engines fitted with SCR NOx reduction systems. However, recommendations may differ between engine manufacturers so driver manuals and/or dealers shall be consulted if in doubt.
E11	Stable, stay-in-grade oil providing effective control with respect to piston cleanliness and bore polishing. It further provides excellent wear control, soot handling and lubricant stability. It is recommended for highly rated diesel engines meeting Euro I, Euro II, Euro III, Euro IV, Euro V and Euro VI emission requirements and running under severe conditions, e.g. extended oil drain intervals according to the manufacturer's recommendations. It is suitable for engines with or without particulate filters, and for most EGR engines and for most engines fitted with SCR NOX reduction systems. E11 is strongly recommended for engines fitted with particulate filters and is designed for use in combination with low Sulphur diesel fuel. However, recommendations may differ between engine manufacturers so driver manuals and/or dealers should be consulted if in doubt

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