



Kixx

***PRODUCT
CATALOGUE***



“Value No.1 Energy & Chemical Partner”

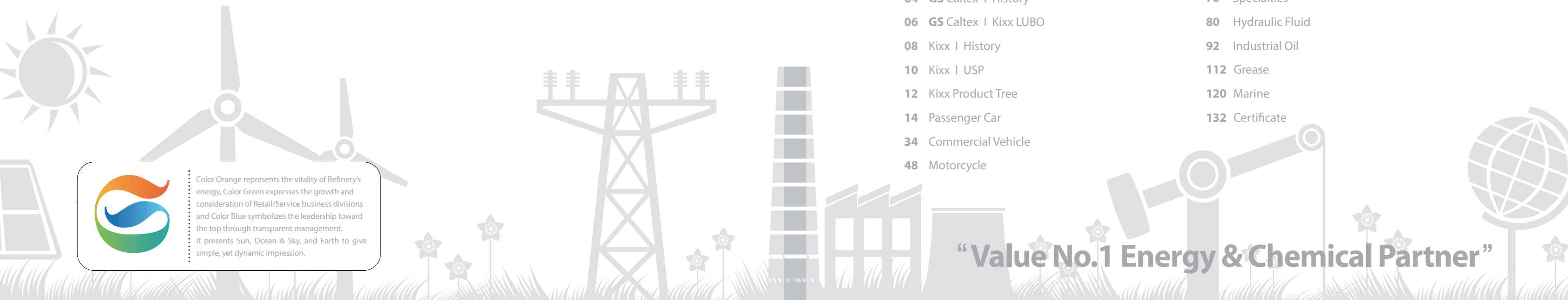
Preparing for the future of a changing energy industry, We will move toward a sustainable tomorrow.

By proactively responding to the transition to lower carbon energy, GS Caltex endeavors to find solutions to the challenges of the future energy industry. By searching for new possibilities that are compatible with the global environment over the long term and re-discovering the value of waste, we intend to expand our capabilities. We will continue to prepare for the future of energy to create a viable and sustainable tomorrow.



CONTENTS

02	GS Caltex Overview	56	Transmission/ Axle
04	GS Caltex History	70	Specialties
06	GS Caltex Kixx LUBO	80	Hydraulic Fluid
08	Kixx History	92	Industrial Oil
10	Kixx USP	112	Grease
12	Kixx Product Tree	120	Marine
14	Passenger Car	132	Certificate
34	Commercial Vehicle		
48	Motorcycle		





Color Orange represents the vitality of Refinery's energy, Color Green expresses the growth and consideration of Retail/Service business divisions and Color Blue symbolizes the leadership toward the top through transparent management. It presents Sun, Ocean & Sky, and Earth to give simple, yet dynamic impression.

“Value No.1 Energy & Chemical Partner”



GS Caltex, founded in 1967 as the first private oil refining company in Korea, has led the nation’s energy industry through constant innovation and creative initiatives. GS Caltex will continue to do its utmost to become "Value No.1 Energy & Chemical Partner"

1966 Dec	Signing of the Joint Venture Agreement	1996 Oct	Completion of the No.2 KD-HDS (70,000 BPSD) Establishment of LG Energy Co., Ltd. (Now GS EPS)	2005 Mar	Company name changed from LG-Caltex Oil Corporation to GS Caltex Corporation	2008 Dec	Received the \$15 billion Export Tower Award Completion of the No.4 HDS (70,000 BPSD, total 260,000 BPSD)
1967 May	Establishment of the Honam Oil Refinery Co., Ltd.D	1996 Dec	Completion of the No.4 CDU (270,000 BPSD, total 650,000 BPSD) Establishment of LG Oil Products Sales Co., Ltd. (incorporation of sales subsidiary)	2005 Aug	Introduction of the new gasoline brand Kixx	2009 Jul	Incorporated Green Century Co., Ltd. as a subsidiary (now GS Greentech)
1969 Jun	Commencement of operations at the Yeosu Refinery (60,000 BPSD)	1997 Feb	Acquisition of Kuk Dong City Gas Co., Ltd. (Now Yesco)	2005 Sep	Completion of the alkylation plant (10,000 BPSD)	2009 Nov	Increase in the No.4 CDU production capacity (300,000 BPSD →330,000 BPSD, total 730,000 BPSD)
1969 Nov	Completion of the Incheon Lubricant plant	1997 Oct	Completion of the Continuous Catalytic Reforming Unit (30,000 BPSD)	2005 Nov	Increase in No.1 CDU production capacity (70,000 BPSD→90,000 BPSD)	2009 Nov	Increase in the base oil production capacity (16,000 BPSD →23,000 BPSD)
1970 Oct	Expansion of the No.1 CDU (60,000 BPSD →100,000 BPSD)	1998 Sep	Completion of the No.3 KD-HDS (70,000 BPSD, total 190,000 BPSD)	2006 Feb	Establishment of GS Park 24 Co., Ltd. Petroleum Co., Ltd.	2009 Nov	Increase in the No.2 & 3 CDU production capacity (total 760,000 BPSD)
1972 Aug	Establishment of Honam Tanker Co., Ltd.	1998 Oct	Merger of LG Oil Products Sales Co., Ltd. Completion of the Value Creation Center	2006 Apr	Launching of the premium gasoline brand, Kixx Prime	2010 Feb	Increase in the KD-HDS capacity (total 272,000 BPSD)
1972 Oct	Completion of the No.2 CDU (60,000 BPSD, total 160,000 BPSD)	1998 Nov	Introduction of the Six Sigma Management Initiative	2006 May	Launching of the premium diesel brand, Kixx Prime Diesel.	2010 Feb	Establishment of GS Caltex Lube
1976 Sep	Acquisition of Sebang Oil Co., Ltd.	1999 Oct	Tower Launching of SIGMA6, Headquarters moved to LG Gangnam	2006 Jun	Establishment of GS Caltex (Langfang) Plastics Co., Ltd.	2010 Mar	Acquisition of Samil Polymer Co., Ltd.
1978 Nov	Expansion of the No.2 CDU (60,000 BPSD →130,000 BPSD, total 230,000 BPSD)	1999 Dec	Headquarters moved to LG Gangnam the new gasoline brand	2006 Jul	Completion of CNSU (72,500 BPSD, total 722,500 BPSD)	2010 Mar	Completion of the Power Carbon Technology plant
1981 Jun	Completion of the No.3 CDU (150,000 BPSD, total 380,000 BPSD)	2000 Jan	Merger of Hoyu Shipping Co., Ltd. Announcement of the new corporate vision, "The Leader in Providing Total Energy Service"	2006 Aug	Establishment of the GS Caltex Foundation	2010 Apr	Acquisition of GS Platch
1984 Sep	Completion of the first crude oil wharf Establishment of Yeosu Energy Co., Ltd. (Now E1)	2000 Jun	Investment in Samnam Petrochemical Co., Ltd.	2006 Dec	Opening of the New Energy Development Center	2011 May	Completion of the No.3 HOU (VR HCR) Groundbreaking ceremony of the No.4 HOU (VGO FCC) Groundbreaking ceremony of Cathode Material Plant
1986 Jan	Establishment of Technology Research Center	2000 Jul	Investment in Daehan Oil Pipeline Corporation	2007 Jan	Establishment of AMCO (subsidiary) Establishment of GS Caltex (Qingdao) Energy Co., Ltd.	2011 Dec	Received the \$20 billion Export Tower Award (Second time in Korea and first time in the refining business)
1986 Sep	Revised Joint Venture Agreement to establish independent management by the Korean shareholder	2000 Aug	Completion of the polypropylene plant (120,000 MTA)	2007 Jun	Completion of the No.2 HOU (VDU: 150,000 BPSD, HCR: 55,000 BPSD)	2012 Jan	Establishment of GS Energy Corporation
1988 Jan	Investment in Samnam Petrochemical Co., Ltd.	2000 Nov	Expansion of the polypropylene plant (120,000 MTA → 180,000 MTA)	2007 Aug	Completion of the base oil plant(16,000 BPSD)	2012 Mar	Announcement of the GSC Way (incorporation of sales subsidiary)
1988 Apr	Completion of the polypropylene plant (120,000 MTA)	2000 Dec	Investment in Daehan Oil Pipeline Corporation	2007 Sep	Opening of the hydrogen station	2012 Mar	Completed Lubricants Global Logistics Center
1989 Dec	Expansion of the polypropylene plant (120,000 MTA → 180,000 MTA)	2001 Jan	Completion of the No.1 aromatics plant (500,000 MTA) Completion of the No.1 PX (200,000 MTA)	2007 Nov	Increase in the aromatics plant production capacity (600,000 MTA →1,200,000 MTA) (BTX: 1,000,000 MTA →1,600,000 MTA, PX: 1,200,000 MTA) Completion of the first and second service stations in Qingdao, China	2012 May	Opening of the GS Caltex Yeulmaru, Yeosu Culture and Arts Park
1990 Jan	Investment in Daehan Oil Pipeline Corporation	2001 Nov	Completion of the No.1 KD-HDS (50,000 BPSD)	2007 Dec	Increase in No.4 CDU production capacity (270,000 BPSD →300,000 BPSD)	2012 Sep	Completion of PCT Cathode Material Plant
1990 Sep	Completion of the No.1 aromatics plant (500,000 MTA) Completion of the No.1 PX (200,000 MTA)	2003 Mar	Expansion of the No.1 aromatics plant (500,000 MTA →600,000 MTA)	2008 Mar	Increase in CNSU production capacity (72,500 BPSD →90,000 BPSD, total 770,000 BPSD)	2012 Dec	Establishment of GS Caltex China
1991 Oct	Completion of the No.1 KD-HDS (50,000 BPSD)	2003 Apr	Completion of the second crude oil wharf Establishment of Hoyu Merchandising Co., Ltd.	2008 Apr	Increase in GS Caltex Beijing Representative Office	2013 Mar	Awarded the \$25 billion Export Tower Award at the 49th Trade & Commerce Day
1991 Dec	Expansion of the No.1 aromatics plant (500,000 MTA →600,000 MTA)	2003 Jul	Expansion of the No.1 PX (200,000 MTA →300,000 MTA)	2008 Aug	Increase in the No.2 CDU production capacity (130,000 BPSD →150,000 BPSD, total 700,000 BPSD)	2013 Mar	Start of 'Mom Talk Talk', a healing program for underprivileged children
1992 Nov	Completion of the second crude oil wharf	2003 Sep	Expansion of the No.1 PX (200,000 MTA →300,000 MTA)	2008 Oct	Increase in HOU production capacity (RFCC: 90,000 →BPSD 93,000 BPSD, HCR: 55,000 BPSD → 60,000 BPSD, total 153,000 BPSD)	2013 Mar	Commercial operation of No.4 HOU (VGO FCC) (268,000 barrels per day)
1994 Mar	Establishment of Hoyu Merchandising Co., Ltd.	2004 Jul	Launching of Technon, the first petroleum brand in Korea	2008 Oct	Establishment of GS NOC Material (Now Power Carbon Technology)	2013 Oct	Completion of Polymer Plant, Czech Republic
1994 Mar	Expansion of the No.1 PX (200,000 MTA →300,000 MTA)	2004 Nov	Awarded the contract for commissioned operation of the Sohar Refinery in Oman		Increase in the No.2 CDU production capacity (130,000 BPSD →150,000 BPSD, total 700,000 BPSD)	2013 Nov	Completion of Polymer Plant, Jinju
1995 Jan	Launching of Technon, the first petroleum brand in Korea		Establishment of GS Holdings Corporation Incorporated as a subsidiary of GS Holdings Corporation			2015 Apr	Achieved 10 year incident free Lubricants plant operation
1995 Aug	Completion of the No.2 PX (350,000 MTA, total 650,000 MTA)		Acquisition of Nuricell Inc. (Now GS Nanotech Oil Corporation)			2017 Oct	Establishment of GS Caltex Ho Chi Minh Representative Office
1995 Sep	Commencement of the No.1 HOU (RFCC) (70,000 BPSD) Establishment of LG Caltex Singapore (Now GS Caltex Singapore)					2021 Jul	MFC/PE factory operation (750,000 tons of MFC operation, 500,000 tons of PE operation)
1996 May	Company name changed to LG-Caltex Oil Corporation						

Manufacturer

PREMIUM LUBRICANTS PRODUCTS AND TECHNOLOGY

GS Caltex produces 9,000 barrels per day of lubricants and 8,000 MTA of grease products. Underpinned by premium products and technology, we are ranked first in the Korean finished lubricant products market based on market share and sales volume. With Kixx Engine Oil as the leading brand in our lubricant line-up, GS Caltex offers 180 kinds of products which are classified according to their usage such as automobiles, industrial equipments, vessels and special purposes.

TRULY A HIGH PERFORMANCE AND ENVIRONMENTALLY FRIENDLY BASE OIL THROUGH THE CUTTING EDGE HYDROCRACKING TECHNOLOGY

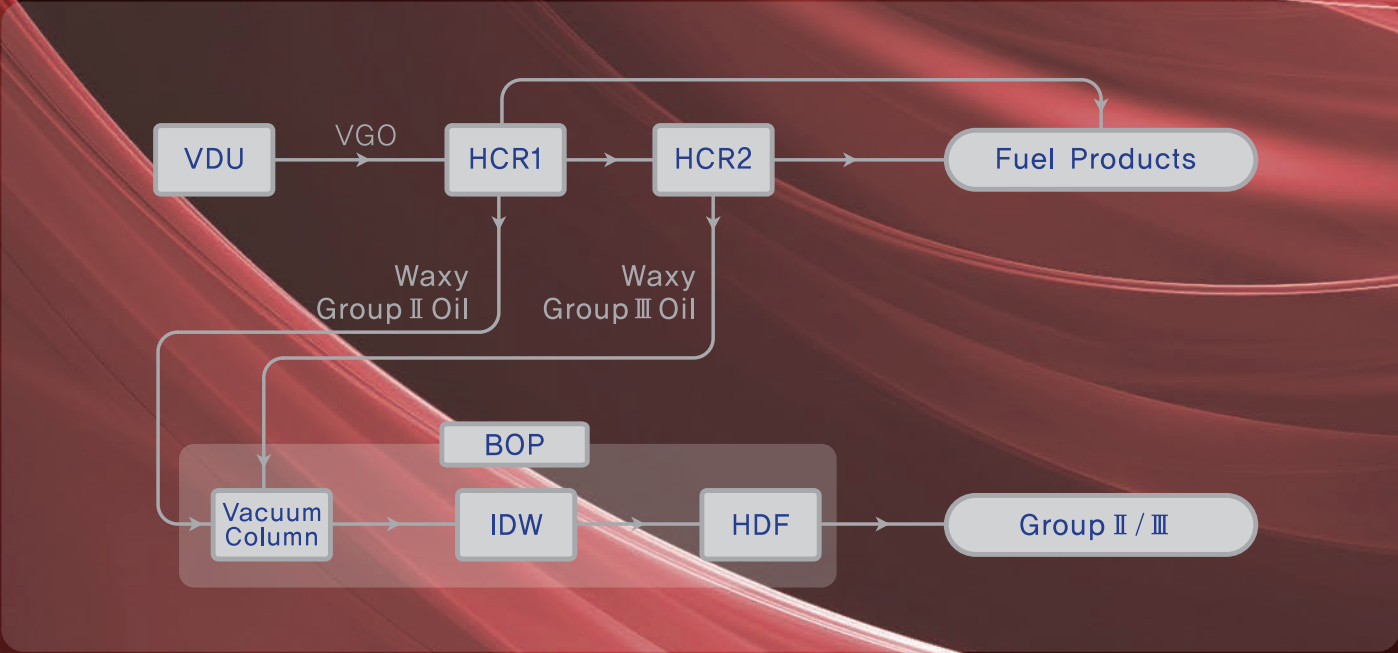
In November 2007, GS Caltex began base oil production with 16,000 barrels per day capacity. As of 2010, its production capacity has increased to 23,000 barrels per day; GS Caltex has expanded its base oil production to 27,000 barrels per day through a revamping of its Base Oil Plant in 2011. GS Caltex continues to expand Base Oil production capacity through building new Base Oil Plants. By using the latest cutting edge hydrocracking technology, GS Caltex produces high quality environment-friendly base oil which satisfies the strict specifications of lubricant manufacturers.

AIMING FOR THE WORLD TOP LUBRICANTS

Exporting to more than 50 countries world-wide, GS Caltex has emerged as world-class lubricants products manufacturer. As part of the effort to provide premium quality lubricants products, GS Caltex built many state-of-art lubricant blending plants as well as introduced quality control systems such as ISO 9001/14001, QS 9000 and ISO/TS 16949. GS Caltex provides premium quality products to Korean government and various global companies including Volvo Construction Equipment, Hyundai & Kia Motors, LG Electronics, LG Chemicals, POSCO, HD HYUNDAI INFRACORE, HD HYUNDAI HEAVY INDUSTRIES as OEMs.



Flexible production of Group II and Group III base oils through a cutting edge two-stage HCR production process.



KixxLUBO, Providing the optimal solutions to engineer the **premium quality lubricants**.

The launch of a new era in high performance base oil.

GS Caltex invested 1.5 trillion won (\$1.6 billion) in its Heavy Oil Upgrade (No.2 HOU) facility and Base Oil Plant (BOP) located in Yeosu, South Korea in order to produce its ultralight sulfur kerosene, light oil, and lube base oil. GS Caltex began base oil production with 16,000BPSD capacity in November 2007 and expanded the capacity to 26,000 BPSD in 2011. GS Caltex aims to be the influential and dominant supplier of high quality base oil through further expansions and improvements.

Truly a high performance base oil which meet your stringent requirements.

The need for lubricant marketers to meet more stringent regulatory standards and challenging specifications is growing. The ongoing shift to higher quality automotive lubricants is driven mainly by the automobile industry's increasingly strict requirements such as severe vehicle emission standards. Industrial demand is also moving towards hydraulic fluids with a High Viscosity Index (HVI) and high oxidation stability turbine oils. Since more than 80% of the content of lubricants consists of base oils, higher quality base oil is essential in producing higher quality lubricants. GS Caltex Group II / III base oil can give the optimal solution for top quality lubricants which conventional base oils are not able to provide.

HCR Environmentally friendly base oil produced with the latest HCR technology.

Through the ingenuity of its facility, GS Caltex has the flexibility to control the desired amount of production of both Group II and Group III base oil. GS Caltex can also produce high quality heavy grade base oil to replace white oil and bright stock. GS Caltex Group II / III base oil has excellent low temperature properties and exceptionally bright white clear transparent qualities. The Group II / III base oil produced by GS Caltex is environment-friendly, it has a low volatility, it will reduce oil consumption and improve fuel economy. Furthermore GS Caltex offers high thermal and oxidation stability to support drain interval extension. All these advantages are the result of the latest cutting edge hydrocracking technology. These benefits will help GS Caltex adapt more efficiently to changing market conditions and generate greater customer satisfaction.

Realizing strategic partnerships by matching various customer needs.

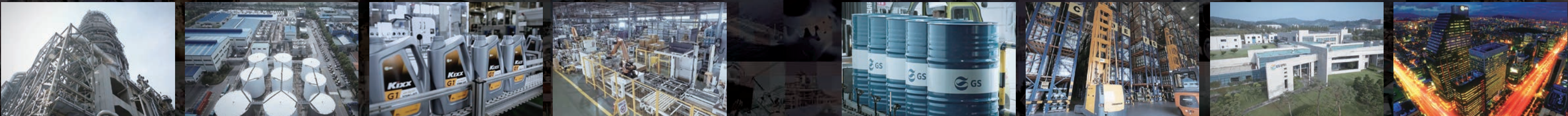
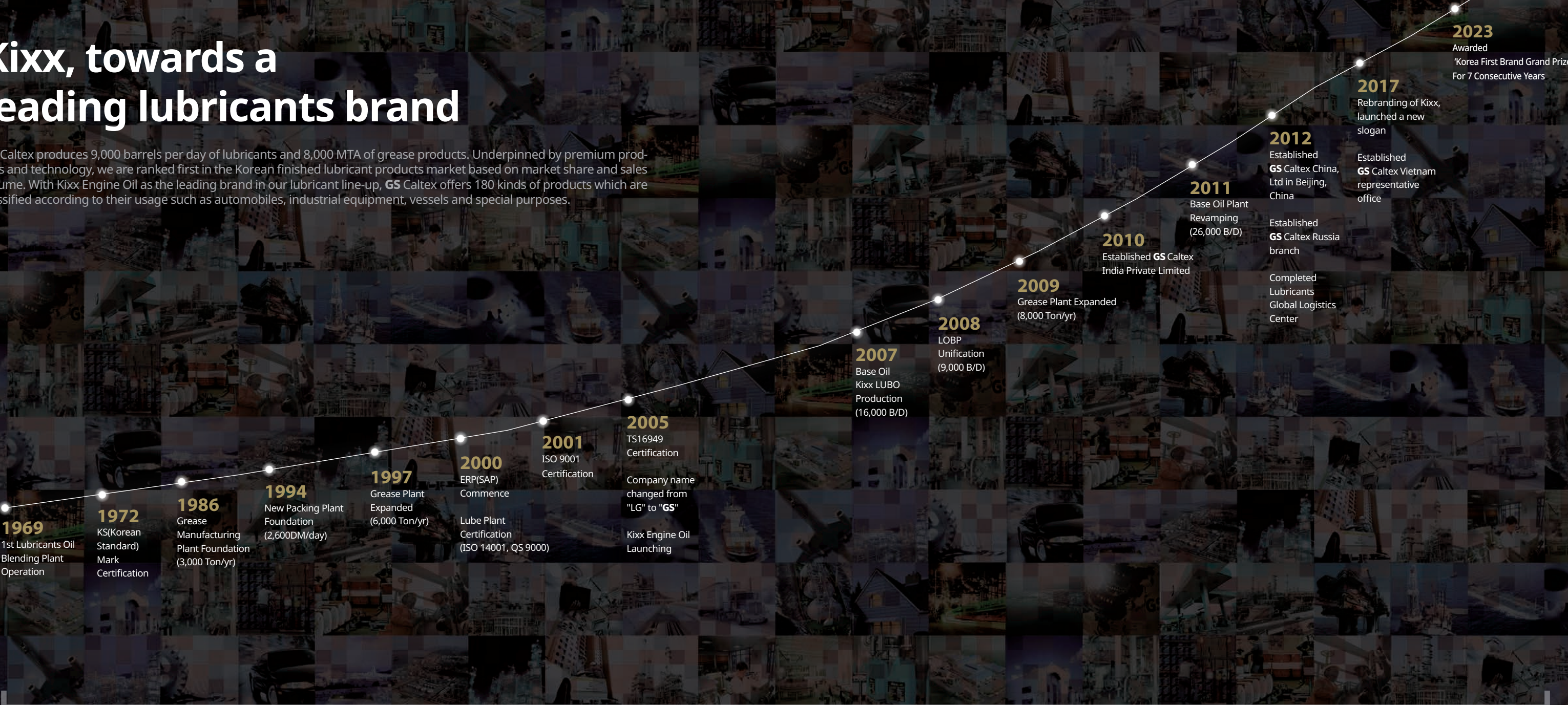
Kixx LUBO, the new name in base oil, is a combination of the GS Caltex family brand Kixx and lube base oil. The Kixx name originates from the etymology of "kick" to describe speed, strength, and dynamism. With the launching of Kixx LUBO, GS Caltex will focus on communicating with customers and establishing strategic partnerships.

- Term**
- CDU (Crude Distillation Unit)
 - AR (Atmospheric Residue)
 - VDU (Vacuum Distillation Unit)
 - VGO (Vacuum Gas Oil)
 - VR (Vacuum Residue)
 - HCR (Hydrocracker)
 - BOP (Base Oil Plant)
 - IDW (Iso Dewaxing)
 - HDF (Hydro Finishing)



Kixx, towards a leading lubricants brand

GS Caltex produces 9,000 barrels per day of lubricants and 8,000 MTA of grease products. Underpinned by premium products and technology, we are ranked first in the Korean finished lubricant products market based on market share and sales volume. With Kixx Engine Oil as the leading brand in our lubricant line-up, GS Caltex offers 180 kinds of products which are classified according to their usage such as automobiles, industrial equipment, vessels and special purposes.



Kixx USP (Unique Selling Proposition)

Kixx

The perfect fit



Kixx with Triple Double Technology

Triple Double Technology of Kixx is equipped with Triple Anti-Technology and Double Boosting Technology which can deliver optimized performance anytime, anywhere.

Applications: Automotive engine oils & Transmission/Axle oils



Kixx PAO USP

Kixx PAO

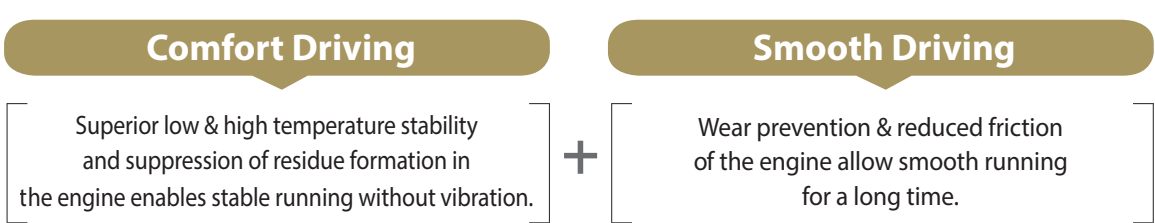
First-class driving

With the best products and services developed with the highest professionalism, Kixx PAO provides an unmatched driving experience.



Kixx PAO with Dual Plus Technology

Dual Plus Technology of Kixx PAO provides a first-class driving experience in a harsh driving environment through Smooth & Stable Boosting Technology.



Product Tree

Passenger Car
Eco-Friendly/Premium



Kixx BIO1



Kixx Hybrid



Kixx PAO1



Kixx PAO A3/B4



Kixx PAO C3

Passenger Car



Kixx G1 SP



Kixx G1 Dexos1



Kixx G1 A3/B4



Kixx G1 SN



Kixx G
SF/SG/SJ/SL



Kixx D1 C3



Kixx D1 RV

Commercial
Vehicle



Kixx HDX PAO



Kixx HDX Euro



Kixx HDX CK-4



Kixx HDX DH-2



Kixx HD CF



Kixx HD
CF-4/CG-4/CH-4



Kixx HD LS CF



Kixx HD1



Kixx HD CNG

Motorcycle



Kixx Ultra 4T
Scooter SL



Kixx Ultra 4T
Scooter SN



Kixx Ultra 4T SJ



Kixx Ultra 4T SL



Kixx Ultra 4T SN



Kixx Ultra 2T FB

Transmission
/Axle



Kixx ATF
DX-III/DX-VI/Multi



Kixx CVTF



Kixx DCTF



Kixx CVTF/ATF
Dual



Kixx Geartec
FF GL-4



Kixx Geartec
LSD GL-5



Kixx Geartec
TO-4



Kixx Gearsyn
GL-4/5



Kixx Geartec
GL-5

Specialties



Kixx PSF



Kixx THF



Kixx CX AF Coolant



Kixx CX AF
Coolant HD



Kixx RA Coolant



Kixx Brake Oil



Kixx Engine Clean



Kixx Oil Treatment

Hydraulic Fluid



Kixx RD BIO 46



Kixx Hydro
HVL



Kixx Hydro
HVI



Kixx Hydro
HVZ



Kixx Hydro
XZ



Kixx Hydro
AF



Kixx Hydro
HX



Kixx Hydro
XW



Kixx Hydro
R&O

Industrial Oil



Kixx Gear EP S WIND



Kixx Gear EP S



Kixx Gear EP



Kixx EP ROLL



Kixx Turbine



Kixx Turbine
R&O



Kixx Turbine GT

Industrial Oil



Kixx Chain BIO



Kixx Compressor
P/S



Kixx RF P 85



Kixx Spindle



Kixx Way Lube



Kixx Rockdrill



Kixx Therm



Kixx Trans I



Kixx Process

Grease



Kixx Grease Liplex



Kixx Grease Moly EP



Kixx Grease Therma



Kixx Grease EP
(0, 1, 2, 3)



Kixx Grease EP
(000, 00)



Kixx Grease
(2, 3)

Marine



Kixx Marine C



Kixx Marine S



Kixx Marine 10



KIXX MARINE 20



KIXX MARINE 30



Kixx Marine 40



Kixx Marine 50

Kixx

The perfect fit for your driving

01 Passenger Car

Kixx BIO1
Kixx HYBRID
Kixx PAO 1
Kixx PAO A3/B4
Kixx PAO C3
Kixx G1 SP
Kixx G1 Dexos1
Kixx G1 A3/B4
Kixx G1 SN PLUS
Kixx G SF
Kixx G SG
Kixx G SJ
Kixx G SL
Kixx D1 C3
Kixx D1 RV



Passenger Car

Fully Synthetic

Kixx BIO1

Sustainable,
fully synthetic engine oil made from 100% plant-based oil

- 0W-20 : API SP, ILSAC GF-6A



DESCRIPTION

Kixx BIO1 0W-20 is a sustainable, fully synthetic engine oil made from 100% plant-based oil and cutting-edge additives. A USDA (United States Department of Agriculture) Certified Biobased Product* and an API SP/ILSAC GF-6A approved engine oil, Kixx BIO1 is an optimal choice for consumers who are looking for a sustainable engine oil that will take their engine to the next level.

APPLICATIONS

- All gasoline fueled vehicles
- High performance cars equipped with T-GDI, GDI, DOHC, EFI and VVT

PERFORMANCE STANDARDS

- 0W-20 : API SP, ILSAC GF-6A

CUSTOMER BENEFITS

Sustainable Mobility

100% Plant-based Base Oil, Base oil made from 100% renewable feedstocks including soy, coconut, rapeseed and palm. A USDA (United States Department of Agriculture) Certified Biobased Product, approved to contain 86% biobased content.

Improved Fuel Economy

Uses the lubricating power of plants to deliver improved fuel economy that exceeds industry standards, with excellent friction reduction

Enhanced Wear Prevention

Improves durability by protecting engine parts from collision owing to improper operation timing caused by timing chain tension loss and wear

Advanced Engine Protection

Prevents engine damage and prolongs engine life with outstanding sludge control, LSPI protection and overall engine cleanliness

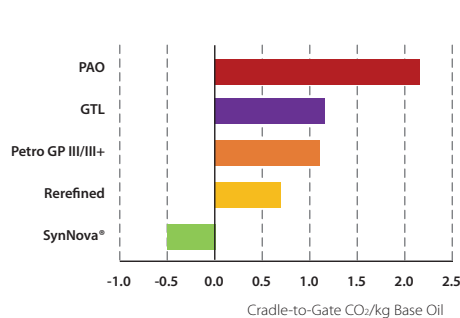
KEY PROPERTIES

SAE Grade	0W-20
Density, @15°C	0.833
Viscosity, mm ² /s @ 40°C	44.9
Viscosity, mm ² /s @ 100°C	8.6
Viscosity Index	175
Pour Point, °C	-46
Flash Point, °C	232

UNIQUE FEATURES

- Kixx BIO1 is made with SynNova Sustainable Synthetic Base Oil (SSBO) – manufactured in the USA to help engines meet carbon neutrality targets.
- The Cradle-to Gate* carbon emission of the base oil used for Kixx BIO1 was -0.51kg, indicating that it has significantly less carbon impact compared to other base oils used.

Cradle-to-Gate CO₂ Emissions of Base Oils
(kg CO₂/kg Base Oil)



* Cradle-to-Gate: The stage of a product's life cycle in which the product's carbon impact is assessed, from production and extraction of raw materials to the manufacturing of the finished product.

Fully Synthetic

Kixx BIO1

Sustainable,
fully synthetic engine oil made from 25% plant-based oil

- 5W-30 : API SP, ILSAC GF-6A



DESCRIPTION

Kixx BIO1 5W-30 is a sustainable, fully synthetic engine oil made from 25% plant-based oil and cutting-edge additives. A USDA (United States Department of Agriculture) Certified Biobased Product* and an API SP/ILSAC GF-6A approved engine oil, Kixx BIO1 is an optimal choice for consumers who are looking for a sustainable engine oil that will take their engine to the next level.

APPLICATIONS

- All gasoline fueled vehicles
- High performance cars equipped with T-GDI, GDI, DOHC, EFI and VVT

PERFORMANCE STANDARDS

- 5W-30 : API SP, ILSAC GF-6A

CUSTOMER BENEFITS

Sustainable Mobility

100% Plant-based Base Oil, Base oil made from 25% renewable feedstocks including soy, coconut, rapeseed and palm. A USDA (United States Department of Agriculture) Certified Biobased Product, approved to contain 26% biobased content.

Improved Fuel Economy

Uses the lubricating power of plants to deliver improved fuel economy that exceeds industry standards, with excellent friction reduction

Enhanced Wear Prevention

Improves durability by protecting engine parts from collision owing to improper operation timing caused by timing chain tension loss and wear

Advanced Engine Protection

Prevents engine damage and prolongs engine life with outstanding sludge control, LSPI protection and overall engine cleanliness

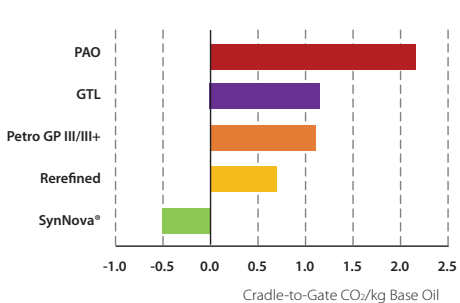
KEY PROPERTIES

SAE Grade	5W-30
Density, @15°C	0.848
Viscosity, mm ² /s @ 40°C	61.8
Viscosity, mm ² /s @ 100°C	10.4
Viscosity Index	157
Pour Point, °C	-43
Flash Point, °C	238

UNIQUE FEATURES

- Kixx BIO1 is made with SynNova Sustainable Synthetic Base Oil (SSBO) – manufactured in the USA to help engines meet carbon neutrality targets.
- The Cradle-to Gate* carbon emission of the base oil used for Kixx BIO1 was -0.51kg, indicating that it has significantly less carbon impact compared to other base oils used.

Cradle-to-Gate CO₂ Emissions of Base Oils
(kg CO₂/kg Base Oil)



* Cradle-to-Gate: The stage of a product's life cycle in which the product's carbon impact is assessed, from production and extraction of raw materials to the manufacturing of the finished product.

Kixx BIO 1

Sustainable, fully synthetic engine oil made from 100% plant-based oil



Fully Synthetic



Kixx HYBRID

Premium engine oil, the perfect fit for Hybrid Electric Vehicles

- 0W-16 : API SP-RC, ILSAC GF-6B Recommended
- 0W-20 : API SP-RC, ILSAC GF-6A
GM dexos1 Gen2 Recommended

DESCRIPTION

Kixx HYBRID is a premium performance, fully synthetic engine oil which is specially designed for Hybrid Electric Vehicles (HEV). Formulated from VHVI base oils and high performance additive systems, Kixx HYBRID provides complete engine oil performance, especially enhanced engine durability and fuel efficiency improvement. In addition, it is an eco-friendly product which minimizes CO2 emissions through fuel consumption reduction.

APPLICATIONS

- Hybrid Electric Vehicles(HEV) equipped with gasoline engines
- For Kixx Hybrid 0W-16, use only for vehicles that the manufacturer recommends 0W-16 viscosity grade

PERFORMANCE STANDARDS

- 0W-16: API SP-RC, ILSAC GF-6B Recommended
- 0W-20: API SP-RC, ILSAC GF-6A, GM dexos1 Gen2 Recommended

CUSTOMER BENEFITS

Excellent Engine Protection

High performance anti-wear additive and leading edge viscosity modifier deliver maximum wear protection and excellent shear stability. Superior low temperature properties provide excellent lubrication and engine protection for HEV that needs to go through frequent engine start up during mode transition.

Maximized Fuel Efficiency

Premium synthetic base oils and advanced friction modifiers provide reduction of friction, ensuring improved engine performance and maximized fuel efficiency. Specially tailored viscosity characteristics(low viscosity grade) improve oil flow and reduce friction resistance, consequently providing higher engine efficiency.

Extended Oil Drainage Interval

Excellent oxidation stability and shear stability extend the engine oil drain interval.

KEY PROPERTIES

SAE Viscosity	0W-16	0W-20
Density, kg/L @15°C	0.85	0.85
Kinematic Viscosity, mm ² /s @ 40°C	30.6	31.6
Kinematic Viscosity, mm ² /s @ 100°C	7.0	7.5
Viscosity Index	200	221
Pour Point, °C	-44	-44
Flash Point, °C	219	219

Fully Synthetic

Kixx PAO 1

Premium engine oil made 100% from PAO with cutting edge technology

- 0W-30 : ACEA C2/C3, API SP, MB 229.31/51/52, BMW LL-04
- 0W-40 : ACEA C3, API SP, MB 229.31/51/52, BMW LL-04 Recommended



DESCRIPTION

Kixx PAO 1 is a premium performance, multi-grade motor oil formulated from selected PAO (Poly Alpha Olefin) and race-proven additive technology. It can be used in passenger car and light truck gasoline engines and passenger car diesel engines under all operating conditions. It is optimized to provide complete engine protection plus ultimate performance.

APPLICATIONS

- Naturally aspirated Gasoline engines, LPG and Diesel engines in passenger cars
- Light truck gasoline and diesel engines
- Gasoline and diesel powered RV and SUV
- CRDI engines in passenger cars
- Passenger cars with high speed, four-stroke, turbocharged and EGR, DPF.
- Four-stroke gasoline engines in motorcycles and portable power equipment where the manufacturer recommends conventional passenger car motor oils

PERFORMANCE STANDARDS

- 0W-30 : ACEA C2/C3, API SP, MB 229.31/51/52, BMW LL-04
- 0W-40 : ACEA C3, API SP, MB 229.31/51/52, BMW LL-04 MB 229.31/51, VW 502.00/505.00 Recommended

CUSTOMER BENEFITS

Maximizes engine life

The wider temperature range capability of the synthetic base fluid ensures correct oil viscosity which reduces friction at start-up, and provides maximum lubrication during high temperature operation. The effective anti-wear additive system minimizes wear in even the most sophisticated valve train mechanisms, including those with variable valve timing.

Maximizes power and performance

Metallic detergent and ashless dispersant additive system ensures maximum power and performance by providing superior control of the ring belt and the piston skirt deposits, even under the most severe operating conditions. Special friction modifiers assist in reducing friction resulting in maximum fuel economy.

Low oil consumption

Synthetic, highly shear-stable formulation provides superior control of oil flow through the ring belt area by maintaining oil viscosity, and reduces oil evaporation at the elevated ring zone temperatures experienced under all operating conditions.

Longer equipment life

Special anti-wear additive package reduces wear by protecting surfaces when load causes breakdown of the lubricant film.

Lower impact emissions

Highly advanced additive technology delivers reduction in harmful exhaust emissions. This advanced technology performance, enhanced by low phosphorus and sulfur formulation (low SAPS) reduces ash formation and delivers a significant increase in DPF service life.

KEY PROPERTIES

SAE Grade	0W-30	0W-40
Density, kg/L @15°C	0.846	0.848
Viscosity, mm ² /s @ 40°C	62.9	84.8
Viscosity, mm ² /s @ 100°C	11.2	14.9
Viscosity Index	174	186
Pour Point °C	-54	-51
Flash Point °C	232	232



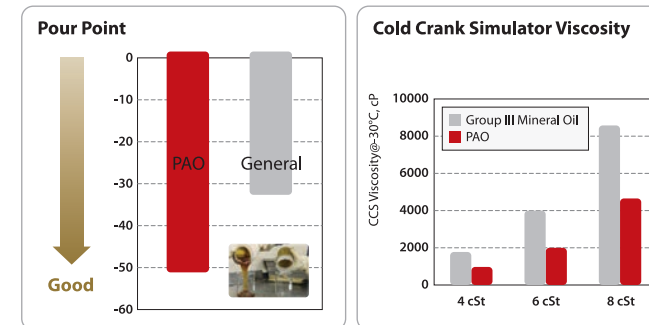
UNIQUE FEATURES

PAO (Poly Alpha Olefin)

PAOs, synthetic base fluids manufactured by carefully controlled chemical reaction of alphaolefin, have extreme stability and high performance in cold property and robustness, mainly used for the most premium lubricant products.

Cold Property

With their excellent cold property, PAOs can be used in extremely cold ambient temperature without oil change

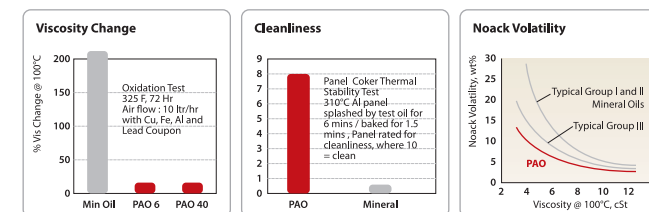


Pour point of PAOs is much lower than general mineral oil, which means better fluidity in low

Low temperature viscosity of PAO is much lower than mineral oil, which enable excellent

Robustness

PAOs have excellent anti-oxidation stability and low volatility, which allows the oil to maintain its original properties longer and significantly reduced sludge extending the oil drain interval.



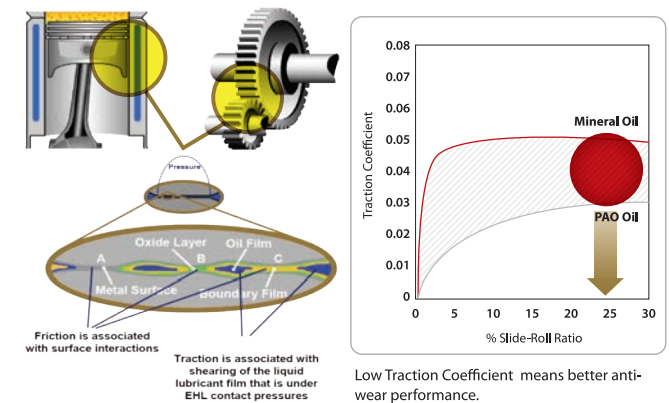
Viscosity increased at high temperature is significantly less

Cleanliness in high temperature is much higher than others.

Low volatility makes oil to be used in longer time.

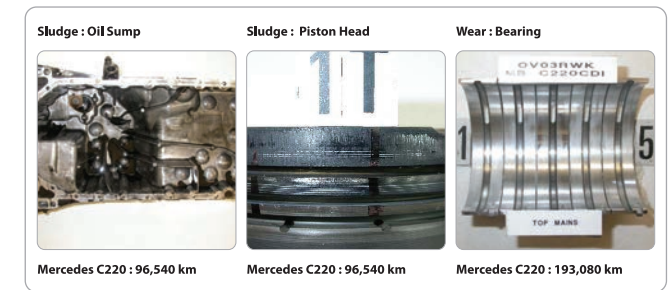
Anti-Wear

PAOs have excellent anti-wear performance in extreme pressurized friction thanks to their solid molecular structure



Field Test

Field test results shows that Kixx PAO products, formulated with premium additives approved from API, ACEA and OEM recent specification, have excellent performance in low sludge and anti-wear characteristics



Fully Synthetic

Kixx PAO A3/B4

Premium gasoline engine oil providing a first-class driving experience

ACEA A3/B4, API SN, MB 229.3/5, VW 502.00/505.00, BMW LL-01, RN 0710 Recommended



DESCRIPTION

Kixx PAO A3/B4 is a premium performance, multi-grade motor oil formulated from PAO and VHVI synthetic base fluids and race-proven additive technology for use in passenger car gasoline engines.

APPLICATIONS

- Gasoline in passenger cars
- Passenger cars where the manufacturers recommend ACEA A3/B4 spec oils
- Portable power equipment where the manufacturer recommends conventional passenger car motor oils

PERFORMANCE STANDARDS

- ACEA A3/B4, API SN
- MB 229.3/5, VW 502.00/505.00, BMW LL-01, RN 0710 Recommended

CUSTOMER BENEFITS

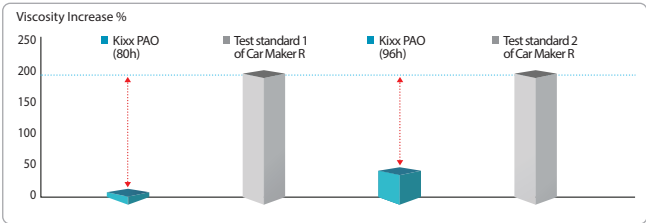
- High performance fully synthetic engine oil made from PAO and VHVI base oil
- Meets the latest ACEA specifications A3/B4 and exceeds many global car OEM requirements
- Provides longer oil drain interval and extends oil's life by minimizing viscosity change
- Improves engine durability by reducing sludge formation while maintaining piston cleanliness.

KEY PROPERTIES

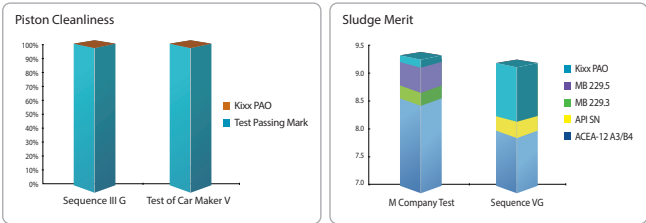
SAE Grade	5W-30	5W-40
Density, kg/L @15°C	0.855	0.853
Viscosity, mm²/s @ 40°C	71.1	87.5
Viscosity, mm²/s @ 100°C	12.2	14.5
Viscosity Index	171	173
Pour Point °C	-39	-37
Flash Point °C	226	220

UNIQUE FEATURES

- Result of Anti-Oxidation Stability test



- Result of Cleanliness test for engine pistons from car maker V
- Result of Sludge Control test



Fully Synthetic

Kixx PAO C3

Premium diesel engine oil providing a first-class driving experience

- 5W-30 : ACEA C2/C3, API SP, MB 229.31/51/52, BMW LL-04
- 5W-40 : ACEA C3, API SP, MB 229.31/51/52, BMW LL-04 Recommended



DESCRIPTION

Kixx PAO C3 is a fully synthetic engine oil formulated from PAO-added VHVI base oil using high performance additive technology. It meets the requirements of current advanced standards of API SP and ACEA C3. It is also highly recommended for diesel passenger cars with DPF. It is engineered to provide outstanding engine protection, ensuring longer engine life.

APPLICATIONS

- Diesel engines equipped with DPF in passenger cars
- Passenger cars where the manufacturers recommend ACEA C3 spec oils

PERFORMANCE STANDARDS

- 5W-30 : ACEA C2/C3, API SP, MB 229.31/51/52, BMW LL-04
- 5W-40 : ACEA C3, API SP, MB 229.31/51/52, BMW LL-04 Recommended

CUSTOMER BENEFITS

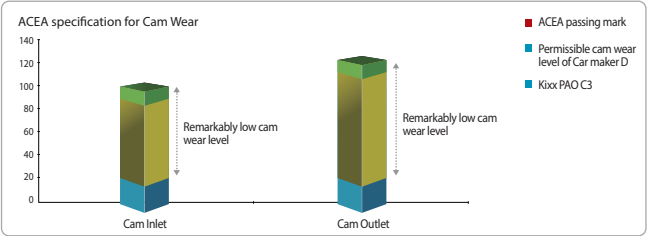
- High performance fully synthetic engine oil made from PAO and VHVI base oil
- Meets the latest ACEA C3 specification and exceeds global car OEM requirements
- Prevents engine's camshaft wear
- Prolongs engine's life with exceptional anti-oxidation stability

KEY PROPERTIES

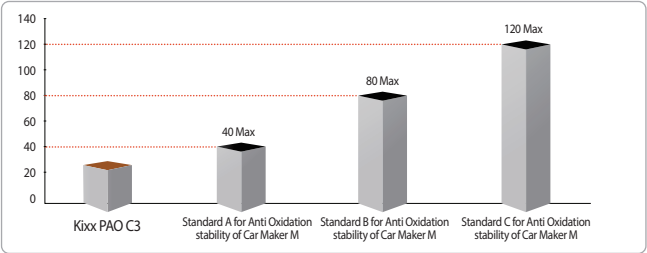
SAE Grade	5W-30	5W-40
Density, kg/L @15°C	0.851	0.856
Viscosity, mm²/s @ 40°C	63.6	84.8
Viscosity, mm²/s @ 100°C	11.6	14.4
Viscosity Index	180	177
Pour Point °C	-45	-45
Flash Point °C	232	232

UNIQUE FEATURES

- Result of Cam Wear test



- Result of Anti-Oxidation Stability test



Fully Synthetic

Kixx G1 SP

High grade gasoline engine oil providing excellent protection

- 0W-16 : API SP-RC, ILSAC GF-6B
- 0W-20 : API SP-RC, ILSAC GF-6A
- 0W-30 : API SP



DESCRIPTION

Kixx G1 is formulated from VHVI base oils, high performance additive systems and leading edge viscosity index improver, which meet the requirement of current advanced top-tier engine oil grade of API SP. It is optimized to provide complete engine oil performance, especially enhanced durability and fuel efficiency improvement, through wear protection and friction reduction. In addition, it also includes Timing Chain Wear protection and LSPI prevention performances, which are essential for today's modern vehicles.

APPLICATIONS

- All gasoline fueled vehicles
- High performance cars equipped with T-GDI, GDI, DOHC, EFI and VVT
- Four-stroke gasoline engines in motorcycles (except for motorcycles with wet clutch gearbox)
- Sports vehicles

PERFORMANCE STANDARDS

- 0W-16 : API SP-RC, ILSAC GF-6B
- 0W-20 : API SP-RC, ILSAC GF-6A
- 0W-30 : API SP

CUSTOMER BENEFITS

Timing Chain Wear Protection

High-quality additives effectively protect timing chain against wear that may cause engine power loss and more fuel consumption.

UNIQUE FEATURES

Kixx G1 SP consists of VHVI base oils and premium additives meeting the requirements of API SP. It provides excellent anti-wear performance and oxidation stability performance under severe operating conditions.

LSPI Prevention

Advanced additives technology efficiently suppresses LSPI phenomena that occasionally occur in combustion chambers of T-GDI engines.

Enhanced Fuel Efficiency

Specifically tailored viscosity characteristics and effective friction modifier help to minimize internal engine friction losses and improve fuel efficiency.

Superior Low Temperature Performance

Superior low temperature properties with proven metal-organic anti-wear additives provide easy start-up of engines at extremely low temperature and excellent wear control in even the most sophisticated valve train mechanisms, including those with variable valve timing.

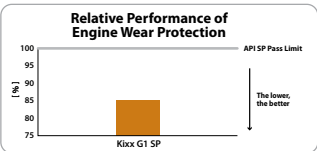
Saves on maintenance costs

High thermal stability and excellent oxidation resistance provides outstanding protection against in-service oil degradation that contributes to filter blocking and sludge formation in the oil galleries, crankcase and engine head.

KEY PROPERTIES

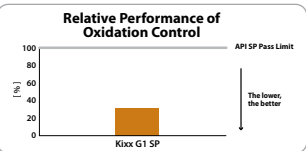
	Fully Synthetic	Fully Synthetic	Fully Synthetic
SAE Viscosity	0W-16	0W-20	0W-30
Density, kg/L @15°C	0.85	0.85	0.84
Kinematic Viscosity, mm ² /s @ 40°C	37.4	45.0	54.2
Kinematic Viscosity, mm ² /s @ 100°C	7.2	8.4	10.0
Viscosity Index	158	167	173
Pour Point, °C	-43	-43	-44
Flash Point, °C	230	226	232

Wear Protection



Kixx G1 SP offers 15% better engine wear protection than API SP pass limit, which means Kixx G1 SP can improve durability of engine elements under severe operating conditions.

Oxidation Stability



Kixx G1 SP offers excellent oxidation performance compared to API SP Pass Limit, which means Kixx G1 SP can resist oil thickening, allowing better engine protection and maintaining engine performance.

Fully Synthetic

Kixx G1 SP

High grade gasoline engine oil providing excellent protection

- 5W-20 / 5W-30 / 10W-30: API SP-RC, ILSAC GF-6A
- 5W-40 / 5W-50 / 10W-40 / 20W-50 : API SP



DESCRIPTION

Kixx G1 is formulated from VHVI base oils, high performance additive systems and leading edge viscosity index improver, which meet the requirement of current advanced top-tier engine oil grade of API SP. It is optimized to provide complete engine oil performance, especially enhanced durability and fuel efficiency improvement, through wear protection and friction reduction. In addition, it also includes Timing Chain Wear protection and LSPI prevention performances, which are essential for today's modern vehicles.

APPLICATIONS

- All gasoline fueled vehicles
- High performance cars equipped with T-GDI, GDI, DOHC, EFI and VVT
- Four-stroke gasoline engines in motorcycles (except for motorcycles with wet clutch gearbox)
- Sports vehicles

PERFORMANCE STANDARDS

- 5W-20 / 5W-30 / 10W-30 : API SP-RC, ILSAC GF-6A
- 5W-40 / 5W-50 / 10W-40 / 20W-50 : API SP

CUSTOMER BENEFITS

Timing Chain Wear Protection

High-quality additives effectively protect timing chain against wear that may cause engine power loss and more fuel consumption.

LSPI Prevention

Advanced additives technology efficiently suppresses LSPI phenomena that occasionally occur in combustion chambers of T-GDI engines.

Improved Engine Power and Maintainability

A reduction in the piston blow-by gas coupled with the oil's anti-sludge characteristics helps to maintain engine power and cleanliness, which in turn extends the engine's service life.

Enhanced Fuel Economy

The wide temperature range capability of VHVI and HVI base oils ensures correct oil viscosity which reduces friction at start-up, and provides maximum lubrication under high temperature operating condition.

Wear Resistance under Wide Temperature Condition

Advanced non-conventional base oil formula coupled with high performance additive systems and leading edge viscosity index improver delivers excellent shear stability and maximum wear protection under high speed, and high temperature driving conditions as well as a rapid, highly effective oil film generation. It also minimizes wear of key engine components during engine start under very low temperature.

Extended Oil Drainage Interval

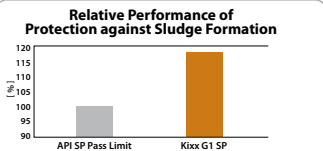
Excellent oxidation resistance and low volatility will extend oil drainage interval.

KEY PROPERTIES

	Fully Synthetic	Fully Synthetic	Fully Synthetic	Fully Synthetic	Semi Synthetic	Semi Synthetic	Semi Synthetic
SAE Viscosity	5W-20	5W-30	5W-40	5W-50	10W-30	10W-40	20W-50
Density, kg/L @15°C	0.85	0.85	0.85	0.85	0.86	0.86	0.87
Kinematic Viscosity, mm ² /s @ 40°C	48.1	62.3	84.0	118.4	68.7	98.9	156.0
Kinematic Viscosity, mm ² /s @ 100°C	8.2	10.4	13.8	18.6	10.9	14.9	17.9
Viscosity Index	144	157	169	176	148	158	127
Pour Point, °C	-39	-39	-40	-39	-40	-39	-26
Flash Point, COC, °C	240	238	228	226	242	240	274

* Kixx G1 20W-50 is also applicable to CNG/LPG engines

Sludge Protection



Kixx G1 SP shows 18% better sludge protection compared to API SP pass limit, which means Kixx G1 SP can provide excellent protection against sludge formation, allowing for stable operation and improve engine durability.

Fully Synthetic

Kixx G1 Dexos1

High grade gasoline engine oil, the perfect fit for GM Dexos1™ Gen2

API SN PLUS-RC, ILSAC GF-5, GM Dexos1™ Gen2



DESCRIPTION

Kixx G1 Dexos 1 is formulated from VHVI base oils, high performance additive systems and leading edge viscosity index improver. It meets the requirements of current advanced top-tier engine oil grades, API SN PLUS.

It is optimized to provide complete engine oil performance, especially for fuel efficiency, through friction reduction and enhanced durability. In addition, it also minimizes abrupt damage of key engine components (such as piston rings, connecting rods and so on) by prevention of LSPI (Low Speed Pre-Ignition) phenomena in T-GDI engines.

APPLICATIONS

- All gasoline fueled vehicles
- High performance cars equipped with T-GDI, GDI, DOHC, EFI and VVT
- Four-stroke gasoline engines in motorcycles .
- Sports vehicles

PERFORMANCE STANDARDS

- API SN PLUS-RC, ILSAC GF-5, GM Dexos1™ Gen2

CUSTOMER BENEFITS

Enhanced Fuel Economy

The wide temperature range capability of the VHVI base oils ensures correct oil viscosity to reduce friction at start-up, and to provide maximum lubricity under high temperature operating condition.

Improved Engine Power and Maintainability

A reduction in the piston blow-by gas coupled with the oil's anti-sludge characteristics helps to maintain engine power and cleanliness, which in turn extends the engine's service life.

Extended Oil Drainage Interval

Excellent oxidation resistance and low volatility will extend oil drainage interval.

Stronger Wear Protection

Outstanding protection of valve train by maintaining lubricating films under high temperature will extend engine life.

LSPI Prevention

Advanced additives technology efficiently suppresses LSPI phenomena that occasionally occur in combustion chambers of T-GDI engines.

KEY PROPERTIES

SAE Viscosity	0W-20	5W-30
Density, kg/L @15°C	0.846	0.851
Kinematic Viscosity, mm²/s @ 40°C	47.2	65.6
Kinematic Viscosity, mm²/s @ 100°C	8.5	10.9
Viscosity Index	159	158
Pour Point, °C	-46	-42
Flash Point, °C	226	228

Fully Synthetic

Kixx G1 A3/B4

High grade gasoline engine oil, the perfect fit for ACEA A3/B4 specification

ACEA A3/B4, API SN
VW 502.00/505.00, BMW LL-01,
RN 0710, MB 229.3 RECOMMENDED



DESCRIPTION

Kixx G1 A3/B4 is a premium performance, multi-grade motor oil formulated with selected synthetic base oil and race-proven additive technology. It can be used in normal SAPS passenger car(gasoline engines and diesel engines without DPF) under all operating conditions. This product particulaly meets the latest ACEA A3/B4 specification. It is optimized to provide long drain interval as well as good performance.

APPLICATIONS

- Naturally aspirated and turbocharged gasoline engines in passenger cars.
- Light truck gasoline engines.
- Gas-fuelled (natural gas and LPG) spark ignition engines where conventional passenger car motor oils are recommended
- Four-stroke gasoline engines in motorcycles and portable power equipment where the manufacturer recommends conventional passenger car motor oils.

PERFORMANCE STANDARDS

- ACEA A3/B4, API SN
- VW 502.00/505.00, BMW LL-01, RN 0710, MB 229.3 Recommended

CUSTOMER BENEFITS

Extended Oil Drainage Interval

Excellent oxidation stability provides very low viscosity increase helping customers to save costs related with the frequent Oil change.

Maximum engine life

The excellent detergent system delivers excellent piston cleanliness and outstanding sludge control. It will provide the needed engine protection and extend engine service life

Superior Low Temperature Performance

Superior low temperature properties with proven metal-organic anti-wear additives provide easy start-up of engine at extremely low temperature and excellent wear control in even the most sophisticated valve train mechanisms, including those with variable valve timing

KEY PROPERTIES

SAE Viscosity	5W-30	5W-40	10W-40
Density, kg/L @15°C	0.856	0.855	0.859
Kinematic Viscosity, mm²/s @ 40°C	67.5	89.05	92.3
Kinematic Viscosity, mm²/s @ 100°C	11.6	14.52	14.3
Viscosity Index	168	170	160
Pour Point, °C	-39	-45	-39
Flash Point, °C	226	220	238

Fully Synthetic

Kixx G1 SN

High grade gasoline engine oil providing excellent protection

- 0W-20 : API SN PLUS-RC, ILSAC GF-5
- 0W-30 : API SN PLUS



DESCRIPTION

Kixx G1 is formulated from VHVI base oils, high performance additive systems and leading edge viscosity index improver, which meet the requirement of current advanced top-tier engine oil grade of API SN PLUS.

It is optimized to provide complete engine oil performance, especially fuel efficiency, through friction reduction and enhanced durability. In addition, it also minimizes abrupt damage of key engine components (such as piston rings, connecting rods and so on) by prevention of LSPI (Low Speed Pre-Ignition) phenomena in T-GDI engines.

APPLICATIONS

- Naturally aspirated and T-GDI, GDI engines in passenger cars including SUV
- Gas-fuelled (natural gas and LPG) spark ignition engines where conventional passenger car motor oils are recommended
- Four-stroke gasoline engines in motorcycles and portable power equipment where the manufacturer recommends conventional passenger car motor oils

PERFORMANCE STANDARDS

- 0W-20 : API SN PLUS-RC, ILSAC GF-5
- 0W-30 : API SN PLUS

CUSTOMER BENEFITS

Superior Low Temperature Performance

UNIQUE FEATURES

Kixx G1 consists of VHVI base oils and premium additives meeting the requirements of API SN PLUS specification. It provides excellent anti-wear performance and fuel efficiency under severe operating conditions.

Superior low temperature properties with proven metal-organic anti-wear additives provide easy start-up of engines at extremely low temperature and excellent wear control in even the most sophisticated valve train mechanisms, including those with variable valve timing.

Fuel Efficiency

Specifically tailored viscosity characteristics and effective friction modifier minimize internal engine friction loss which reduces fuel consumption.

Saves on maintenance costs

High thermal stability and excellent oxidation resistance provides outstanding protection against in-service oil degradation that contributes to filter blocking and sludge formation in the oil galleries, crankcase and rocker arm cover.

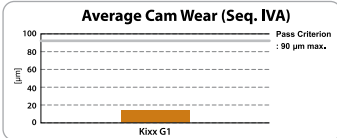
LSPI Prevention

Advanced additives technology efficiently suppresses LSPI phenomena that occasionally occur in combustion chambers of T-GDI engines.

KEY PROPERTIES

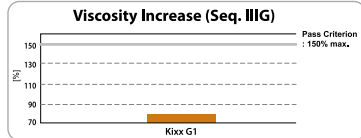
SAE Viscosity	0W-20	0W-30
Density, kg/L @15°C	0.85	0.84
Kinematic Viscosity, mm ² /s @ 40°C	45.4	57.6
Kinematic Viscosity, mm ² /s @ 100°C	8.4	10.4
Viscosity Index	165	171
Pour Point, °C	-46	-46
Flash Point, °C	222	230

Wear Protection



Average value of cam wear after the Sequence IVA test is much lower than pass criterion of API SN PLUS specification. The test result means that Kixx G1 improves durability of engine elements under severe operating conditions.

Anti-Degradation



Viscosity increase of Kixx G1 after the Sequence IIIG test is much lower than pass criterion of API SN PLUS specification. In general, oil viscosity increases with the increase in level of oxidation. The test result means that Kixx G1 can show good anti-wear performance and fuel efficiency by the suppression of its degradation based on excellent anti-oxidation stability.

Semi Synthetic

Kixx G SG

Gasoline engine oil, the perfect fit for smart consumers

API SG



DESCRIPTION

Kixx G SG is a high quality engine oil designed to meet the requirements of passenger car and light truck engines where API SG performance is required. It is a multi-grade gasoline engine oil formulated from selected base oils.

APPLICATIONS

- Gasoline engines (four-stroke).
- Gasoline engines equipped with emissions control equipment.
- Industrial or marine applications using passenger car type gasoline engines

PERFORMANCE STANDARDS

- API SG

CUSTOMER BENEFITS

Enhanced Engine Protection

Proven metallo-organic anti-wear additive system forms a protective layer on contact surfaces to control wear. Effective corrosion inhibitors protect against rust and corrosion.

Trouble-free operation

Special combination of detergent and dispersant additives controls piston and ring deposits that can adversely effect power and performance.

Long periods between overhauls

Good thermal stability and oxidation resistance combats in-service oil degradation that contributes to filter blocking and sludge formation.

KEY PROPERTIES

SAE Viscosity	15W-40	20W-50
Density, kg/L @15°C	0.868	0.871
Kinematic Viscosity, mm ² /s @ 40°C	106.5	163.9
Kinematic Viscosity, mm ² /s @ 100°C	14.2	18.8
Viscosity Index	135	130
Pour Point, °C	-45	-39
Flash Point, COC, °C	250	255

Semi Synthetic

Kixx G SJ

Gasoline engine oil,
the perfect fit for smart consumers

API SJ



DESCRIPTION

Kixx G SJ is a high quality engine oil designed to meet the requirements of passenger car and light truck engines where API SJ performance is required.

APPLICATIONS

- Gasoline engines (four-stroke)
- Gasoline engines equipped with emissions control equipment
- Industrial or marine applications using passenger car type gasoline engines
- Diesel Engines (high speed, four-stroke, naturally aspirated)

PERFORMANCE STANDARDS

- API SJ

CUSTOMER BENEFITS

Enhanced Engine Protection

Proven metallo-organic anti-wear additive system forms a protective layer on contact surfaces to control wear. Effective corrosion inhibitors protect against rust and corrosion.

Trouble-free operation

Special combination of detergent and dispersant additives controls piston and ring deposits that can adversely effect power and performance.

Long periods between overhauls

Good thermal stability and oxidation resistance combats in-service oil degradation that contributes to filter blocking and sludge formation.

KEY PROPERTIES

SAE Viscosity	5W-30	10W-30	10W-40
Density, kg/L @15°C	0.852	0.863	0.866
Kinematic Viscosity, mm²/s @ 40°C	59.5	66.8	104.8
Kinematic Viscosity, mm²/s @ 100°C	10.2	10.1	14.8
Viscosity Index	160	140	147
Pour Point, °C	-45	-42	-42
Flash Point, COC, °C	230	232	234

Semi Synthetic

Kixx G SL

Gasoline engine oil,
the perfect fit for smart consumers

API SL



DESCRIPTION

Kixx G SL is formulated with synthetic technology base oil and high performance additives. It is optimized to provide outstanding protection and lubricity in all passenger car and light truck gasoline engines.

APPLICATIONS

- All passenger car and light truck four-stroke gasoline engines, both naturally aspirated and turbocharged, including those featuring the most recent valve train and emission
- Suitable for small four-stroke gasoline engines in motorcycle and portable power equipment where engine manufacturers allow the use of conventional passenger car motor oils and do not require a purpose-design lubricant.

PERFORMANCE STANDARDS

- API SL

CUSTOMER BENEFITS

- Maximizes engine life through superior wear and deposit control under all operating conditions.
- Provides significant fuel savings by reducing frictional losses.
- Protects against start-up wear in cold conditions through excellent low-temperature fluidity.
- Maintains power and economy by minimizing wear in even the most sophisticated valve train mechanisms, including those with variable valve timing.

KEY PROPERTIES

SAE Viscosity	5W-30	10W-30	10W-40	15W-40
Density, kg/L @15°C	0.849	0.863	0.860	0.864
Kinematic Viscosity, mm²/s @ 40°C	56.8	65.6	99.5	109.4
Kinematic Viscosity, mm²/s @ 100°C	10.0	10.0	15.1	15.2
Viscosity Index	165	138	158	145
Pour Point, °C	-45	-45	-42	-39
Flash Point, °C	224	236	246	236

Fully Synthetic

Kixx D1 C3

High grade diesel engine oil, the perfect fit for emission reduction systems & high durability

- 5W-30:API SP, ACEA C2/C3, MB 229.31
- 5W-40:API SP, ACEA C3, MB 229.31



DESCRIPTION

Kixx D1 C3 is a fully synthetic Low SAPS engine oil engineered to comply with the latest ACEA and API international standard, provides unsurpassed lubrication with a wide range of temperature for today's engines operating in severe conditions.

APPLICATIONS

- Diesel engines equipped with DPF, SCR and other emission after-treatment systems where an ACEA C3 engine oil is required.
- Light duty diesel engines and gasoline direct injection engines

PERFORMANCE STANDARDS

- 5W-30:API SP, ACEA C2/C3, MB 229.31
- 5W-40:API SP, ACEA C3, MB 229.31

CUSTOMER BENEFITS

- Maximize engine life based on outstanding wear protection
- Extends the service life of emission after treatment systems by prevention of clogging in DPFs and TWCs(Three-Way Catalytic Converters)
- Excellent low temperature fluidity for quick and easy start-ups in cold weather
- Keeps engine clean through outstanding resistance to high temperature varnish and low temperature sludge deposit formation
- Excellent oil consumption control

KEY PROPERTIES

SAE Viscosity	5W-30	5W-40
Density, kg/L @15°C	0.85	0.85
Kinematic Viscosity, mm²/s @ 40°C	71.0	91.2
Kinematic Viscosity, mm²/s @ 100°C	11.8	14.8
Viscosity Index	163	169
Pour Point, °C	-41	-44
Flash Point, °C	228	232

Fully Synthetic

Kixx D1 RV

High grade diesel engine oil providing excellent protection

ACEA C3



DESCRIPTION

Kixx D1 RV is formulated with the latest VHVI synthetic base oil combined with additive technology that produces minimum sulfated ash, phosphorous and sulfur contents to meet the requirement of low SAPS oil. Kixx D1 RV is suitable for passenger car mounted with gasoline or diesel engines, as well as SUV and RV. Kixx D1 RV maintains engine durability while helps in extending the life of DPF and helps in increasing DPF performance by using additive of minimum sulfated ash contents. Kixx D1 RV also helps extending the life of emission after-treatment device such as SCR by introducing low phosphorous and sulfur content additive technology.

APPLICATIONS

- SUV and RV equipped with DPF, SCR and other emission after-treatment system where an ACEA C3 performance engine oil is required.
- Light duty diesel engines and gasoline direct injection engines.
- Passenger cars where the manufacturers recommend API SN spec oils.
- Vehicles that requires MB, BMW specification performance.

PERFORMANCE STANDARDS

- 5W-30 : ACEA C3, API SN, MB 229.31/51/52, BMW LL-04, VW 505.00/01, GM dexos 2 Recommended
- 5W-40 : ACEA C3, API SN, MB 229.31/51, BMW LL-04, VW 505.00/01, GM dexos2 Recommended

KEY PROPERTIES

SAE Grade	5W-30	5W-40
Density, kg/L @15°C	0.848	0.8543
Kinematic Viscosity, mm²/s @ 40°C	69.2	89.5
Kinematic Viscosity, mm²/s @ 100°C	12.3	14.9
Viscosity Index	178	179
Pour Point °C	-42	-42
Flash Point °C	228	238

Kixx

The perfect fit for your driving

02 Commercial Vehicle

Kixx HDX PAO
Kixx HDX Euro
Kixx HDX CK-4
Kixx HDX DH-2
Kixx HD CF
Kixx HD CF-4
Kixx HD CG-4
Kixx HD CH-4
Kixx HD LS CF
Kixx HD1 CI-4
Kixx HD CNG



Commercial

Fully Synthetic

Kixx HDX PAO

Premium diesel engine oil for heavy duty vehicles, producing ideal performances

API CJ-4/SN, ACEA E9



DESCRIPTION

Kixx HDX PAO is a super premium performance, synthetic heavy-duty diesel engine oil specifically designed for new low emission engine with ULSD. It is formulated using the most advantaged additive technology, providing outstanding engine protection for EURO VI emissions standard for on highway diesel trucks. It meets the latest stringent EGR soot control and particulate requirements. It is also recommended for a wide range of diesel and gasoline engines requiring API CJ-4, CI-4 PLUS, CI-4, SN, ACEA E9 performance lubricants operating under the most severe service conditions.

APPLICATIONS

- Kixx HDX PAO 15W-40 is a mixed fleets motor oil recommended for all naturally aspirated and turbocharged four-stroke diesel engines and four-stroke gasoline engines in which the API CJ-4 grade is recommended.
- It is developed in response to EURO VI emissions standard
- It is formulated for superior performance with ULSD but also with both normal and low sulfur diesel fuels
- It is recommended for use in off-highway and construction applications which require an API CJ-4 Service Category.
- Meets major diesel engine manufacturers requirements
- Mixed fleets of both diesel and gasoline engines
- Mixed fleets including both old and new equipment
- Commercial road transport, including the latest electronic controlled engines.
- Stop-and-go vehicles in high soot loading service such as buses and waste collection trucks

PERFORMANCE STANDARDS

- API CJ-4/SN, ACEA E9
- MB 228.31, Cummins CES 20081, Volvo VDS-4, MAN 3275, Mack EO-O Premium Plus, Detroit Diesel DDC93K218, Renault VI RLD-3, CAT ECF-3, ECF-2, ECF-1-a Recommended

CUSTOMER BENEFITS

Enhanced Emission Control System Life

Extends DPF life for less frequent downtime and cleaning leading to decreased number of maintenance.

Minimizes Inventory costs

Backwards compatible with all previous API Oil Service Categories and engine models. One oil for all services, in four-stroke gasoline and all naturally aspirated turbocharged and modern electronically controlled/low emission diesel engines. One oil that allows users with a wide mix of engine brands to enjoy simplified inventory and dispensing systems that help save money, space, handling time, and avoid product misapplication.

Reduced Maintenance and Operating costs

Excellent soot dispersion and wear control. Cylinders, pistons, rings, and injectors are well protected against wear and corrosion, lasting longer in service and requiring less maintenance. Contributes to maximum vehicle utilization and minimum downtime.

Extends engine life to overhaul

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

KEY PROPERTIES

SAE Grade	15W-40
Density, kg/L @15°C	0.871
Kinematic Viscosity, mm²/s @ 40°C	120.8
Kinematic Viscosity, mm²/s @ 100°C	16.23
Viscosity Index	143
Pour Point °C	-41
Flash Point °C	240
Base Number,mg KOH/g	8.80

Semi Synthetic

Kixx HDX Euro

Top grade diesel engine oil for heavy duty vehicles, the perfect fit for EURO 6 standards

API CJ-4, CI-4 PLUS, CI-4, SN, ACEA E9



DESCRIPTION

Kixx HDX Euro is a premium performance, multigrade, heavy-duty diesel engine oil specifically designed for new low emission engine with ULSD. It is formulated using the most advantaged additive technology available to provide outstanding engine protection for EURO VI emissions standard for on highway diesel trucks. It meets the latest stringent EGR soot control and particulate requirements. It is also recommended a wide range of diesel and gasoline engines requiring API CJ-4, CI-4 PLUS, CI-4, SN, ACEA E9 performance lubricants operating under the most severe service conditions.

APPLICATIONS

- Kixx HDX Euro is a mixed fleets motor oil recommended for all naturally aspirated and turbocharged four-stroke diesel engines and four-stroke gasoline engines in which the API CJ-4 grade is recommended.
- It is developed in response to EURO VI emissions standard
- It is formulated for superior performance with ULSD but also with both normal and low sulfur diesel fuels
- It is recommended for use in off-highway and construction applications witch require an API CJ-4 Service Category.
- Meets major diesel engine manufacturers requirements.
- Mixed fleets of both diesel and gasoline engines
- Mixed fleets including both old and new equipment
- Commercial road transport, including the latest electronic controlled engines.
- Stop-and-go vehicles in high soot loading service such as buses and waste collection trucks

PERFORMANCE STANDARDS

- API CJ-4, CI-4 PLUS, CI-4, SN, ACEA E9
- 10W-30: Volvo VDS-4, Mack EO-O Premium Plus, Renault VI RLD-3, Cummins CES 20081 Approved
- MB 228.31, Cat ECF-3, ECF-2, ECF-1-a, MAN 3275, DDC 93K218 Recommended
- 15W-40: Volvo VDS-4, Mack EO-O Premium Plus, Renault VI RLD-3, Cummins CES 20081, DDC 93K218 Approved

MB 228.31, Cat ECF-3, ECF-2, ECF-1-a, MAN 3275 Recommended

CUSTOMER BENEFITS

Enhanced emission control system life

Extends DPF life for less frequent downtime and cleaning, thus decreasing your maintenance.

Minimizes Inventory costs

Backwards compatible with all previous API Oil Service Categories and engine models. One oil for all services, in four-stroke gasoline and all naturally aspirated turbocharged and modern electronically controlled/low emission diesel engines. One oil that allows users with a wide mix of engine brands to enjoy simplified inventory and dispensing systems that help save money, space, handling time, and avoid product misapplication.

Reduced Maintenance and Operating costs

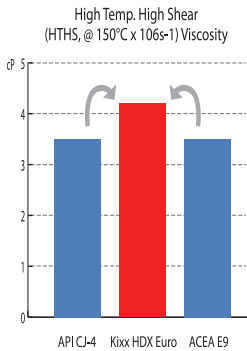
Excellent soot dispersion and wear control. Cylinders, pistons, rings, and injectors are well protected against wear and corrosion, lasting longer in service and requiring less maintenance. Contributes to maximum vehicle utilization and minimum downtime.

Extends engine life to overhaul

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

KEY PROPERTIES

SAE Grade	10W-30	15W-40
Density, kg/L @15°C	0.8656	0.8714
Kinematic Viscosity, mm²/s @ 40°C	83.2	115.5
Kinematic Viscosity, mm²/s @ 100°C	12.2	16.0
Viscosity Index	144	146
Pour Point °C	-41	-39
Flash Point °C	226	232
Base Number,mg KOH/g	8.5	8.5



Semi Synthetic

Kixx HDX

Top grade diesel engine oil for heavy duty vehicles, producing superior performances

API CK-4, ACEA E9



DESCRIPTION

Kixx HDX is a premium performance, multigrade, heavy-duty diesel engine oil specifically designed for new low emission 2017 model year on-highway engine using ULSD (Ultra Low Sulfur Diesel) and Tier 4 non-road exhaust emission standards. It is formulated using the most advantaged additive technology available to provide outstanding engine protection for EURO VI emissions standard for on highway diesel trucks. It is also recommended for a wide range of diesel engines requiring the latest API CK-4, ACEA E9 performance lubricants operating under the most severe service conditions.

APPLICATIONS

- Kixx HDX is a mixed fleets motor oil recommended for diesel engines equipped with DPF(Diesel Particulate Filter) or SCR(Selective Catalytic Reduction) and in other after-treatment systems where an API CK-4 engine oil is specified
- It is developed in response to EURO VI emissions standard
- It is formulated for superior performance with ULSD but also with both normal and low sulfur diesel fuels
- It is recommended for use in off-highway and construction applications which require an API CK-4 Service Category
- Meets major diesel engine manufacturers requirements
- Mixed fleets including both old and new equipment
- Commercial road transport, including the latest electronic controlled engines
- Stop-and-go vehicles in high soot loading service such as buses and waste collection trucks

PERFORMANCE STANDARDS

- API CK-4, ACEA E9
- Volvo VDS 4.5. Mack EOS-4.5. Renault VI RLD-3. Cummins CES 20086. Caterpillar CAT ECF-3 Approved
- MB 228.31. MTU Type 2.1. Deutz DQC III-10 LA. Detroit Diesel DFS93K222. Ford WSS-M2C171-F1 Recommended

CUSTOMER BENEFITS

Enhanced emission control system life

Extends DPF life for less frequent downtime and cleaning, thus decreasing your maintenance.

Minimizes Inventory costs

Backwards compatible with all previous API Oil Service Categories and engine models. One oil for all services, in four-stroke gasoline and all naturally aspirated turbocharged and modern electronically controlled/low emission diesel engines. One oil that allows users with a wide mix of engine brands to enjoy simplified inventory and dispensing systems that help save money, space, handling time, and avoid product misapplication.

Reduced Maintenance and Operating costs

Excellent soot dispersion and wear control. Cylinders, pistons, rings, and injectors are well protected against wear and corrosion, lasting longer in service and requiring less maintenance. Contributes to maximum vehicle utilization and minimum downtime.

Extends engine life to overhaul

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

KEY PROPERTIES

SAE Grade	15W-40
Density, kg/L @15°C	0.872
Kinematic Viscosity, mm ² /s @ 40°C	114.3
Kinematic Viscosity, mm ² /s @ 100°C	14.9
Viscosity Index	135
Pour Point °C	-38
Flash Point °C	234
Base Number,mg KOH/g	9.1

Semi Synthetic

Kixx HDX DH-2

Top grade diesel engine oil for heavy duty vehicles, the perfect fit for JASO DH-2 specifications

JASO DH-2, API CK-4, ACEA E9 Approved



DESCRIPTION

Kixx HDX DH-2 is a high Performance Diesel engine oil designed to meet the performance requirement of high output, JASO DH-2. It is formulated from an optimized high quality base oil blend plus specialized additives to provide the maximum oil drain intervals recommended for engines and is optimally formulated for new low emission engines running on ultra low sulfur diesel (ULSD) fuel. The DH-2 classification applies to Japanesemade diesel engines with after-treatment devices, such as DPFs and catalysts that comply with up-to-date exhaust emission regulations. It is suitable for the medium- and heavy-duty engines built by manufacturers like Hino Motors Ltd., Isuzu Motors Ltd., Mitsubishi Fuso Truck & Bus Corp. and Nissan Diesel Motor Co. Ltd.

APPLICATIONS

- Kixx HDX DH-2 is recommended for use in off-highway and construction applications which require an DH-2 Service Category.
- Meets Japanese major diesel engine manufacturers requirements.
- Mixed fleets including both old and new equipment
- Commercial road transport, including the latest electronic controlled engines.
- Stop-and-go vehicles in high soot loading service such as buses and waste collection trucks

PERFORMANCE STANDARDS

- JASO DH-2, API CK-4, ACEA E9
- Volvo VDS 4.5, Mack EOS-4.5, Renault VI RLD-4, Cummins CES 20086, MB 228.31, MTU Type 2.1, Detroit Diesel DFS93K222, CAT ECF-3, Deutz DQC III-10 LA Approved

CUSTOMER BENEFITS

Enhanced emission control system life

Extends DPF life for less frequent downtimeand cleaning, thus decreasing your maintenance.

Reduced Maintenance and Operating costs

Excellent soot dispersion and wear control. Cylinders, pistons, rings, and injectors are well protected against wear and corrosion, lasting longer in service and requiring less maintenance. Contributes to maximum vehicle utilization and minimum downtime.

Extends engine life to overhaul

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

KEY PROPERTIES

SAE Grade	10W-30	15W-40
Density, kg/L @15°C	0.8673	0.8744
Kinematic Viscosity, mm ² /s @ 40°C	77.04	112.9
Kinematic Viscosity, mm ² /s @ 100°C	11.83	14.87
Viscosity Index	148	136
Pour Point °C	-39	-36
Flash Point °C	227	241
Base Number,mg KOH/g	7.93	6.06

Semi Synthetic

Kixx HD CF

Diesel engine oil for heavy duty vehicles, the perfect fit for smart consumers

API CF



DESCRIPTION

Kixx HD CF is a high performance, multigrade diesel engine oil specially designed to lubricate a wide range of diesel and gasoline engines requiring API CF performance lubricants.

APPLICATIONS

- Mixed fleets of diesel engines (high speed, four-stroke, turbo-charged or naturally aspirated)
- Mixed fleets of both diesel and gasoline engines
- Commercial road transport
- Off-highway vehicles and plant
- Small diesel engines in marine service(e.g. fishing, river transport, etc)
- Generator sets

PERFORMANCE STANDARDS

- API CF

CUSTOMER BENEFITS

Maximum power output

Advanced detergent/dispersant additive system maintains power output by providing outstanding deposit control under the high temperature conditions encountered in turbocharged engines.

Reduced maintenance costs

Highly effective detergent additive system minimizes piston crown land deposits which can lead to damaging bore polishing. The proven metallo-organic anti-wear additive system reduces wear in severe service by forming a protective layer on all metal contact surfaces.

Saves on inventory costs

The mid-ash, medium dispersion formulation provides very good overall performance in mixed fleets of different engine designs, allowing fewer oils to be stored and reducing the chance of problems arising through product misapplication.

KEY PROPERTIES

SAE Grade	20W-50	40	50
Density, kg/L @15°C	0.8771	0.8801	0.8719
Kinematic Viscosity, mm²/s @ 40°C	173.6	137.5	168.6
Kinematic Viscosity, mm²/s @ 100°C	19.65	14.96	19.74
Viscosity Index	130	110	135
Pour Point °C	-30	-33	-36
Flash Point °C	250	250	272
Base Number,mg KOH/g	9.74	9.02	9.7

Semi Synthetic

Kixx HD CF-4

Diesel engine oil for heavy duty vehicles, the perfect fit for smart consumers

API CF-4



DESCRIPTION

Kixx HD CF-4 is a high performance, multigrade diesel engine oil specially designed to lubricate a wide range of diesel and gasoline engines requiring API CF-4 performance lubricants.

APPLICATIONS

- Mixed fleets of diesel engines (high-speed, four-stroke, turbo-charged or naturally aspirated)
- Mixed fleets of both diesel and gasoline engines
- Commercial road transport
- Off-highway vehicles and plant
- Small diesel engines in marine service(e.g. fishing, river transport, etc)
- Generator sets
- Powershift transmissions(where oil type and viscosity are appropriate)

PERFORMANCE STANDARDS

- API CF-4

CUSTOMER BENEFITS

Maximum power output

Advanced detergent/dispersant additive system maintains power output by providing outstanding deposit control under the high temperature conditions encountered in turbocharged engines.

Reduced maintenance costs

Highly effective detergent additive system minimizes piston crown land deposits which can lead to damaged bore polishing. The proven metallo-organic anti-wear additive system reduces wear in engines under severe service by forming a protective layer on all metal contact surfaces.

Saves on inventory costs

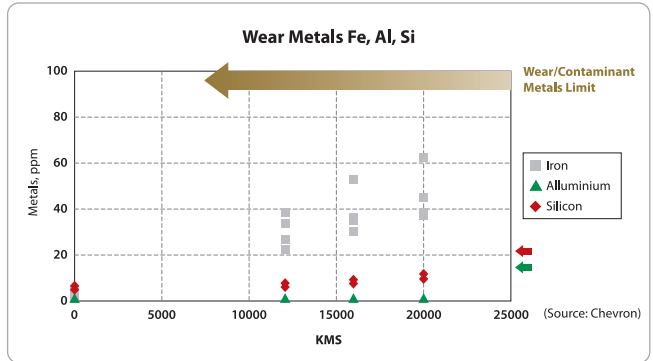
The mid-ash, medium dispersant formulation provides very good overall performance in mixed fleets of different engine designs, allowing fewer oils to be stored and reducing the chance of problems arising through product misapplication.

KEY PROPERTIES

SAE Grade	5W-30	10W-30	15W-40	15W-50	20W-50
Density, kg/L @15°C	0.8539	0.8671	0.8731	0.8652	0.8774
Kinematic Viscosity, mm²/s @ 40°C	58.09	69.14	113.5	141.3	177.6
Kinematic Viscosity, mm²/s @ 100°C	10.16	10.57	15.02	18.89	20.09
Viscosity Index	164	141	137	152	131
Pour Point °C	-39	-39	-36	-36	-36
Flash Point °C	228	228	239	242	250
Base Number,mg KOH/g	10.56	10.53	10.46	8.65	10.33

UNIQUE FEATURES

- Kixx HD CF-4 maintains power output by providing outstanding deposit control.
- With the anti-wear additive system, Kixx HD CF-4 reduces wear in severe service by forming a protective layer on all metal contact surfaces.



Semi Synthetic

Kixx HD CG-4

Diesel engine oil for heavy duty vehicles, the perfect fit for smart consumers

API CG-4



DESCRIPTION

Kixx HD CG-4 is a high performance, multigrade, heavy-duty diesel engine oil specifically designed to lubricate a wide range of diesel engines requiring API CG-4 performance lubricants.

APPLICATIONS

- Mixed fleets of diesel engines (high speed, four-stroke, turbo-charged or naturally aspirated)
- Commercial road transport
- Off-highway vehicles and plant
- Agricultural tractors and farm machinery
- High speed diesel engines in marine service (e.g. fishing, river transport, etc.)
- Generator sets
- Mobile hydraulic systems (where oil type and viscosity are appropriate)

PERFORMANCE STANDARDS

- API CG-4

CUSTOMER BENEFITS

Reduces fleet maintenance costs

Specially balanced metallic detergent and ashless dispersant additive system provides excellent overall engine cleanliness in all service conditions, particularly the higher soot dispersion required to maintain oil drain intervals in modern engine designs. Excellent oxidation stability protects against the formation of gums and varnish at elevated temperatures.

Prolongs engine life

Proven metallo-organic anti-wear additive system provides excellent protection against wear of critically loaded components under all operating conditions. Multigrade viscosity provides additional protection against wear at start-up and under high temperature operating conditions.

Preserves full power and performance

Metallic detergent and ashless dispersant additive system preserves full power and performance by providing excellent upper-ring-belt deposit control under the high temperatures encountered in turbocharged diesel engines.

Saves on inventory costs

Mid-ash, higher dispersion formulation provides excellent overall performance in mixed fleets of different engine designs, allowing fewer oils to be stored and reducing the chance of problems arising through product misapplication.

KEY PROPERTIES

SAE Grade	10W-30	10W-40	15W-40	20W-50
Density, kg/L @15 °C	0.8666	0.8658	0.8703	0.8793
Kinematic Viscosity, mm²/s @ 40°C	64.43	100.7	110.8	180.8
Kinematic Viscosity, mm²/s @ 100°C	10.05	14.99	15.01	20.00
Viscosity Index	141	156	143	128
Pour Point °C	-39	-39	-36	-33
Flash Point °C	240	225	236	242
Base Number,mg KOH/g	8.67	9.11	8.93	8.77

Semi Synthetic

Kixx HD CH-4

Diesel engine oil for heavy duty vehicles, the perfect fit for smart consumers

API CH-4/SJ, ACEA E7



DESCRIPTION

Kixx HD CH-4 is a premium performance, multigrade, heavy-duty diesel engine oil specifically designed to lubricate a wide range of diesel and gasoline engines requiring API CH-4, SJ, ACEA E7 performance lubricants operating under the most severe service conditions.

APPLICATIONS

- Mixed fleets of European, North American diesel engines (high speed, four-stroke, turbocharged or naturally aspirated)
- Mixed fleets of both diesel and gasoline engines
- Mixed fleets including both old and new equipment
- Commercial road transport, including the latest electronic controlled engines.
- It meets the major diesel engine manufacturers requirements
- Stop-and-go vehicles in high soot loading service such as buses and waste collection trucks
- Off-highway vehicles and plant

PERFORMANCE STANDARDS

- API CH-4/SJ, ACEA E7
- MB 228.3, MAN 3275, MTU 2.0, Mack EO-M Plus, CES 20077, Cat ECF-1-a Recommended

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 on valves and piston crownlands reduces oil consumption. Exceptional oxidation stability and soot control extends oil drain capability so that equipment is in service longer generating revenue. Outstanding valve train wear protection maintains fuel economy.

Extends engine life to overhaul

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

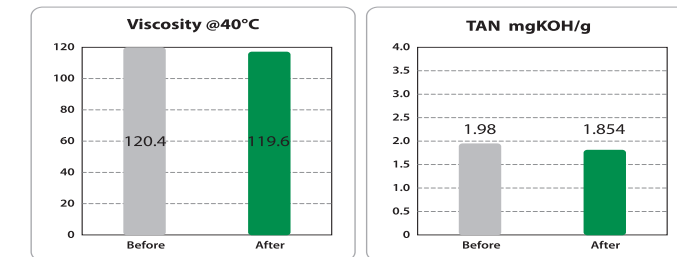
KEY PROPERTIES

SAE Grade	10W-30	10W-40	15W-40	20W-50
Density, kg/L @15 °C	0.8667	0.8670	0.8689	0.8769
Kinematic Viscosity, mm²/s @ 40°C	80.14	102.5	108.8	179.4
Kinematic Viscosity, mm²/s @ 100°C	11.99	15.13	14.86	20.04
Viscosity Index	144	155	142	130
Pour Point °C	-42	-42	-36	-33
Flash Point °C	231	228	236	246
Base Number,mg KOH/g	10.0	10.0	10.0	10.0

UNIQUE FEATURES

- Kixx HD CH-4 prolongs engine life and extends oil drain intervals
- Exceptional oxidation stability and soot control extends oil drain capability so that equipment can be in service with longer generating revenue

ISOT (165.5°C, 24Hr)



Oxidation stability test, ISOT, shows the viscosity of before test and after are almost the same. Total acid number is almost the same. It means that the oil is strong against to oxidation.

Semi Synthetic

Kixx HD LS

Diesel engine oil for heavy duty vehicles using low sulfur fuel, the perfect fit for smart consumers

API CF



DESCRIPTION

Kixx HD LS is a high quality, heavy-duty diesel engine oil designed to lubricate diesel engines requiring API CF performance lubricants which uses low sulfur diesel fuel. It is formulated using an advanced additive technology and HVI base oils to provide engine protection.

APPLICATIONS

- Diesel engines (high-speed, four-stroke, turbocharged or naturally aspirated) using low sulfur fuel.
- Commercial road transport
- Off-highway vehicles
- Agricultural tractors
- Generator sets
- High speed diesel engines in marine service (e.g., fishing, river transport, etc.)

PERFORMANCE STANDARDS

- API CF

CUSTOMER BENEFITS

Saves on maintenance

Proven metallo-organic anti-wear additive system resists wear by forming a protective layer on contact surfaces under all service conditions.

Prolongs periods between overhauls

High performance detergent and dispersant additive system resists the formation of high temperature deposits in diesel engines and low temperature sludge in gasoline engines. Good oxidation stability resists oil degradation and protects against oil thickening, and oil line and filter plugging.

Long oil drain intervals

High viscosity index base oils ensures that protects an decrease of engine oil without the need for overly shortened oil drain intervals.

KEY PROPERTIES

SAE Grade	30	40	15W-40
Density, kg/L @15°C	0.8696	0.8754	0.8658
Kinematic Viscosity, mm²/s @ 40°C	88.62	128.7	107.6
Kinematic Viscosity, mm²/s @ 100°C	11.21	14.32	14.41
Viscosity Index	114	111	137
Pour Point °C	-36	-36	-36
Flash Point °C	264	264	248
Base Number,mg KOH/g	6.37	6.44	6.45

Fully / Semi Synthetic

Kixx HD1

High grade diesel engine oil for heavy duty vehicles, producing excellent performances

API CI-4/SL, ACEA E7



DESCRIPTION

Kixx HD1 is a premium performance, multigrade, heavy-duty diesel engine oil specifically designed to lubricate a wide range of diesel and gasoline engines requiring API CI-4, SL, ACEA E7 performance lubricants operating under the most severe service conditions.

APPLICATIONS

- Mixed fleets of European, North American diesel engines (high speed, four-stroke, turbocharged or naturally aspirated)
- Mixed fleets of both diesel and gasoline engines
- Mixed fleets including both old and new equipment
- Commercial road transport, including the latest electronic controlled engines.
- It meets the major diesel engine manufacturers requirements
- Stop-and-go vehicles in high soot loading service such as buses and waste collection trucks
- Off-highway vehicles and plant

PERFORMANCE STANDARDS

- API CI-4/SL, ACEA E7
- 10W-40 / 15W-40: Volvo VDS-3, MB 228.3, MAN 3275, MTU Type 2, Mack EO-M Plus, Renault RLD-2, CES 20076, 77, 78, Cat ECF 2, ECF 1-a, Global DHD-1 Approved
- 10W-30: Volvo VDS-3, MB 228.3, MAN 3275, MTU Type 2, Mack EO-M Plus, Renault RLD-2, CES 20076, 77, 78, Cat ECF 2, ECF 1-a, Global DHD-1 Recommended

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 on valves and piston crownlands reduces oil consumption. Exceptional oxidation stability and soot control extends oil drain capability so that equipment is in service longer generating revenue. Outstanding valve train wear protection maintains fuel economy.

Extends engine life to overhaul

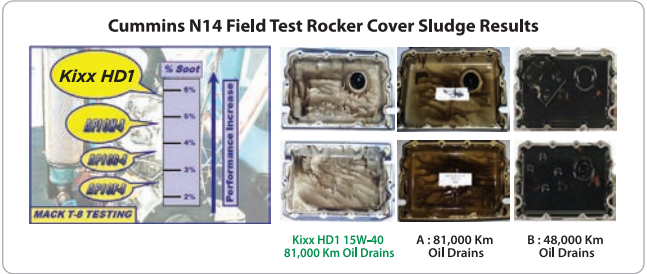
High level of anti-wear additive protects against valve train wear and scuffing of highly loaded parts operating under boundary lubrication conditions.

KEY PROPERTIES

	Fully Synthetic	Fully Synthetic	Semi Synthetic	Semi Synthetic
SAE Grade	10W-30	10W-40	15W-40	20W-50
Density, kg/L @15°C	0.8654	0.8651	0.8727	0.8806
Kinematic Viscosity, mm²/s @ 40°C	80.85	105.7	110.8	178.2
Kinematic Viscosity, mm²/s @ 100°C	12.10	15.49	14.96	19.89
Viscosity Index	144	153	141	129
Pour Point °C	-42	-42	-39	-33
Flash Point °C	234	226	232	249
Base Number,mg KOH/g	10.41	10.44	10.64	10.76

UNIQUE FEATURES

- Kixx HD1 has excellent performance for sustaining durability with EGR system.
- Kixx HD1 protects sludge formed by sulfur and fuel combustion without the need for overly shortened drain intervals.



Semi Synthetic

Kixx HD CNG

Top Performance Low Ash CNG Engine Oil

API CF



DESCRIPTION

Kixx HD CNG is a heavy-duty, low ash, multi-grade crankcase oil specifically designed to lubricate a wide range of spark ignition, natural gas or compressed natural gas engines. It provides the protection needed for mobile natural gas engines and also excellent engine oil for stationary applications. It has a lot of performances like the protection against deposits in the higher temperature gas combustion chamber, wear protection, foam protection, exceptional oxidation and nitration control ability.

APPLICATIONS

- Mobile heavy-duty automotive engines converted to run on sweet natural gas or LPG
- Four-cycle stationary engines on sweet natural gas or LPG
- Gas powered co-generation engines

PERFORMANCE STANDARDS

- API CF, Cummins SES 20074

CUSTOMER BENEFITS

Maximizes engine life

Detergent additive provides excellent piston deposit control. Balanced sulfated ash level reduces valve surface deposits.

Reduced maintenance costs

Outstanding oxidation and nitration resistance minimizes acid number increase, providing protection against bearing corrosion.

Extended oil change periods

Very high oxidation stability protects against the formation of gums and varnishes, reduces oil thickening and increases oil life.

Increased service life

Low phosphorus content ensures exhaust system catalyst compatibility and, therefore, maximizes unit's service life.

KEY PROPERTIES

SAE Grade	10W-40	15W-40
Density, kg/L @15°C	0.8551	0.8682
Kinematic Viscosity, mm²/s @ 40°C	99.47	114.5
Kinematic Viscosity, mm²/s @ 100°C	14.98	15.04
Viscosity Index	158	136
Pour Point °C	-39	-37
Flash Point °C	226	237
Sulfated Ash, mass%	0.52	0.56

First-class driving

Kixx PAO



Kixx

The perfect fit for your driving

03 Motorcycle

Kixx Ultra 4T Scooter SL
Kixx Ultra 4T Scooter SN
Kixx Ultra 4T SJ
Kixx Ultra 4T SL
Kixx Ultra 4T SN
Kixx Ultra 2T FB



Motorcycle

Semi Synthetic

Kixx Ultra 4T Scooter SL

Top grade engine oil,
the perfect fit for four-stroke scooters

API SL
JASO MB Approved



DESCRIPTION

Kixx Ultra 4T Scooter SL is formulated from Synthetic Technology meeting the requirement of current advanced top-tier engine oil grade of API SL. It is optimized to provide complete scooter engine oil performance especially for fuel efficiency, reducing friction loss and durability.

APPLICATIONS

- All gasoline fueled vehicles
- High performance cars equipped with DOHC, EFI and VVT
- Four-stroke gasoline engines in motorcycles
- Sports Vehicles

PERFORMANCE STANDARDS

- API SL
- 10W-40 / 15W-40 : JASO MB Approved

CUSTOMER BENEFITS

Fuel economy

The wide temperature range capability of the synthetic technology base fluid ensures correct oil viscosity which reduces friction at start-up, and provides maximum lubrication during high temperature operation.

Engine power and maintainability

A reduction in the piston blow-by gas coupled with the oil's anti-sludge characteristics help maintain engine power and cleanliness, which in turn extends the engine's service life.

Oil drainage interval

Excellent oxidation resistance and low volatility will extend oil drainage interval.

All-temperature wear resistance

Advanced non-conventional base oil formula coupled with high performance additive systems and leading edge viscosity index improver delivers excellent shear stability and maximum wear protection in high speed, high temperature driving conditions as well as a rapid, highly effective oil film protection. It also provides component wear resistance during very low temperature cold starts.

KEY PROPERTIES

SAE Viscosity	10W-40	15W-40
Density, kg/L @15°C	0.863	0.871
Kinematic Viscosity, mm ² /s @ 40°C	101.2	114.8
Kinematic Viscosity, mm ² /s @ 100°C	14.8	14.7
Viscosity Index	155	131
Pour Point °C	-42	-39
Flash Point °C	220	242

Fully / Semi Synthetic

Kixx Ultra 4T Scooter SN

Top grade engine oil,
the perfect fit for four-stroke scooters

API SN
JASO MB Recommended



DESCRIPTION

Kixx Ultra 4T Scooter SN is formulated from Synthetic Technology meeting the requirement of current advanced top-tier engine oil grade of API SN. It is optimized to provide complete scooter engine oil performance especially for fuel efficiency, reducing friction loss and durability.

APPLICATIONS

- All gasoline fueled vehicles
- High performance cars equipped with DOHC, EFI and VVT
- Four-stroke gasoline engines in motorcycles
- Sports Vehicles

PERFORMANCE STANDARDS

- API SN
- 5W-40 / 10W-40: JASO MB Recommended

CUSTOMER BENEFITS

Fuel economy

The wide temperature range capability of the synthetic technology base fluid ensures correct oil viscosity which reduces friction at start-up, and provides maximum lubrication during high temperature operation.

Engine power and maintainability

A reduction in the piston blow-by gas coupled with the oil's anti-sludge characteristics help maintain engine power and cleanliness, which in turn extends the engine's service life.

Oil drainage interval

Excellent oxidation resistance and low volatility will extend oil drainage interval.

All-temperature wear resistance

Advanced non-conventional base oil formula coupled with high performance additive systems and leading edge viscosity index improver delivers excellent shear stability and maximum wear protection in high speed, high temperature driving conditions as well as a rapid, highly effective oil film protection. It also provides component wear resistance during very low temperature cold starts.

KEY PROPERTIES

SAE Viscosity	Fully Synthetic 5W-40	Semi Synthetic 10W-40
Density, kg/L @15°C	0.849	0.861
Kinematic Viscosity, mm ² /s @ 40°C	83.9	104.8
Kinematic Viscosity, mm ² /s @ 100°C	14.4	15.7
Viscosity Index	178	159
Pour Point °C	-42	-42
Flash Point °C	222	220

Semi Synthetic

Kixx Ultra 4T SJ

Top grade engine oil,
the perfect fit for four-stroke motorcycles

API SJ
JASO MA2 Approved



DESCRIPTION

Kixx Ultra 4T SJ is a premium performance, shear-stable, multi-grade gasoline engine oil specifically designed for use in four-stroke motorcycles and portable power equipment requiring API SJ, JASO MA lubricants, including high output engines operating in severe service.

APPLICATIONS

- Air and liquid-cooled four-stroke motorcycle engines
- Particularly suitable for Japanese high performance motorcycle engines
- Motorcycles with combined engine/transmission units, or separate gear boxes where a multigrade engine oil is specified
- Motorcycles with back torque limiters
- Motorcycles with exhaust catalytic converters
- Latest generation, four-stroke scooter engines
- Four-stroke gasoline engines fitted to portable power equipment, such as generators, pumps, mowers, etc

PERFORMANCE STANDARDS

- API SJ
- 15W-40 / 20W-50 : JASO MA2 Approved

CUSTOMER BENEFITS

Prolongs engine life

Proven metallo-organic anti-wear additive system reduces wear of highly stressed engine components under severe operating conditions.

Saves on maintenance

High oxidation stability resists oil breakdown under the severe heat stress generated by modern engines, enabling the lubricant to do its primary job of providing effective protection for stressed components.

Lively throttle response

Highly effective detergent/dispersant additive system ensures excellent control of piston ring belt deposits for very good power release and acceleration. Correct frictional characteristics enable smooth operation of wet clutches and back torque limiters.

Good all-temperature protection

Highly shear stable viscosity index improver additive minimizes shear-thinning, particularly in the gearbox, and resists breakdown under the high stresses which occur at high rotational speeds, to provide the correct oil viscosity for protection at both start-up and during high temperature operation.

KEY PROPERTIES

SAE Viscosity	15W-40	20W-50
Density, kg/L @15°C	0.863	0.872
Kinematic Viscosity, mm ² /s @ 40°C	109.2	167.2
Kinematic Viscosity, mm ² /s @ 100°C	15.0	19.3
Viscosity Index	144	132
Pour Point °C	-36	-39
Flash Point °C	226	236

Semi Synthetic

Kixx Ultra 4T SL

Top grade engine oil,
the perfect fit for four-stroke motorcycles

API SL
JASO MA2 Approved



DESCRIPTION

Kixx Ultra 4T SL is a premium performance, shear-stable, multi-grade gasoline engine oil specifically designed for use in four-stroke motorcycles and portable power equipment requiring API SL JASO MA / MA2 lubricants, including high output engines operating in severe service.

APPLICATIONS

- Air and liquid-cooled four-stroke motorcycle engines
- Particularly suitable for Japanese high performance motorcycle engines
- Motorcycles with and without oil immersed clutches
- Motorcycles with combined engine/transmission units or separate gear boxes where a multi-grade engine oil is specified
- Motorcycles with back torque limiters
- Motorcycles with exhaust catalytic converters
- Latest generation, four-stroke scooter engines
- Four-stroke gasoline engines fitted to portable power equipment, such as generators, mowers, etc.

PERFORMANCE STANDARDS

- API SL
- JASO MA2 Approved

CUSTOMER BENEFITS

Prolongs engine life

Proven metallo-organic anti-wear additive system reduces wear of highly stressed engine components under severe operating conditions.

Saves on maintenance

High oxidation stability resists oil breakdown under the severe heat stress generated by modern engines, enabling the lubricant to do its primary job of providing effective protection for stressed components.

Lively throttle response

Highly effective detergent/dispersant additive system ensures excellent control of piston ring belt deposits for very good power release and acceleration. Correct frictional characteristics enable smooth operation of wet clutches and back torque limiters.

Good all-temperature protection

Highly shear stable viscosity index improver additive minimizes shear-thinning, particularly in the gearbox, and resists breakdown under the high stresses which occur at high rotational speeds, to provide the correct oil viscosity for protection at both start-up and during high temperature operation.

KEY PROPERTIES

SAE Viscosity	10W-40	15W-40	20W-40	20W-50	25W-60
Density, kg/L @15°C	0.86	0.856	0.874	0.873	0.874
Kinematic Viscosity, mm ² /s @ 40°C	108.5	98.4	133	168.8	229
Kinematic Viscosity, mm ² /s @ 100°C	15.6	14.8	15	19.2	25.8
Viscosity Index	152	156	114	130	143
Pour Point °C	-37	-33	-35	-36	-26
Flash Point °C	236	236	278	240	254

Fully Synthetic

Kixx Ultra 4T SN

Top grade engine oil,
the perfect fit for four-stroke motorcycles

API SN
JASO MA2 Approved



DESCRIPTION

Kixx Ultra 4T SN is a premium performance, shear-stable, multi-grade gasoline engine oil specifically designed for use in four-stroke motorcycles and portable power equipment requiring API SN JASO MA / MA2 lubricants, including high output engines operating in severe service.

APPLICATIONS

- Air and liquid-cooled four-stroke motorcycle engines
- Particularly suitable for Japanese high performance motorcycle engines
- Motorcycles with and without oil immersed clutches
- Motorcycles with combined engine/transmission units or separate gear boxes where a multi-grade engine oil is specified
- Motorcycles with back torque limiters
- Motorcycles with exhaust catalytic converters
- Latest generation, four-stroke scooter engines
- Four-stroke gasoline engines fitted to portable power equipment, such as generators, mowers, etc.

PERFORMANCE STANDARDS

- API SN Recommended
- JASO MA2 Approved

CUSTOMER BENEFITS

Prolongs engine life

Proven metallo-organic anti-wear additive system reduces wear of highly stressed engine components under severe operating conditions.

Saves on maintenance

High oxidation stability resists oil breakdown under the severe heat stress generated by modern engines, enabling the lubricant to do its primary job of providing effective protection for stressed components.

Lively throttle response

Highly effective detergent/dispersant additive system ensures excellent control of piston ring belt deposits for very good power release and acceleration. Correct frictional characteristics enable smooth operation of wet clutches and back torque limiters.

Good all-temperature protection

Highly shear stable viscosity index improver additive minimizes shear-thinning, particularly in the gearbox, and resists breakdown under the high stresses which occur at high rotational speeds, to provide the correct oil viscosity for protection at both start-up and during high temperature operation.

KEY PROPERTIES

SAE Viscosity	10W-40	20W-50
Density, kg/L @15°C	0.853	0.857
Kinematic Viscosity, mm ² /s @ 40°C	98.99	127.9
Kinematic Viscosity, mm ² /s @ 100°C	15.11	18.05
Viscosity Index	161	157
Pour Point °C	-38	-36
Flash Point °C	236	242

Kixx Ultra 2T

High grade engine oil,
the perfect fit for two-stroke motorcycles

MEETS JASO FB



DESCRIPTION

Kixx Ultra 2T is a high-performance, two-stroke motorcycle oil formulated with a low-ash additive system. It is available in one SAE fluidity/miscibility grade, F/M 2, as preferred by oil-injection systems. It is prediluted with a special solvent that permits ready mixing with gasoline over a wide temperature range. Dyed distinctively to aid in identifying its presence in fuel/ oil mixtures.

APPLICATIONS

- Satisfies the performance needs of those manufacturers of two-stroke engines who allow the use of JASO FB oils.
- Recommended for over-the-road service in all two-stroke motorcycle engines, either oil-injected or using a premix of gasoline and oil.
- Manufacturers recommended gasoline-to-oil ratios, up to 50:1, should be used for premixes of gasoline and oil.
- Suitable for use in two-stroke portable power equipment except the most severe chainsaw applications.
- Not recommended for use in ash-sensitive, water-cooled, two-stroke outboard engines.
- Should not be used in with small air-cooled engines which operate at gasoline-to-oil ratios below 25:1
- Should not be used in any four-stroke engines.

PERFORMANCE STANDARDS

Meets JASO FB, ISO EGB

CUSTOMER BENEFITS

- Maximizes time between overhauls by minimizing scuffing, wear and deposits.
- Protects against preignition.
- Maximizes engine life by controlling the deposits which lead to ring sticking.
- Maximizes spark plug life by reducing fouling.
- Easy to mix with gasoline.

KEY PROPERTIES

SAE Grade (J1536)	F/M2
Density, kg/L @15°C	0.859
Kinematic Viscosity,mm2/s@40°C	43.2
Kinematic Viscosity,mm2/s@100°C	7.2
Viscosity Index	129
Pour Point,°C	-39
Flash Point °C	85

Kixx

The perfect fit for your driving

04 Transmission/Axle

Kixx ATF DX-III

Kixx ATF DX-VI

Kixx ATF Multi

Kixx CVTF

Kixx DCTF

Kixx CVTF/ATF Dual

Kixx Geartec FF GL-4

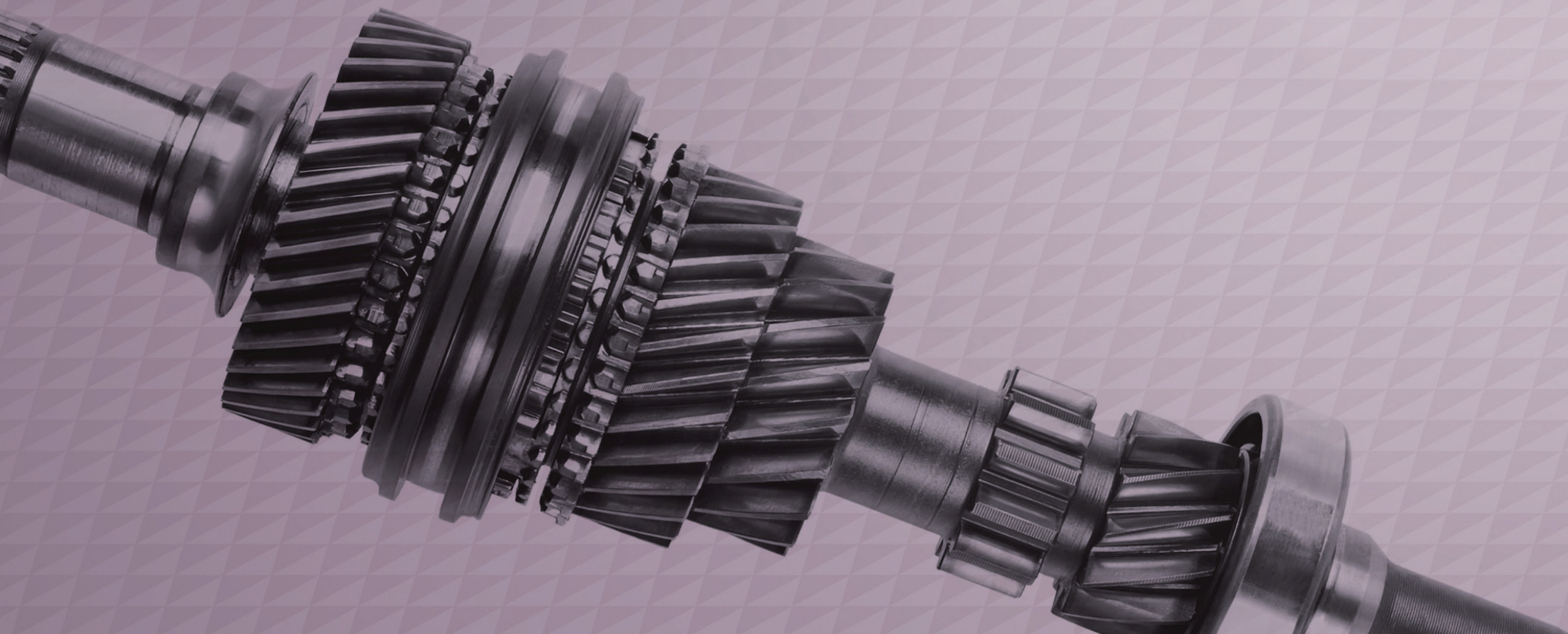
Kixx Geartec LSD GL-5

Kixx Geartec TO-4

Kixx Gearsyn GL-4/5

Kixx Geartec GL-5

Transmission/Axle



Fully Synthetic

Kixx ATF DX-III

Automatic Transmission Fluid

GM DEXRON®-III , MERCON®, ALLISON C-4



DESCRIPTION

Modern vehicle and transmission designs place increased stress on the automatic transmission fluid. Kixx ATF DX-III is superior to any other past or currently ATF for uses in passenger car with automatic transmission. And It can be recommended for Automatic transmission with lock-up clutch. It provides a higher quality performance due in part by its oxidation resistance, low temperature fluidity, appropriate friction performance, high shear stability, and near sludge free operation.

APPLICATIONS

In accordance with the GM powertrain licensing requirements for the use of the DEXRON trademark, ATF DX-III may be recommended for use in automatic transmissions or other units, such as power-steering systems, industrial hydraulic systems and air compressors for which the service-fill product is specified as DEXRON®-II, DEXRON®-III or DEXRON fluid.

PERFORMANCE STANDARDS

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

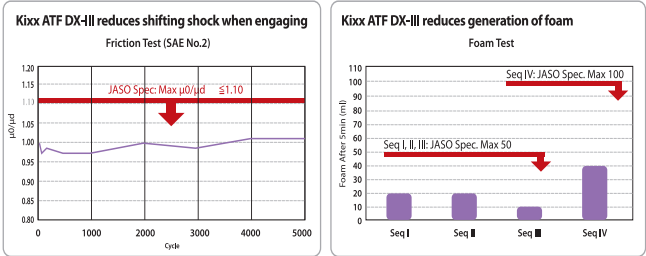
CUSTOMER BENEFITS

- Ensures long life-time
- Provides high foam stability.
- Provides high antirusting performance and lower sludge formation.
- Provides good start operation in cold climates thanks to its excellent low-temperature fluidity.
- Provides more stable friction property.

KEY PROPERTIES

Density, kg/L @15°C	0.841
Kinematic Viscosity, mm²/s @ 40°C	33.5
Kinematic Viscosity, mm²/s @ 100°C	7.02
Pour Point °C	-48
Flash Point °C	230
Brookfield Viscosity, cP @-20°C	980
Brookfield Viscosity, cP @-40°C	11,840

UNIQUE FEATURES



Fully Synthetic

Kixx ATF DX-VI

Top Performance Low Viscosity Automatic Transmission Fluid

GM DEXRON®-VI, FORD MERCON LV, JASO 1A-LV



DESCRIPTION

Kixx ATF DX-VI is a premium performance, low viscosity multi-vehicle fluid for modern automatic transmissions, which is blended with synthetic base stocks and advanced high performance additives. It is specially designed to provide improved fuel efficiency and excellent shudder control performance. Kixx ATF DX-VI is officially approved for use by GM and meets or exceeds the requirements of latest OEM specifications such as Ford MERCON LV, Toyota WS, Nissan Matic S, Hyundai SP-IV/SP-IV-RR. It is also suitable for most modern 6+ speed automatic transmissions.

PERFORMANCE STANDARDS

Auto Maker	Specification	Auto Maker	Specification
GM	DEXRON® VI Approved DEXRON® III, IIIH DEXRON® II, IID, IIE	Mercedes / Daimler	MB 236.10/11/12/14/15 MB 236.3/4/15/6/7/8/9/1
Toyota / Lexus	Type D-II Type T, T-III, T-IV Type WS (JWS 3324)	Suzuki	3314, 3317
VW / Audi	G 052 533/055 G 052 025 (A2) G 052 990 (A2) G 055 025 (A2) G 055 540 (A2) G 060 162 (A1, A2, A6)	Allison	TES-295/353/389
ZF	LifeGuard fluid6, 8 TE-ML 03D/04D/11A/14A/16L/17C	Volvo	P/N 1161521, 1161540, 1161640
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	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-II, 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

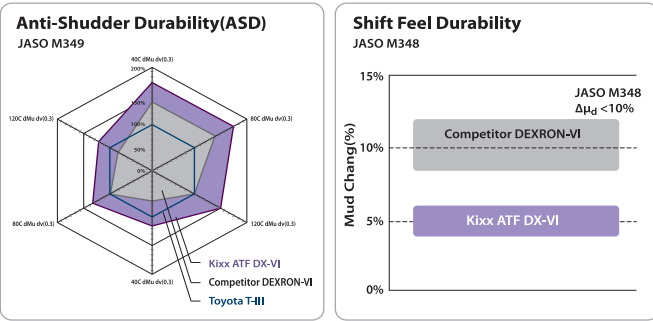
CUSTOMER BENEFITS

- OEM approved and licensed by GM(DEXRON®-VI).
- Improved fuel efficiency and shudder control performance.
- Excellent transmission cleanliness and durability by oxidation/thermal stability.
- Good start operation in cold climates thanks to its excellent low-temperature fluidity.
- Excellent friction performance and shift feel durability for comfort transmission shift.
- Exceptional wear and corrosion performance for long equipment life.

KEY PROPERTIES

Density, kg/L @15°C	0.864
Kinematic Viscosity, mm²/s @ 40°C	30.3
Kinematic Viscosity, mm²/s @ 100°C	6.0
Pour Point °C	-52
Flash Point °C	224
Brookfield Viscosity, cP @-20°C	864
Brookfield Viscosity, cP @-40°C	12,100

UNIQUE FEATURES



- At least 20% longer than Competitor
- At least 30% longer than Toyota T-III
- Kixx ATF DX-VI consistently within JASO limit

Fully Synthetic

Kixx ATF Multi

Top Performance Multi-vehicle Automatic Transmission Fluid

JASO 1A, GM DEXRON®-III, TOYOTA T-IV, HYUNDAI SP-III/SP-IV



DESCRIPTION

Kixx ATF Multi is a high-performance, high-quality multi-vehicle fluid for automatic transmissions. (Applicable for Slip controlled lock-up clutch) It is a specially formulated fluid designed to meet 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. In addition, it meets the requirements of European OEM's like Volvo CE 97340 and MB, BMW, VW, ZF 4, 5, 6 and 8-speed automatic transmission specifications. Kixx ATF Multi is a special blend of high quality base stocks with an advanced additives system for use as a Service-Fill.

PERFORMANCE STANDARDS

Auto Maker	Specification	Auto Maker	Specification
VW / Audi	G 052 162 (ZF Lifeguard 5)	Hyundai / Kia	Dex-III, SP-III
	G 055 162-A2, A6 (ZF Lifeguard 6 Plus)		JWS 3314, NWS 9638
Mercedes Benz	G 060 162 (ZF Lifeguard 6)	Jaguar	SP-III, SP-IV, SP-IV M, SP-IV RR
	G 052 990		ATF RED 1, RED 1K
	G 055 025-A2 (JWS 3309)	JASO	M315-2013 1A
BMW	MB 236.1, 236.2, 236.3		M315-2013 2A
	MB 236.5, 236.6, 236.7	Mazda	ATF 3317
Ford	MB 236.8, 236.9		ATF D-II, F-1, FZ
	704SE, ETL-8072B	Mitsubishi	ATF M-III, M-V, N-1, S-1
Fuso	JWS 3309 (T-IV)		Diaqueen ATF PA
	LT71141(ZF 5 HP 18FL/19FL/24A/30)	Nissan	Diaqueen AW
GM	MERCON®, FNR5		Diaqueen J2, J3, SK
	WSS M2C138CJ, M2C166H	Porsche	Diaqueen SP-III, SP-III, SP-IV
Honda	WSS M2C 922A1, 924A		ATF 3403-M115
	WSS M2C 938A	Subaru	T-IV (JWS 3309)
Chrysler / Dodge	ATF-A4		ZF 5HP 19FL, 5HP 20, LT71141
	ATF-II	Suzuki	ATF 5AT, ATF HP
Isuzu	ATF-SP III		ATF 2326, ATF 2384K
	DEXRON®-II, IID, IIE	Toyota	ATF 3314, ATF 3317
JEEP	DEXRON®-III, IIH		JWS 3309
	GM/GMC/Opel/Saturn VI, AW1	ZF	ATF D-II, D-III, T-III, T-IV(JWS 3309)
	GM986195(Aisin AW, JWS 3309)		ATF WS(JWS 3324)
	ATF Ultra II, DW-1	Shell	4~9 speed transmission
	ATF-Z1(except in CVTs)		TE-ML 05L, 09, 11A, 11B, 21L
	Type 3.0, Type 3.1	Texaco	3403, M115, LA 2634
	ATF+, +2		7045-E, 8072B, N402
	ATF +3(MS 7176E), +4(MS 9602)		
	JWS 3309 (T-IV)		
	Besco ATF-I		
	Besco ATF-II		
	ATF+3, +4		

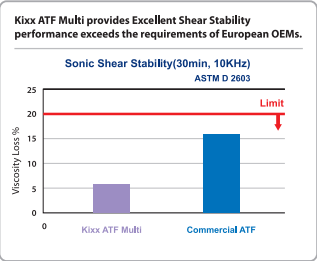
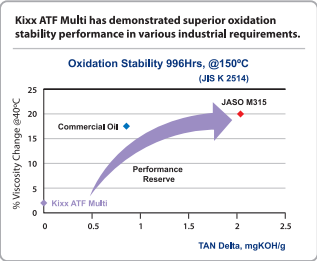
CUSTOMER BENEFITS

- Excellent anti shudder protection.
- Oxidation and thermal stability
- Provides high foam stability.
- Provides good start operation in cold climates thanks to its excellent low-temperature fluidity.
- Provides more stable friction property.
- Use for most 4~8 speed vehicles.

KEY PROPERTIES

Density, kg/L @15°C	0.845
Kinematic Viscosity, mm²/s @ 40°C	35.6
Kinematic Viscosity, mm²/s @ 100°C	7.0
Pour Point °C	-49
Flash Point °C	220
Brookfield Viscosity, cP @-20°C	875
Brookfield Viscosity, cP @-40°C	14,960

UNIQUE FEATURES



Fully Synthetic

Kixx CVTF

Top Performance Continuously Variable Transmission Fluid

TOYOTA TC/FE, NISSAN NS-3, MITSUBISHI SP-III



DESCRIPTION

Kixx CVTF is a premium quality transmission fluid designed to meet the service fill use in a broad range of Continuously Variable Transmissions(CVT). This CVTF is a specially formulated to provide excellent driving comfort, longer life of transmission, extended service interval, excellent wear control and durability between belt and pully. It is recommended for use in all of the push belt type CVT. And it is recommended to be used in chain type CVTs.

PERFORMANCE STANDARDS

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

* Use in Honda CVT with starting clutch is not recommended

CUSTOMER BENEFITS

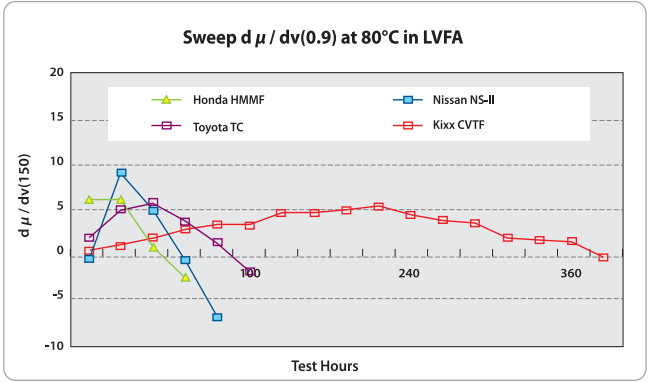
- Compatibility in multiple CVT Transmission types
- Superior anti-shudder durability.
- Maintain high steel-steel friction and extended paper friction durability
- Prevent wear at the metal-to-metal contact points on parts of transmission system.
- Provides strong oil film/good shear stability
- Excellent thermal and oxidation stability
- Excellent parts material compatibility

KEY PROPERTIES

Appearance	Red
Density, kg/L @15°C	0.845
Kinematic Viscosity, mm²/s @ 40°C	34.7
Kinematic Viscosity, mm²/s @ 100°C	7.36
Viscosity Index	178
Pour Point °C	-48
Flash Point °C	214
Brookfield Viscosity, cP @-20°C	970
Brookfield Viscosity, cP @-40°C	9,560

UNIQUE FEATURES

Kixx CVTF shows much longer anti-shudder durability performance than most popular CVTFs in the market including Toyota TC and Nissan NS-2.



Fully Synthetic

Kixx DCTF

Top Performance Dual Clutch Transmission Fluid

VW 6-SPEED DCT, BMW 6&7-SPEED DCT



DESCRIPTION

Kixx DCTF is a high performance, premium DCT fluid specifically designed for use in service-fill applications for a wide range of OEM vehicles equipped with European, Asian and U.S. wet dual clutch transmissions. It was formulated with synthetic base oil and the latest advanced additive technology chosen by various OEMs for their next generation wet-DCT applications.

PERFORMANCE STANDARDS

Auto Maker	Specification	Auto Maker	Specification
VW / Audi	TL 052 182	Mitsubishi	TC-SST 6-speed (GFT)
	TL 052 529		MZ320065 DiaQueen SSTF-1
VW(Audi/Seat/Skoda)	G 052 529 A2 or A6	Peugeot / Citroen	DCS 6-speed(GFT)
	6-speed DCT		9734_S2
BMW	6-speed DCT	Volvo	Powershift 6-speed(GFT)
	Drivelogic 7-speed(Getrag)		1161838, 1161839
Ford/Getrag/Nissan	DCTF-1	Chrysler	Powershift 6-speed(Getrag)
	Powershift 6-speed(GFT)		EDC 6-speed(Getrag)
	M2C936A	ZF/Porsche	999.917.080.00

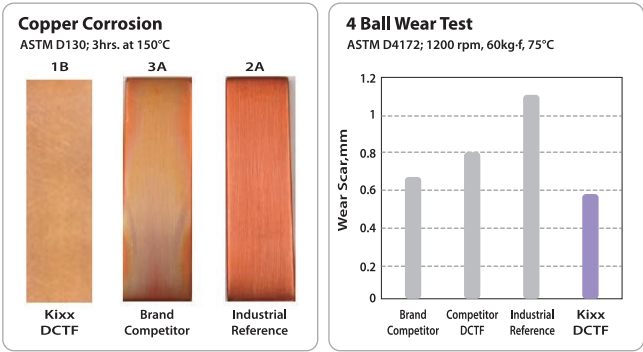
CUSTOMER BENEFITS

- Improved friction performance to provide shudder free driving experience.
- Excellent oxidation control to provide longer fluid life.
- Exceptional anti-corrosion performance for better hardware protection.
- Superior parts durability for hardware protection.
- Very good low temperature characteristics and high shear resistance.
- Increased fuel economy.

KEY PROPERTIES

Appearance	Amber & Clear
Density, kg/L @15°C	0.846
Kinematic Viscosity, mm²/s @ 40°C	35.3
Kinematic Viscosity, mm²/s @ 100°C	7.2
Viscosity Index	172
Pour Point °C	-50
Flash Point °C	210
Brookfield Viscosity, cP @-20°C	945
Brookfield Viscosity, cP @-40°C	11,760

UNIQUE FEATURES



Fully Synthetic

Kixx CVTF/ATF Dual

Top Performance Continuously Variable Transmission Automatic and Transmission Fluid



DESCRIPTION

Kixx CVTF/ATF Dual is a top performance multifunctional transmission fluid designed to providing superior versatility for both Automatic Transmission and Continuously Variable Transmissions(CVT) Service Fill applications. It is a specially formulated with synthetic base oil and premium additive system to provide good balance of high friction coefficient in steel-on-steel contact and long anti-shudder durability.

APPLICATIONS

- Pushbelt or chain type Continuously Variable Transmissions (CVTs)
- Most modern automatic transmissions

PERFORMANCE STANDARDS

Auto Maker	Specification (CVTF)	Auto Maker	Specification (ATF)
Toyota	CVTF TC, CVTF FE	Toyota/Aisin	AutoFluid D-II and D-III
Nissan	NS-1, NS-2, NS-3		Type T-IV, WS, JWS 3309, 3314, 3317
Honda	Z-1, HMMF, HCF-2	Nissan	Matic Fluid C, D, J, S
Mitsubishi	DiaQueen SP-III	Honda	Z-1, ATF DW-1
Mazda	Mazda JWS 3320	Mitsubishi	DiaQueen SP-II & IIM, SP-III
Subaru	Subaru EVT, iCVT		DiaQueen AW/PA, J2, J3, ATF PA
Daihatsu	Lineartronics Chain CVT	Mazda	ATF M-III, M-V, FZ
Suzuki	Ammix CVT, CVT Fluid DC, DFE	Subaru	Subaru ATF
Isuzu	CVTF TC/3320, NS-2	Daihatsu	Ammix ATF D3-SP
Hyundai/Kia	CVT J1	Suzuki	Suzuki ATF
GM	GM DEX-CVT	Isuzu	BESCO ATF-II, ATF-III
BMW	Mini Cooper EZL 799	Hyundai/Kia	SP-III, SP-IV
Audi	Multitronic Chain CVT	GM	Vehicles of model year 2005 and earlier
		Ford	Vehicles of model year 2006 and earlier*
		ZF	ZF manufactured 4-6 speeds ATs

CUSTOMER BENEFITS

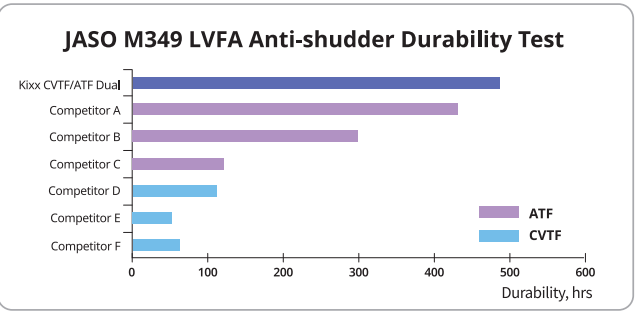
- Use for most vehicles equipped with CVT or AT
- Superior anti - shudder durability
- Maintain high steel-on-steel friction
- Extended paper friction durability in torque converter
- Retention of torque capacity on aging
- Excellent thermal and oxidation stability

KEY PROPERTIES

Appearance	Red
Density, kg/liter @15°C	0.845
Kinematic Viscosity, mm2/s @40°C	35.8
Kinematic Viscosity, mm2/s @100°C	7.44
Viscosity Index	181
Pour point, °C	-49
Flash point, COC, °C	214
Brookfield Viscosity, m Pas @-30°C	3,510
Brookfield Viscosity, m Pas @-40°C	11,300

UNIQUE FEATURES

Kixx CVTF/ATF Dual shows superior Anti-shudder Durability performance and high steel-on- steel friction for CVT.



Kixx Geartec FF GL-4

Top Performance Transmission & Transaxle Fluid for FF Vehicles

API GL-4, MIL-L-2105D



DESCRIPTION

Kixx Geartec FF GL-4 is a high-performance gear lubricant suitable for transaxle of FF vehicles(front engine front wheel drive). Especially, it is suitable for the transaxle of FF vehicles that needs high quality gear lubricant which provides outstanding oxidation resistance under extremely high temperature condition as well as excellent shear stability. Kixx Geartec FF GL-4 is made from high quality base oils and additives which provide wear resistance, oxidation stability, anti-rust and anticorrosion qualities as well as excellent shear stability.

PERFORMANCE STANDARDS

- API GL-4
- MIL-L-2105D

CUSTOMER BENEFITS

- Reduces operating costs by minimizing wear and extending equipment life.
- Long service life by resisting oxidation and oil thickening.
- Protects against corrosion of ferrous and non-ferrous component.
- Protects gears in severe service through its excellent load-carrying and EP properties.
- Lubricates effectively over a wide temperature range.

KEY PROPERTIES

SAE Grade	75W-85
Density, kg/L @15°C	0.87
Kinematic Viscosity, mm²/s @ 40°C	72.35
Kinematic Viscosity, mm²/s @ 100°C	12.32
Viscosity Index	169
Pour Point °C	-40
Flash Point °C	210

Kixx Geartec LSD GL-5

Top Performance Automotive Limited Slip Differential Fluid

API GL-5, ZF TE-ML 05C, 12C, 21C



DESCRIPTION

Kixx Geartec LSD GL-5 is formulated with a high performance sulfur-phosphorous extreme pressure additive, thermally stable hydro-cracked base stocks, and friction modifiers for limited slip performance. Its special friction properties smooth, noise free operation and extended life of these units.

APPLICATIONS

- Limited Slip hypoid differentials in rear wheel drive cars and light trucks, under all operating conditions.
- Manual Transmissions/transaxles where gear lubricants are recommended
- Complete fill or top-off of all limited slip differentials.
- Differential calling for API GL-5 gear lubricants plus supplemental limited slip additive.
- All conventional differential calling for this viscosity grade in an API GL-5 gear lubricant.
- For-wheel drive transfer case.

PERFORMANCE STANDARDS

- API GL-5
- MIL-L-2105D
- ZF TE-ML 05C, 12C, 21C Approved
- DOOSAN Genuine Limited Slip Gear Oil

CUSTOMER BENEFITS

Reduced inventory Costs

One gear lubricant for both conventional and limited slip differentials, Simplified inventory saves money, space, handling time and helps avoid product misapplication.

Extended gear life

Extreme pressure properties protect hypoid and other type of gears from scuffing and wear.

Long lubricant Life

Outstanding thermal and oxidation stability allow high temperature operation with long lubricant life.

Quiet operation

Special friction modifier additive provides excellent frictional characteristics, ensuring easy operation.

KEY PROPERTIES

SAE Grade	80W-90
Density, kg/L @15°C	0.882
Kinematic Viscosity, mm²/s @ 40°C	140.5
Kinematic Viscosity, mm²/s @ 100°C	15.1
Viscosity Index	109
Pour Point °C	-36
Flash Point °C	232

Kixx Geartec TO-4

Top Performance Off-road Transmission and Hydraulic Fluid

CATERPILLAR TO-4, ZF TE-ML 03C, 07F



DESCRIPTION

Kixx Geartec TO-4 is specially formulated heavy duty transmission fluid for off-highway power-shift transmission device and hydro-dynamic power shift, modern engineering machineries meeting the performance requirements of Caterpillar TO-4, Allison C-4 and other off-road equipment specification.

APPLICATIONS

- Kixx Geartec TO-4 is recommended for heavy duty off-highway equipment. It meets performance requirements and can be used in applications where manufactures recommend the use of Caterpillar TO-4 and Allison C-4 automatic or power-shift Transmission.
- Off-Road Transmission and associated equipment
 - Automotive manual transmissions and gearboxes
 - Hydraulic systems
 - Enclosed oil immersed (wet) brakes

PERFORMANCE STANDARDS

- Caterpillar TO-4
- Allison C-4(off-road), TES-439
- API GL-4
- Eaton I-280-S
- ZF TE-ML 03C, 07F Approved
- Komatsu KES 07.868.1
- Caterpillar TO-2
- Vickers M-2950-S

CUSTOMER BENEFITS

Maximizes transmission life

Extremely shear stable formulation maintains film thickness under severe transmission and hydraulic system operation, protecting vital components against scuffing and wear. Effective anti-wear additive also reduces wear by forming a protective layer on metal surfaces under high load conditions.

Longer oil life

Very high oxidation stability protects against the formation of gums and varnishes, reducing oil thickening and increasing oil life.

Saves on maintenance

Highly refined base oils and effective oxidation inhibitors provide

excellent thermal and oxidation stability, providing superior resistance to the formation of lacquer, deposits and corrosive oil degradation by-products. Excellent viscosity characteristics at low temperatures ensure rapid oil circulation on start-up, preventing wear which contributes to power loss.

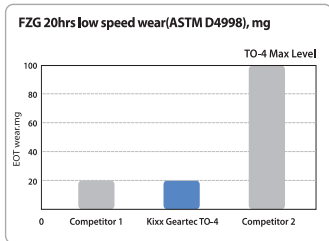
Smooth and quiet operation

Special friction modifier component allows smooth action of the wet brakes and power take off clutches minimizing chatter, stick slip and squawk and ensures maximum brake efficiency.

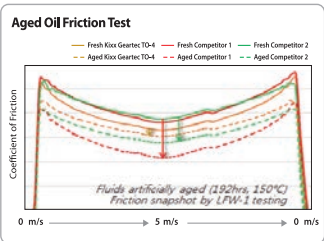
KEY PROPERTIES

SAE Viscosity	10W	30	50
Density, kg/L @15°C	0.865	0.874	0.879
Kinematic Viscosity, mm²/s @ 40°C	40.4	90	192
Kinematic Viscosity, mm²/s @ 100°C	6.5	11.1	18.7
Viscosity Index	113	108	107
Pour Point °C	-41	-37	-31
Flash Point °C	232	266	270
Viscosity, CCS, cP @ -20°C	2,420	9,645	32,099

UNIQUE FEATURES



- Kixx Geartec TO-4 demonstrates excellent performance in FZG low speed wear testing for wear under low speed, high load conditions
- Low speed, high load is common in construction and mining machinery



- Outstanding friction performance from fill to drain
- Little variation in aged-fluid friction with Kixx Geartec TO-4, compared to competitor fluids

Fully Synthetic

Kixx Gearsyn GL-4/5

Premium Manual Transmission and Axle Fluid providing ideal protection and performance

API GL-4, GL-5



DESCRIPTION

Premium performance Total Driveline Lubricants(TDL) formulated with PAO & VHVI synthetic base oil and latest advanced additive technologies to provide extremely loaded automotive gear protection and outstanding synchromesh performance. It is recommended for use in both transmission and axle applications.

APPLICATIONS

Light and heavy duty automotive axles and spiral-bevel, worm gear differentials automotive manual transmission and transaxles heavily loaded axle and synchronized or non-synchronized gear-boxes.

PERFORMANCE STANDARDS

- API GL-4, GL-5
- MIL-L-2105D

CUSTOMER BENEFITS

Longer fluid and equipment life

Outstanding oxidation and thermal stable performances help resist oil degradation and prevent damage to gears, bearings and seals from harmful deposits.

Excellent gear protection and synchronizer performance

The Special new additive technologies provide good load carrying capacity and wear protection, and also provide excellent and stable synchromesh compatibility.

Superior cold performance and fuel efficiency

The wide temperature range capability of the PAO based synthetic base fluid ensures correct oil viscosity which reduces friction at low temperature and provides maximum lubrication during high temperature operation.

KEY PROPERTIES

SAE Viscosity	75W-90
Density, kg/L @15°C	0.867
Kinematic Viscosity, mm²/s @ 40°C	82.8
Kinematic Viscosity, mm²/s @ 100°C	14.7
Viscosity Index	186
Pour Point °C	-46
Flash Point °C	220
Brookfield Viscosity, m Pas @-40°C	30400

UNIQUE FEATURES

Superior Thermal Stability	Excellent Load Carrying and Antiwear
Superior thermal stability performance which meets the OEM requirements for axle and transmission.	Excellent resisting gear wear and scuffing under severe conditions

Kixx Geartec GL-5

Top Performance Manual Transmission and Axle Fluid

API GL-5, MIL-L-2105D



DESCRIPTION

Kixx Geartec GL-5 is a high-performance, multipurpose, thermally stable, EP automotive gear lubricant.

APPLICATIONS

- Recommended for automotive hypoid gear applications requiring lubricants meeting MIL-L-2105D, MIL-L-2105C, MIL-L-2105B, API Service GL-5 or where EP, multi-purpose or hypoid type gear oils are specified.
- Recommended where loading is severe and maximum gear protection is required. “Clean gear” technology makes it particularly suitable where gear oil temperatures are high.
- Not recommended for manual transmissions and transaxles where the manufacturer specifies API GL-4(mild-EP) lubricants, or where the manufacturer advises against the use of API GL-5(multipurpose, hypoid) lubricants.

PERFORMANCE STANDARDS

- API GL-5
- MIL-L-2105D

CUSTOMER BENEFITS

Provides long equipment life by resisting gear wear and scuffing. Maximizes equipment availability by avoiding premature failure or need for overhaul due to deposit-induced seal wear and leakage. Assists smooth shifting in manual transmissions by controlling glazing and coking of friction surfaces in synchronizing mechanisms. Provides long oil service life by resisting oxidation and oil thickening. Provides against corrosion of ferrous and non-ferrous components.

KEY PROPERTIES

SAE Grade	75W-90	80W-90	85W-140	90	140
Density, kg/L @15°C	0.869	0.875	0.880	0.877	0.881
Kinematic Viscosity, mm ² /s @ 40°C	85.7	136.7	306.6	176.7	316.1
Kinematic Viscosity, mm ² /s @ 100°C	14.56	14.65	25.68	17.51	26.18
Viscosity Index	178	107	109	107	109
Pour Point °C	-43	-38	-32	-34	-30
Flash Point °C	225	208	210	232	232

UNIQUE FEATURES

High performance, thermally stable, EP automotive gear lubricant
(API GL-5, MIL-L-2105D, SAE 80W-90, 85W-140)

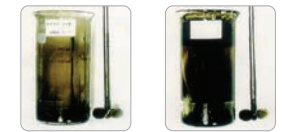
Very Good Anti-wear Performance

High quality base oil and additive provide good resisting gear wear and scuffing under severe conditions



Outstanding thermal & oxidation stability

GSC product is superior to other products in oxidation test under 150°C, 96 hours. (Oxidation Test Method : JIS K2514)



Automatic Transmission Fluid



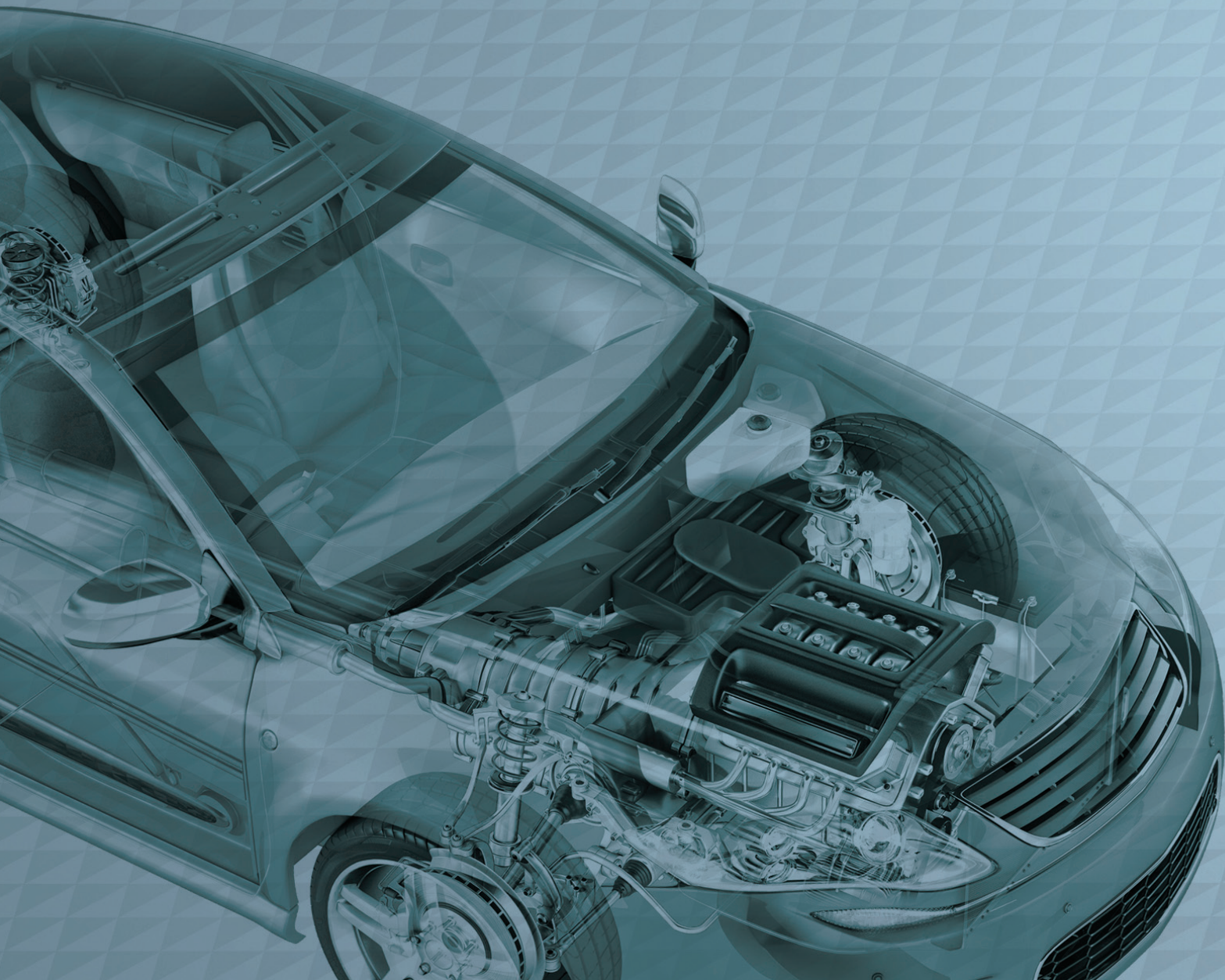
Kixx

The perfect fit for your driving

05 Specialties

Kixx PSF
Kixx THF
Kixx AF Coolant
Kixx CX AF Coolant HD
Kixx RA Coolant
Kixx Brake
Kixx Engine Clean
Kixx Oil Treatment

Specialties



Fully Synthetic

Kixx PSF

Top Performance Power Steering Fluid

ALLISON C-4, DEXRON®-III



DESCRIPTION

Kixx PSF is specially designed for use in power steering system applications over a wide temperature range, which is also meets the service requirements of many OEMs such as DEXRON®-II, DEXRON®-III, Allison C-4, etc. It is a high quality performance which meets oxidation resistance, low temperature fluidity, appropriate friction performance, high shear stability.

APPLICATIONS

- Power steering units(Passenger cars, trucks, buses, etc) for service-fill product is specified as DEXRON®-II, DEXRON®-III fluid.

PERFORMANCE STANDARDS

- General Motors DEXRON®-II, DEXRON®-III
- Allison C-4

CUSTOMER BENEFITS

- Ensures long life-time.
- Provides high foam stability.
- Provides excellent corrosion prevention.
- Provides good start operation in cold climates by excellent low-temperature fluidity.
- Provides more stable friction property.

KEY PROPERTIES

Appearance	Red
Density, kg/L @15°C	0.844
Kinematic Viscosity, mm²/s @ 40°C	34.3
Kinematic Viscosity, mm²/s @ 100°C	7.2
Viscosity Index	180
Pour Point °C	-48
Flash Point °C	212
Brookfield Viscosity, m Pas @-20°C	1,050
Brookfield Viscosity, m Pas @-40°C	11,000



Kixx THF

Top Performance Multi-functional Tractor Oil / UTTO

JOHN DEERE JDM J20C/D, API GL-4

DESCRIPTION

Kixx THF is a high quality, multi-functional, specially formulated universal tractor transmission oil(UTTO) for use in transmissions, hydraulic systems and final drives of modern farm and industrial wheel and crawler tractors.

APPLICATIONS

- Where tractor manufacturers specify the use of a THF/UTTO type product
- Mixed fleets of agricultural tractors and associated equipment
- Automotive manual transmissions and gear boxes
- Mobile hydraulic system
- Enclosed oil immersed (wet) brakes
- Power take off (PTO) clutches.

PERFORMANCE STANDARDS

- API GL-4
- John Deere JDM J20C, J20D
- CNH Case / New Holland MAT 3525, 3526, FNHA-2-C-201, M2C92A, 134-D
- Massey Ferguson CMS M1135, M1141, M1143, M1145
- Case MS-1206, MS-1207, MS-1210
- Allison C-3/C-4, Caterpillar TO-2
- Komatsu Dresser B-06-0001, B-06-0002
- Kubota UDT, Volvo CE WB101
- ZF TE-ML 03E, 03F, 05F, 06K

CUSTOMER BENEFITS

Maximizes transmission life

Extremely shear stable formulation maintains film thickness under severe transmission and hydraulic system operation, protecting vital components against scuffing and wear. Effective anti-wear additive also reduces wear by forming a protective layer on metal surfaces under high load conditions.

Longer oil life

Very high oxidation stability protects against the formation of gums and varnishes, reducing oil thickening and increasing oil life.

Saves on maintenance

Highly refined base oils and effective oxidation inhibitors provide excellent thermal and oxidation stability, providing superior resistance to the formation of lacquer, deposits and corrosive oil degradation by-products. Excellent viscosity characteristics at low temperatures ensure rapid oil circulation on start-up, preventing wear which contributes to power loss.

Smooth and quiet operation

Special friction modifier component allows smooth action of the wet brakes and power take off clutches minimizing chatter, stick slip and squawk and ensures maximum brake efficiency.

KEY PROPERTIES

SAE Grade	80W
Density, kg/L @15°C	0.866
Kinematic Viscosity, mm²/s @ 40°C	55.75
Kinematic Viscosity, mm²/s @ 100°C	9.506
Viscosity Index	155
Pour Point °C	-47
Flash Point °C	232
Viscosity,Brookfield cP @ -18°C	2,440
Foam Test, ml, Sequence I	5/0
Foam Test, ml, Sequence II	10/0
Foam Test, ml, Sequence III	5/0
Copper Corrosion, 100°C x 3hrs	1a

Kixx AF Coolant

Top Performance Antifreeze / Coolant

ASTM D 3306



DESCRIPTION

Kixx AF Coolant is a premium quality, ethylene glycol based anti-freeze coolant concentrate, designed primarily to meet the stringent corrosion protection requirements of late model car engines which have a significant amounts of aluminum in their construction. It is dyed a distinctive color for easy identification.

APPLICATIONS

- Primarily recommended for late model passenger car and light commercial vehicle engines where enhanced protection of aluminum heat-rejecting surfaces is required. It can also be used in certain cast iron, heavy-duty diesel engines, particularly, European dry-liner and “no-liner” designs, which operate without supplemental coolant additives(SCAs).
- Kixx AF Coolant is a coolant concentrate designed to be mixed with clean water. It is not a pre-diluted product. For optimum year-round protection a concentration of 50 percent solution of Kixx AF Coolant in water is recommended.
- Freezing and boiling protection provided by various concentrations of Kixx AF Coolant are as follows:

Amount of Kixx AF Coolant for Freezing Protection 8L Bolling Point		
Coolant in Water(vol.%)	Down to(°C)	Increase(°C)
60	-52	10
50	-37	8
40	-24	6
33	-18	5
Should not be used at concentrations more than 67 percent or less than 33 percent		

PERFORMANCE STANDARDS

- ASTM D 3306

CUSTOMER BENEFITS

- Protects cooling systems from corrosion and deposits.
- Provides a higher boiling point for protection against engine overheating.
- Prevents coolant freezing.
- Maximizes aluminum engine component life.
- Long service life.
- Compatible with hard tap water.

KEY PROPERTIES

Test Item		Specification	Typical Value
Specific Gravity	Undiluted	1.114 min	1.122
	30% vol% solution in water	-14.5 max	-15.7
Freezing point, °C	50% vol% solution in water	-34.0 max	-36.6
	Undiluted	155 min	170
Boiling point, °C	30% vol% solution in water	4 max	0
Foaming, ml	Undiluted	Report	22.6
Reserve alkalinity, ml	30% vol% solution in water	7.0~11.0	8.36
PH	Undiluted	5 max	3.91
Water, wt %			

Kixx AF Coolant HD

Top Performance Extended Life Antifreeze Coolant



DESCRIPTION

Kixx AF Coolant HD is an Extended Life Antifreeze Coolants based on ethylene glycol and phosphate using Hybrid Organic Acid Technology(HOAT) without amine, borate, nitrate and silicate. It has been designed for use and can be used in all models of foreign and domestic passenger vehicles, light duty and heavy duty diesel applications especially for heavy duty use. It will provide extended protection against rust, erosion, galvanized corrosion and pitting caused by cavitation for all coolant system metals, including aluminum. It offers excellent protection against temperature extremes, preventing freeze-up and boil over when used in accordance with OEM and product manufacturer’s guidelines regarding product dilution. The superior performance and stability of this premium extended life corrosion inhibitor package allows the product to go on working well beyond the lifetime of traditional products.

APPLICATIONS

- Large trucks and buses, automotive vehicles, cars, such as for filling and supplement.
- Industrial vehicles, machinery and equipment, filling and cooling system supplement.
- Marine institutions of cooling device filling and supplement.
- Aircraft de-ice for the filling and supplement.

PERFORMANCE STANDARDS

- ASTM D 3306, D 4985, D 6210
- JIS K 2234
- KS M 2142

CUSTOMER BENEFITS

When used as a 50% coolant in softened or de-ionized water, Kixx AF Coolant HD offers the following advantages

- Compatible with other extended life heavy duty diesel coolants such as Caterpillar ELC.

- Compatible with Coolant Extenders currently used with OAT based heavy duty diesel coolants.
- Does not require the use of traditional SCAs(Supplemental Coolant Additives).
- Hard water compatible.
- Excellent liner cavitation protection.
- Excellent high temperature aluminium protection.
- Can be used 10 years or 200,000km for passenger car.

Freezing and boiling protection provided by various concentrations of Kixx AF Coolant HD are as follows:

Amount of Kixx AF Coolant HD for Freezing and Boiling Protection		
Coolant in Water(vol.%)	Down to(°C)	Increase(°C)
60	-52	10
50	-36	8
40	-25	6
30	-16	4

KEY PROPERTIES

Test Item		Specification	Typical Value
Specific Gravity	Undiluted	1.12~1.15	1.136
	30% vol% solution in water	Max -14.5	-15.2
Freezing point, °C	50% vol% solution in water	Max -34.0	-36.5
	Undiluted	Min 155	165
Boiling point, °C	30% vol% solution in water	Max 4	0
Foaming, ml/s	Undiluted	Report	12.8
Reserve alkalinity, ml	30% vol% solution in water	7.0~9.0	7.74
PH	50% vol% solution in water	7.0~9.0	7.81
	Undiluted	Max 5.0	4.25
Water, wt %			

Kixx RA Coolant

Top Performance Radiator / Coolant



DESCRIPTION

Kixx RA Coolant is a premium quality, ethylene glycol based amine-phosphate type coolant, which is pre-mixed with ionized water (80%). It is designed primarily to meet the corrosion protection requirements of late model car engines having significant amounts of aluminum in their construction. It is dyed a distinctive color for ready identification.

APPLICATIONS

- Primarily recommended for late model passenger car and light commercial vehicle engines where enhanced protection of aluminum heat-rejecting surfaces is required. It can also be used in certain cast iron, heavy-duty diesel engines, which operate without supplemental coolant additives(SCAs).
- Kixx RA Coolant is a pre-diluted coolant with clean water. Its freezing point is about -8°C, boiling point increases about 3°C.

PERFORMANCE STANDARDS

- ASTM D 3306
- KS M2142
- JIS K2234

CUSTOMER BENEFITS

- Protects cooling systems from corrosion and deposits.
- Provides higher boiling point for protection against engine overheating.
- Prevents coolant freezing.
- Maximizes aluminum engine component life.
- Long service life.

KEY PROPERTIES

Test Item		Specification	Typical Value
Specific Gravity	Undiluted	1.020~1.028	1.028
Freezing point, °C	Undiluted	-7 max	-8.1
Boiling point, °C	Undiluted	100 min	103
Foaming, ml	Undiluted	10 max	0
PH	Undiluted	6.0~11.0	8.24

Kixx Brake

Top Performance Automotive Brake Fluid

DOT 3, DOT 4



DESCRIPTION

Kixx Brake is a premium, non-petroleum automotive brake fluid, designed for use in a wide range of conventional hydraulic brake and clutch systems in severe service conditions or where DOT fluids are recommended.

PERFORMANCE STANDARDS

- DOT-3: FMVSS No. 116 DOT 3, SAE J1703, ISO 4925
- DOT-4: U.S. Federal Motor Vehicle Safety Standard (FMVSS) No. 116 DOT 4, SAE J1704, ISO 4925

CUSTOMER BENEFITS

Excellent braking response

Low volatility minimizes vapor formation over a wide temperature range, ensuring good braking performance and providing an additional margin of safety against vapor lock under more severe service conditions.

Reliable operation in severe service

High thermal and oxidation stability provides resistance to fluid degeneration and formation of harmful deposits, even under severe service conditions.

Saves on maintenance

Compatible with all metallic, plastic and elastomer components, providing continuous corrosion protection and lubrication throughout the brake/clutch system.

Reduces inventory costs

Widespread suitability for different motor vehicles as it may be used in systems designed for DOT 3, DOT 4.

KEY PROPERTIES

FMVSS Grade	DOT 3	DOT 4
Specific Gravity	1.07	1.1
Equilibrium Reflux Boiling Pt., °C	234	258
Wet Equilibrium Reflux Boiling Pt., °C	151	163
Kinematic Viscosity, cSt @ 40°C	1225	1073
Kinematic Viscosity, cSt @ 100°C	2.8	2.1
pH	9.58	8.64

Kixx Engine Clean

Top Performance Engine Flushing Oil



DESCRIPTION

Kixx Engine Clean, highly effective engine flushing oil is intended for clearing the buttered system of carbonaceous and varnish adjournment of gasoline and diesel engines of all types and also mechanical transmissions and allowing transition to oils with higher operational properties. It is recommended for use at transition from mineral oils to semi synthetic and synthetic oils.

APPLICATIONS

- Restores mobility of piston rings.
- Prevents blocking of hydrojacks and eliminates their knock.
- In the course of washing oil channels, other knots of the engine are cleared of harmful adjournment formed while in service.
- Application is recommended at each replacement of oil.

FLUSHING STEPS

- Drain old engine oil from system, having to have the used buttered filter in place.
- Then fill oil system with engine flush oil (no less than 75 % from necessary volume of oil in the engine).
- Start the engine and allow it to work idly in a current for 20 minutes.
- Then drain engine flush oil from system, change the oil filter and fill in with new engine oil.

KEY PROPERTIES

ISO VG Grade	32
Density, kg/L @15°C	0.8535
Kinematic Viscosity, mm²/s @ 40°C	30.19
Kinematic Viscosity, mm²/s @ 100°C	5.4
Viscosity Index	114
Pour Point °C	-15
Flash Point °C	228

Kixx Oil Treatment

Top Performance Engine Oil Booster



DESCRIPTION

Kixx Oil Treatment is a high quality, shear-stable, oil booster specially designed to help for engine oil maintain its stay-in-grade. it contains a shear stable viscosity index improver, a lubricity agent, a corrosion fighter and acid-inhibitor additives.

APPLICATIONS

- Booster for gasoline engine in passenger car.
- Booster for diesel engine in light and heavy duty truck.

CUSTOMER BENEFITS

- Reduce engine wear
- Decrease friction and increase power
- Reduce oil consumption
- Quiet noisy engine

RECOMMENDED USES

- Add Kixx Oil Treatment to your engine oil when engine is warm.
- Use 1 can of Kixx Oil Treatment with 4ℓ of engine oil (Approximately 10% Kixx Oil Treatment).
- Add Kixx Oil Treatment when you change oil or between oil change.

KEY PROPERTIES

Density, kg/L @15°C	0.8486
Viscosity, cSt @ 100°C	374

Kixx

The perfect fit for your machinery

06 Hydraulic Fluid

Kixx RD BIO 46
Kixx Hydro HVL
Kixx Hydro HVI
Kixx Hydro HVZ
Kixx Hydro XZ
Kixx Hydro AF
Kixx Hydro HX
Kixx Hydro XW
Kixx Hydro R&O



*Hydraulic
Fluid*

Fully Synthetic

Kixx RD BIO 46

Fully Synthetic,
Biodegradable Hydraulic Fluid



EU Ecolabel: BE/027/005



ISO VG 46

DESCRIPTION

Kixx RD Bio is an advanced biodegradable hydraulic fluid which shows high performance above ISO 15380 HEES specification. It is readily biodegradable with a low level of ecotoxicity and bioaccumulation, so that the use for hydraulic devices operated in environmentally sensitive area is particularly suited. Fully synthetic esters, blended with state-of-the-art ashless additives, provide Kixx RD Bio with outstanding lubrication performance and environmental acceptability.

APPLICATIONS

- Industrial hydraulic devices operated in environmentally sensitive area
- Industrial hydraulic devices subject to wide variation in operating temperature
- Hydraulic systems in construction, mobile and agricultural equipments
- General industrial circulating and hydraulic systems in various stationary devices

PERFORMANCE STANDARDS

Kixx RD BIO meets performance standards as below.

- EU Ecolabel for biodegradable hydraulic fluid
- ISO 15380 HEES
- US EPA (Environmental Protection Agency) 2013 VGP (Vessel General Permit)

CUSTOMER BENEFITS

Longer hydraulic device life

Advanced ashless anti-wear additives protects key hydraulic elements over a wide range of operating conditions. It passed vane pump durability test (Vickers 104C, more than 90% of margin against pass limit).

Reduced downtime

- Effective oxidation and rust inhibition system prevents
- the generation of abrasive particles from rust and deposits
 - varnishes and sludges from base fluid breakdown
 - filter blockage

Wide temperature application

Excellent viscosity-temperature characteristics can minimize the variation in kinematic viscosity with variation in operating temperature, and reduce the risk of breakdown in high pressure and high load hydraulic devices which operate over a wide range of temperature.

Environment protection

Formulation consists of high biobased materials (82 % of biobased carbon content, ASTM D6866) and its excellent biodegradability (more than 60 % after 28 days, OECD 301 B) provide ultimate environment protection.

FLUID COMPATIBILITY

Kixx RD BIO is miscible with general hydraulic oils formulated using mineral base oils. However, hydraulic devices in which Kixx RD BIO will be applied should be flushed as much as possible, to maintain excellent environmental properties and performances.

SEAL COMPATIBILITY

Kixx RD BIO is compatible with HNBR (Hydrogenated Nitrile Butadiene Rubber), NBR 1 (Acrylonitrile Butadiene Rubber) and FKM 2 (Fluroelestomer).

Test Results (ISO 6072)

Material	HNBR	NBR 1	FKM 2	AU
Test Temperature [°C]	80	80	80	80
Degradation time [hr.]	1000	1000	1000	1000
Change in shore A hardness [grade]	-2.9	-3.3	-4.0	-2.3
Change in volume [%]	5.7	7.7	0.1	-1.0
Change in elongation [%]	1	-17	-1	-25
Change in tensile strength [%]	9	3	13	-64

KEY PROPERTIES AND PERFORMANCES

Test Items	Standard	Unit	Result
Density @15 °C	ISO 12185	kg/L	0.902
Kinematic Viscosity @-20 °C	ISO 3104	cSt	2564
Kinematic Viscosity @0 °C		cSt	444.6
Kinematic Viscosity @40 °C		cSt	46.19
Kinematic Viscosity @100 °C		cSt	7.916
Flash Point, C.O.C.	ISO 2592	°C	268
Pour Point	ISO 3016	°C	-36
Rust Prevention	ISO 7120	-	Pass
Copper Corrosion	ISO 2160	-	1a
FZG A/8.3/90, Fail Load Stage	ISO 14635-1	-	12



Kixx Hydro HVL

Premium Long-life Antiwear Hydraulic Fluid
for Excavator

ISO VG 46

DESCRIPTION

Kixx Hydro HVL is a premium quality, shear stable, multi-viscosity, anti-wear hydraulic fluid, designed for use in hydraulic systems subjected to wide variations in ambient and operating temperatures. It is specifically designed to meet the long-life hydraulic oil requirement of construction equipment. (Excavator : 5000 hrs)

APPLICATIONS

- Industrial hydraulic equipment subject to wide variation in temperatures
- Hydraulic Systems in mobile, construction and agricultural equipment
- Industrial Hydraulic systems with vane, gear or piston pumps
- Enclosed gears operating under moderate load conditions
- Industrial circulating systems where a rust and oxidation inhibitor or antiwear oil is required

PERFORMANCE STANDARDS

Kixx Hydro HVL meets performance standards as below.

- Denison Hydraulics HF-0
- Vickers I-286-S [industrial applications], M-2950-S [mobile applications]
- Bosch Rexroth RDE 90220
- ISO Standard 6743 Part 4, Type HV
- GB 11118.1-2011, L-HV
- DIN 51524 Part 3, HVLP

CUSTOMER BENEFITS

Wide temperature application

Shear stable, multi-viscosity characteristics reduce the risk of breakdown in high pressure & high load hydraulic systems which operate over a wide temperature range.

Longer equipment life

Special anti-wear additive package reduces wear by protecting surfaces when applied load causes breakdown of the lubricating film.

Reduced downtime

Effective rust and oxidation inhibitor system prevents

- the production of abrasive particles from rust & deposits
- varnishes and sludges from oil breakdown which can damage equipment surfaces & seals
- filters being blocked prematurely

Trouble-free operation

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

Extended oil service life

High oxidation stability resists oil thickening and deposit formation in service, eliminating the need for unscheduled change of hydraulic fluid.

KEY PROPERTIES

ISO VG	46
Specific Gravity, 15 °C	0.852
Kinematic Viscosity, mm ² /s @ 40°C	46.5
Kinematic Viscosity, mm ² /s @ 100°C	8.0
Viscosity Index	147
Pour Point °C	-45
Flash Point °C	243
Copper Corrosion, 100°C/3hr	1a
Rust Preventive, Sea Water	Pass
Demulsibility, min	15

Kixx Hydro HVI

Premium Wide Temperature Range Antiwear Hydraulic Fluid for Excavator

ISO VG 46



DESCRIPTION

Kixx Hydro HVI is a premium quality, shear stable, multi-viscosity, anti-wear hydraulic fluid, designed for use in hydraulic systems subjected to wide variations in ambient and operating temperatures. It is designed for excavators to meet the requirements of major manufacturers and users of hydraulic system(Excavator : 2000 hrs).

APPLICATIONS

- Industrial hydraulic equipment subject to wide variation in temperatures
- Hydraulic Systems in mobile, construction and agricultural equipment
- Industrial Hydraulic systems with vane, gear or piston pumps
- Enclosed gears operating under moderate load conditions
- Industrial circulating systems where a rust and oxidation inhibitor or antiwear oil is required

PERFORMANCE STANDARDS

- ISO 11158 HV
- DIN 51524 Part 3 HVLP
- GB 11118.1-2011, L-HV
- AIST 126, 127
- Bosch Rexroth RDE 90220
- Parker Denison TP30560 HF-0, HF-1, HF-2
- Fives Cincinnati Machine P70
- GM Hydraulic Anti-Wear
- JCMAS P041 HK Low Temperature
- Eaton M-2950-S
- Vickers I-286-S3

CUSTOMER BENEFITS

Wide temperature application

Shear stable, multi-viscosity characteristics reduce the risk of breakdown in high pressure & high load hydraulic systems which operate over a wide temperature range.

Longer equipment life

Special anti-wear additive package reduces wear by protecting surfaces when applied load causes breakdown of the lubricating film.

Reduced downtime

- Effective rust and oxidation inhibitor system prevents
- the production of abrasive particles from rust & deposits
 - varnishes and sludges from oil breakdown which can damage equipment surfaces & seals
 - filters being blocked prematurely

Trouble-free operation

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

Extended oil service life

High oxidation stability resists oil thickening and deposit formation in service, eliminating the need for unscheduled change of hydraulic fluid.

KEY PROPERTIES

ISO VG	46
Density, kg/L @15°C	0.860
Kinematic Viscosity, mm²/s @ 40°C	46.2
Kinematic Viscosity, mm²/s @ 100°C	8.4
Viscosity Index	155
Pour Point °C	-45
Flash Point °C	233
Copper Corrosion, 100°C/3hr	1a
Rust Preventive, Sea Water	Pass
Demulsibility, min	15

Kixx Hydro HVZ

Top Performance Wide Temperature Range Antiwear Hydraulic Fluid

ISO VG 15, 22, 32, 46, 68, 100



DESCRIPTION

Kixx Hydro HVZ is a premium quality, shear stable, multi-viscosity, anti-wear hydraulic fluid, designed for use in hydraulic systems subjected to wide variations in ambient and operating temperatures(Excavator : 2000 hrs).

APPLICATIONS

- Industrial hydraulic equipment subject to wide variation in temperatures
- Hydraulic Systems in mobile, construction and agricultural equipment
- Industrial Hydraulic systems with vane, gear or piston pumps
- Fork-lift trucks
- Enclosed gears operating under moderate load conditions
- Industrial circulating systems where a rust and oxidation inhibitor or antiwear oil is required

PERFORMANCE STANDARDS

Kixx Hydro HVZ meets performance standards as below.

- Denison Hydraulics HF-0(ISO VG 32, 46, 68)
- Vickers I-286-S [industrial applications], M-2950-S [mobile applications] (ISO VG 32, 46, 68)
- Cincinnati Milacron P-68 (ISO VG 32), P-69 (ISO VG 68), P-70 (ISO VG 46)
- Bosch Rexroth RDE 90220 and RE 07 075
- ISO Standard 6743 Part 4, Type HV
- DIN 51524 Part 3, HVLP
- GB 11118.1-2011, L-HV
- US Steel 126 and 127

CUSTOMER BENEFITS

Wide temperature application

Shear stable, multi-viscosity characteristics reduce the risk of breakdown in high pressure & high load hydraulic systems which operate over a wide temperature range.

Longer equipment life

Special anti-wear additive package reduces wear by protecting surfaces when applied load causes breakdown of the lubricating film.

Reduced downtime

- Effective rust and oxidation inhibitor system prevents
- the production of abrasive particles from rust & deposits
 - varnishes and sludges from oil breakdown which can damage equipment surfaces & seals
 - filters being blocked prematurely

Trouble-free operation

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

Extended oil service life

High oxidation stability resists oil thickening and deposit formation in service, eliminating the need for unscheduled change of hydraulic fluid.

KEY PROPERTIES

ISO VG	15	22	32	46	68	100
Density, kg/L @15°C	0.840	0.839	0.851	0.861	0.866	0.872
Kinematic Viscosity, mm²/s @ 40°C	14.9	21.7	31.9	46.2	68.9	101.2
Kinematic Viscosity, mm²/s @ 100°C	3.8	5.0	6.3	8.3	11.0	14.4
Viscosity Index	165	169	154	155	153	147
Pour Point °C	-55	-45	-45	-45	-42	-32
Flash Point °C	172	206	218	233	234	246
Copper Corrosion, 100°C/3hr	1a	1a	1a	1a	1a	1a
Rust Preventive, Sea Water	pass	pass	pass	Pass	Pass	pass
Demulsibility, min	20	15	15	15	15	15

Kixx Hydro XZ

Premium Performance Wide Temperature Range
Antiwear Hydraulic Fluid

APPROVAL: EATON E-FDGN-TB002-E
ISO 32, 46, 68



Kixx Hydro XZ is a premium quality, shear stable, multi-viscosity, anti-wear hydraulic fluid, designed for use in hydraulic systems subjected to wide variations in ambient and operating temperatures and severe load for very high discharge pressure.

APPLICATIONS

- Industrial hydraulic equipment subject to wide variation in temperatures
- Hydraulics of mobile, construction and agricultural equipment
- Industrial hydraulic systems with vane, gear or piston pumps
- Fork-lift trucks
- Plastic injection molding machines
- Marine deck equipment, steering gears, bow thrusters and automatic controls
- Enclosed gears operating under moderate load conditions
- Industrial circulating systems where a rust and oxidation inhibitor or antiwear oil is required

PERFORMANCE STANDARDS

- Kixx Hydro XZ has the following approvals.
- Eaton E-FDGN-TB002-E (ISO 32, 46, 68)
- Kixx Hydro XZ meets performance standards as below.
- Parker Denison TP30560 HF-0, HF-1, HF-2 (ISO 32, 46, 68)
 - Fives Cincinnati Machine P-68 (ISO 32), P-69 (ISO 68), P 70 (ISO 46)
 - GM Hydraulic Anti-Wear LH-04
 - JCMAS P041 HK Low Temperature Use(ISO 32, 46)
 - ISO 11158 HV
 - DIN 51524 Part 3 HVLP
 - GB 11118.1-2011, L-HV
 - SAE MS 1004 HM
 - AIST 126, 127
 - David Brown Industrial Gears 0A, 1A, 2A, 3A, 4A, 5A

BENEFITS

Wide temperature application

Shear stable, multi-viscosity characteristics reduce the risk of breakdown in high pressure/high load hydraulic systems which operate over a wide temperature range.

Longer equipment life

Special anti-wear additive package reduces wear by protecting surfaces when load causes breakdown of the lubricant film under severe load for very high discharge pressure.

Reduced downtime

Effective rust and oxidation inhibitor system prevents

- the production of abrasive particles from rust & deposits
- varnishes and sludges from oil breakdown which can damage equipment surfaces & seals
- filters being blocked prematurely

Trouble-free operation

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

Extended oil service life

High oxidation stability resists oil thickening and deposit formation in service, eliminating the need for unscheduled change of hydraulic fluid.

ENVIRONMENT, HEALTH AND SAFETY

Information is available on this product in the GS Caltex Material Safety Data Sheet (MSDS) and GS Caltex Customer Safety Guide. Customers are encouraged to review this information, follow precautions and comply with laws and regulations concerning product use and disposal

KEY PROPERTIES

ISO Grade	32	46	68
Density, kg/liter @15°C	0.850	0.860	0.866
Kinematic Viscosity, mm ² /s @ 40°C	31.79	46.00	68.17
Kinematic Viscosity, mm ² /s @ 100°C	6.358	8.290	10.86
Viscosity Index	156	157	150
Pour Point, °C	-51	-45	-42
Flash Point, COC, °C	224	240	252
Rust Preventing Characteristics(D665)	pass	pass	pass
Copper Corrosion(3hr @ 100°C)	1a	1a	1a



Kixx Hydro AF

Top Performance Ash Free Anti-Wear Hydraulic Fluid

ISO VG 46, 68

DESCRIPTION

Kixx Hydro AF is designed to give maximum protection to hydraulic pumps in high temperature industrial applications as well as in environmentally sensitive areas. It is formulated with high quality base oils and an ashless (“Zinc-free”) additive system that provides superior oxidation stability, water separability, foam suppression, and protection against wear, rust and corrosion.

APPLICATIONS

- Industrial hydraulic equipment operated in plants and factory
- Industrial Hydraulic systems with vane, gear or piston pumps
- Enclosed gears operating under moderate load conditions
- Industrial circulating systems where a rust and oxidation inhibitor or antiwear oil is required

PERFORMANCE STANDARDS

- ISO 11158 HM
- ASTM D6158
- DIN 51524 Part 2 HLP
- GB 11118.1-2011, L-HM
- AIST 126, 127
- Parker Denison TP30560 HF-0, HF-1, HF-2
- Fives Cincinnati Machine P70(VG 46)/P69(VG 68)
- GM Hydraulic Zinc-Free Anti-Wear
- Eaton M-2950-S
- Vickers 1-286-S3
- SAE MS 1004 HM

CUSTOMER BENEFITS

Premium performance

Ashless formulation meets or exceeds pump manufacturer’s requirements for viscosity, rust and corrosion protection, hydrolytic stability, water separability, foam inhibition, and filterability.

Superior oxidation stability

Longer service life than conventional antiwear hydraulic oils or vegetable hydraulic oils.

Excellent antiwear properties

Provides excellent wear protection.

KEY PROPERTIES

ISO VG	46	68
Density, kg/L @15°C	0.850	0.859
Kinematic Viscosity,mm ² /s@40°C	45.8	68.8
Kinematic Viscosity,mm ² /s@100°C	7.4	9.5
Viscosity Index	124	116
Pour Point °C	-39	-36
Flash Point °C	236	254

Kixx Hydro HX

Long-life Anti-wear Hydraulic Fluid
with High Flash Temperature

ISO VG 46



DESCRIPTION

Kixx Hydro HX is a long-life anti-wear hydraulic fluid with high flash temperature (exceeds 250 degree of Celsius, ASTM D92). Based on optimized formula-tion with high quality base fluids and additives, Kixx Hydro HX can be used for relatively long time compared with other anti-wear hydraulic fluids, and contributes to reduction in maintenance cost and increase in maintenance convenience.

APPLICATIONS

- Industrial hydraulic equipments (especially, specified to use hydraulic fluid whose flash temperature exceeds 250 degree of Celsius)
- Plastic injection molding machines
- Marine deck equipment, steering gears, bow thrusters and automatic controls
- Enclosed gears operating under moderate load conditions
- Industrial circulating systems where a rust and oxidation inhibitor or anti-wear oil is required

PERFORMANCE STANDARDS

Kixx Hydro HX meets performance standards as below.

- ISO 11158 HM
- ASTM D6158
- DIN 51524 Part 2 HLP
- GB 11118.1-2011, L-HM
- SAE MS 1004 HM
- Bosch Rexroth Spec. RDE 90235
- Eaton M-2950-S / Vickers I-286-S3
- Parker Denison TP30560 HF-0, HF-1, HF-2
- Fives Cincinnati Machine P-70
- GM Hydraulic Anti-Wear LH-04
- JCMAS P041 HK Normal Temperature Use
- AIST 126, 127
- David Brown Industrial Gears 0A, 1A, 2A, 3A, 4A, 5A

BENEFITS

Extended oil service life

Outstanding oxidation stability resists oil thickening and deposit formation in service, eliminating the need for unscheduled change of hydraulic fluid. It was dem-onstrated through field tests using hydraulic injection molding machines (whose

clamping forces are 250 and 350 ton) put into producing automotive HVAC control panels (for more than 15,000 hours).

Longer equipment life

Special anti-wear additive package reduces wear by protecting surfaces when load causes breakdown of the lubricant film under severe load for very high discharge pressure.

Reduced downtime

Effective rust and oxidation inhibitor system prevents

- the production of abrasive particles from rust & deposits
- varnishes and sludges from oil breakdown which can damage equipment surfaces & seals
- filters being blocked prematurely

Trouble-free operation

Good hydrolytic stability and water separation characteristics provide excellent filter-ability in the presence of water contamination. Good anti-foam and air release prop-erties ensure smooth operation and system efficiency.

Flexible response to regulation

High flash temperature (exceeds 250 degree of Celsius, ASTM D92) contributes to flexible response for fire protection regulation in some countries

ENVIRONMENT, HEALTH AND SAFETY

Information is available on this product in the GS Caltex Material Safety Data Sheet (MSDS) and GS Caltex Customer Safety Guide. Customers are encouraged to re-view this information, follow precautions and comply with laws and regulations concerning product use and disposal

KEY PROPERTIES

ISO VG	46
Density, kg/liter, @ 15 °C	0.853
Kinematic Viscosity, mm ² /s @ 40°C	48.30
Kinematic Viscosity, mm ² /s @ 100°C	7.634
Viscosity Index	124
Pour Point °C	-36
Flash Point, COC, °C	254
Rust Preventing Characteristics(D665)	Pass
Copper Corrosion(3hr @ 100°C)	1a



Kixx Hydro XW

Top Performance Antiwear Hydraulic Fluid

ISO VG 32, 46, 68, 100, 150, 220, 320

DESCRIPTION

Kixx Hydro XW is a premium-quality antiwear hydraulic fluid designed for use in mobile and stationary high pressure hydraulic systems.It contains a stabilized zinc additive system which provides outstanding antiwear characteristics, and also provides good thermal and oxidation stability.

APPLICATIONS

- Industrial hydraulic equipment operated in plants and factory
- Industrial Hydraulic systems with vane, gear or piston pumps
- Enclosed gears operating under moderate load conditions
- Industrial circulating systems where a rust and oxidation inhibitor or antiwear oil is required

PERFORMANCE STANDARDS

- ISO 11158 HM(VG 32, 46, 68, 100, 150)
- ASTM D6158(VG 32, 46, 68, 100, 150)
- DIN 51524 Part 2 HLP(VG 32, 46, 68, 100, 150)
- GB 11118.1-2011, L-HM(VG 32, 46, 68, 100, 150)
- Bosch Rexroth RDE 90245(VG 32 ,46, 68)
- GM Hydraulic Anti-Wear(VG 32, 46, 68)
- SAE MS 1004 HM(VG 32, 46, 68, 100)
- AIST 126, 127(VG 32,46,68,)
- Parker Denison TP30560 HF-0, HF-1, HF-2(VG 32, 46, 68)
- Fives Cincinnati Machine P68(VG 32)/P70(VG 46)/P69(VG 68)
- JCMAS P041 HK Normal Temperature(VG 32, 46)
- Eaton E-FDGN-TB002-E(VG 32, 46)
- Eaton M-2950-S/Vickers I-286-S3(VG 68)
- JCMAS P041 HK Normal Temperature(VG 32, 46)

CUSTOMER BENEFITS

Longer equipment life

Special anti-wear additive package reduces wear by protecting surfaces when applied load causes breakdown of the lubricating film.

Reduced downtime

Effective rust and oxidation inhibitor system prevents
- the production of abrasive particles from rust & deposits

- varnishes and sludges from oil breakdown which can damage equipment surfaces & seals
- filters being blocked prematurely

Trouble-free operation

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

Extended oil service life

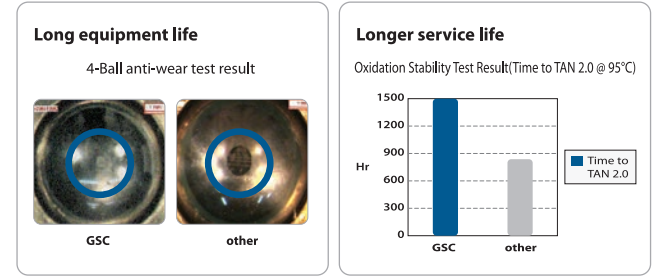
High oxidation stability resists oil thickening and deposit formation in service, eliminating the need for unscheduled change of hydraulic fluid.

KEY PROPERTIES

ISO VG	32	46	68	100	150	220	320
Density, kg/L @15°C	0.852	0.861	0.863	0.868	0.875	0.879	0.880
Kinematic Viscosity,mm ² /s@40°C	32.3	46.3	67.8	100.2	149.2	213.0	312.5
Kinematic Viscosity,mm ² /s@100°C	5.8	7.2	9.3	11.9	15.5	20.1	25.9
Viscosity Index	120	115	113	109	106	110	108
Pour Point °C	-36	-30	-25	-27	-32	-26	-24
Flash Point °C	221	229	235	243	245	247	249
Rust Preventive, Sea Water (D665)	Pass	Pass	Pass	Pass	Pass	Pass	Pass

UNIQUE FEATURES

- The special anti-wear additive package reduces wear by protecting surface when load breakdown of the lubricant film.
- Outstanding oxidation stability compared with other anti-wear hydraulic oil en-sure less in-service thickening and longer fluid life.





Kixx Hydro R&O

General Purpose Hydraulic Fluid

ISO VG 32, 46, 68, 100, 320

DESCRIPTION

Kixx Hydro R&O is a general purpose hydraulic fluid, rust and oxidation inhibited hydraulic fluid designed for used in a variety of industrial applications.

APPLICATIONS

- Mobile and stationary hydraulic systems using axial piston type pumps where R&O type oils are suitable
- Hydraulic systems using vane and gear pumps where pressures and speeds allow the use of R&O type oils (Not suitable for hydraulic systems where antiwear type oils are required)
- Industrial circulating systems where a rust and oxidation inhibitor is required
- Enclosed gear applications where antiwear or EP properties are not required

PERFORMANCE STANDARDS

- ISO 11158 HL(VG 32, 46, 68, 100)
- DIN 51524 Part 1, HL(VG 32, 46, 68, 100)
- GB 11118.1-2011, L-HL(VG 32,46, 68, 100)

CUSTOMER BENEFITS

- Providing long service life by resisting oil thickening and the formation of harmful sludge or varnish deposits
- Protection against rust
- Rapid separation of mixed water

KEY PROPERTIES

ISO VG	32	46	68	100	320
Density, kg/L @15°C	0.853	0.856	0.862	0.864	0.8908
Kinematic Viscosity, mm²/s @ 40°C	30.8	46.2	67.4	97.13	333
Kinematic Viscosity, mm²/s @ 100°C	5.5	7.2	9.3	11.71	25.78
Viscosity Index	117	116	115	109	101
Pour Point °C	-33	-30	-27	-24	-15
Flash Point °C	228	234	240	249	270
Rust Preventive, Sea Water (D665)	Pass	Pass	Pass	Pass	Pass

UNIQUE FEATURES

- Superior oxidation & Thermal stability resists oil thickening and deposit formation in service, eliminating the need for unscheduled change of hydraulic oil.

Superior Oxidation & Thermal stability

GSC product produce less sludge than other products
(test under 150°C, 168 hrs)



GSC

other



Kixx Hydro

The perfect fit
for your machinery



Kixx

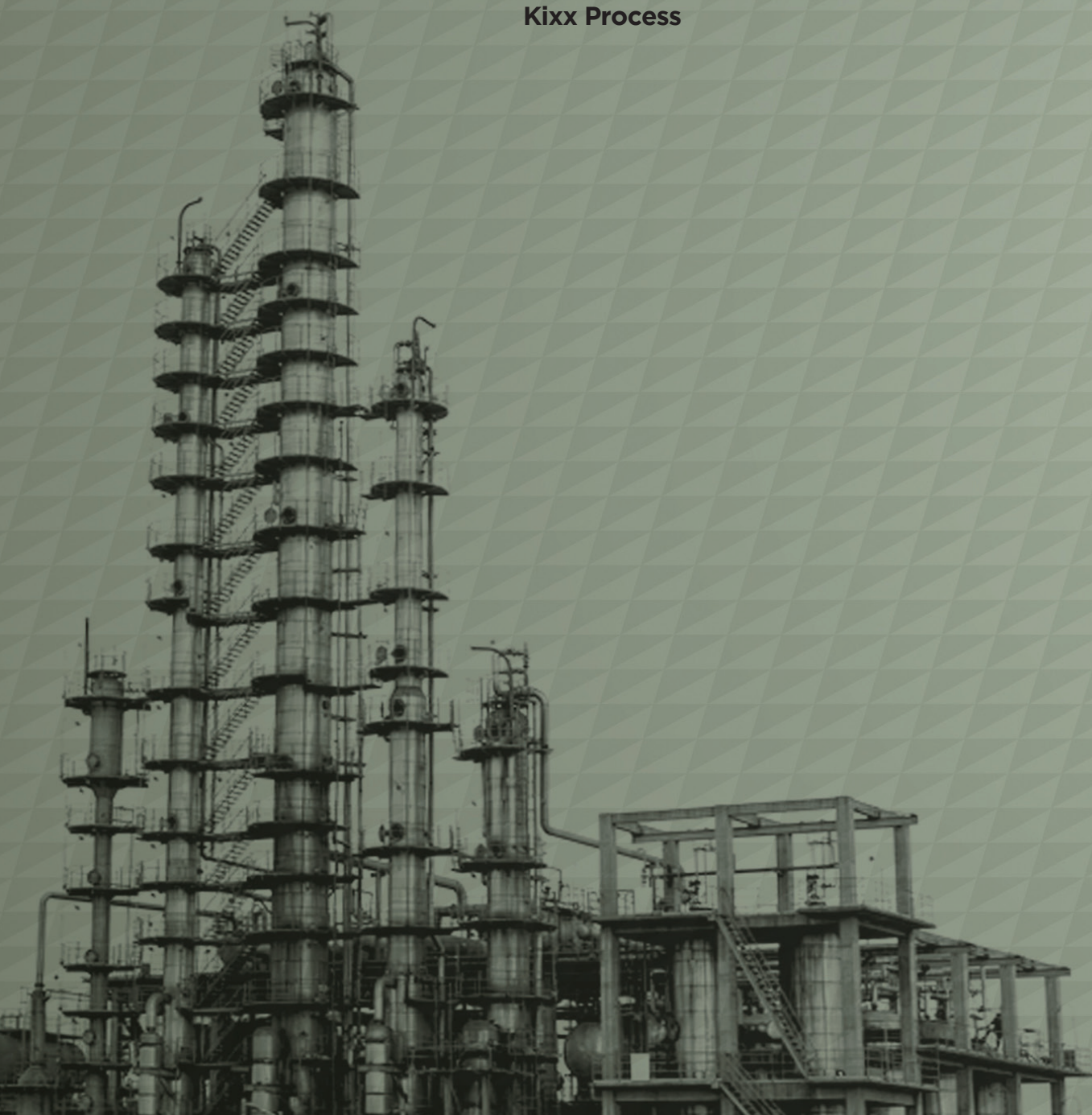
The perfect fit for your machinery

07 Industrial Oil

Kixx Gear EP S Wind
Kixx Gear EP S
Kixx Gear EP
Kixx EP ROLL
Kixx Turbine
Kixx Turbine R&O
Kixx Turbine GT

Kixx Chain BIO
Kixx Compressor P
Kixx Compressor S
Kixx RF P 85
Kixx Spindle
Kixx Way Lube
Kixx Rockdrill
Kixx Therm
Kixx Trans I
Kixx Process

**Industrial
oil**



Kixx Gear EP S Wind

Synthetic Industrial Gear Oil for Wind Power application

ISO VG 320



DESCRIPTION

Kixx Gear EP S Wind is advanced synthetic industrial gear oil using state of the art technology for Wind Power generation application. It offers outstanding lubrication under extreme operating conditions of Wind power generation equipment, help reducing friction and provides longer service life. High resistance to micro-pitting for optimal gear protection.

APPLICATION

- Main geardrive, Pitch/Yaw geardrive of Wind Power generation equipment
- Recommended for many types of enclosed gearboxes especially those running continuously at temperatures up to 120°C or exposed to very low temperatures.
- Suitable for severe service conditions such as heavy loads and low speeds.
- Particularly recommended for certain systems where extra long oil life is required such as wind turbines or systems which are inaccessible or require infrequent lubrication.

PERFORMANCE STANDARDS

- General Electric GEK-46506D & 32568E
- AGMA 9005-E02 [EP]
- U.S. Steel 224
- David Brown Table E S1.53.101
- DIN 51517 Part 3
- Cincinnati Machine P-74

BENEFITS

- Excellent Gear Wear & Corrosion protection
- Longer Oil life, reduced maintenance
- Energy Saving – reduced operating costs
- Protects against rust and corrosion.

KEY PROPERTIES

Test Items	Standard	Unit	Result
Density @15 °C	ASTM D4052	kg/L	0.859
Kinematic Viscosity @40 °C	ASTM D445	cSt	311
Kinematic Viscosity @100 °C		cSt	40
Viscosity Index	ASTM D2270	-	186
Flash Point, C.O.C.	ASTM D92	°C	254
Pour Point	ASTM D6749	°C	-50

Kixx Gear EP S

Extreme Pressure Synthetic Industrial Gear Oil

ISO VG 150, 220, 320



DESCRIPTION

Kixx Gear EP S is PAO based advanced synthetic heavy duty industrial gear oil. It offers outstanding lubrication under severe operating conditions, help reducing friction and provides longer service life. High resistance to micro-pitting for optimal gear protection.

APPLICATIONS

- Recommended for many types of enclosed gearboxes especially those running continuously at temperatures up to 120°C or exposed to very low temperatures.
- Suitable for severe service conditions such as heavy loads and low speeds.
- Particularly recommended for certain systems where extra long oil life is required such as wind turbines or systems which are inaccessible or require infrequent lubrication.

PERFORMANCE STANDARDS

- Flender Industrial Gear Revision 9 2005(VG 220, 320)
- General Electric GEK-46506D & 32568E(VG 150, 220, 320)
- AGMA 9005-E02 [EP](VG 150, 220, 320)
- U.S. Steel 224(VG 150, 220, 320)
- David Brown Table E S1.53.101(VG 150, 220, 320)
- DIN 51517 Part 3(VG 150, 220, 320)
- Cincinnati Machine P-74(VG 150, 220, 320)

CUSTOMER BENEFITS

- Excellent Gear Wear & Corrosion protection
- Longer Oil life, reduced maintenance
- Energy Saving – reduced operating costs
- Protects against rust and corrosion.

KEY PROPERTIES

ISO VG	150	220	320
Kinematic Viscosity,mm ² /s@40°C	143.5	212.9	316.6
Kinematic Viscosity,mm ² /s@100°C	18.7	25.3	34.8
Viscosity Index	148	150	155
Pour Point °C	-39	-33	-30
Flash Point °C	276	280	260
Timken Ok Load, kg	27	27	27
FZG, Load Stage	>12	>12	>12

Kixx Gear EP

Extreme Pressure Industrial Gear Oil

ISO VG 68, 100, 150, 220, 320, 460, 680, 1000



DESCRIPTION

Kixx Gear EP is an EP industrial gear lubricant based on a sulfur-phosphorus additive system.

APPLICATIONS

- Recommended for all types of industrial and mobile equipment requiring mild EP gear lubricants. Particularly recommended for enclosed gear drives and speed reducers, ranging from small gearboxes to large, high-power units such as metal rolling mills, cement mills, sugar mills and mine hoists.
- Also suitable for chain cases, sprockets, slide guides, flexible couplings, and plain and rolling element bearings.

PERFORMANCE STANDARDS

- ANSI/AGMA 9005-E02(EP) (VG 68, 100, 150, 220, 320, 460, 680, 1000)
- DIN 51517 Part 3 CLP(VG 68, 100, 150, 220, 320, 460, 680)
- U.S.Steel 224(VG 68, 100, 150, 220, 320)
- AGMA 250.04/251.02(VG 68, 100, 150, 220, 320, 460, 680, 1000)
- David Brown Table E approved (VG 68, 100, 150, 220, 320, 460, 680)
- Sumitomo Heavy Industries approved (SHI-MH/SHI-PE/SHI- HMX) (VG 150)

CUSTOMER BENEFITS

- Extends gear life due to high load carrying capacity and has an outstanding ability to keep gear surfaces free of deposits.
- Provides long oil service life thanks to its excellent oxidation resistance.
- Allows rapid separation of water.
- Protects against rust and corrosion.

KEY PROPERTIES

ISO VG	68	100	150	220	320	460	680	1000
AGMA	2EP	3EP	4EP	5EP	6EP	7EP	8EP	8AEP
David Brown	2E	3E	4E	5E	6E	7E	8E	-
Kinematic Viscosity@40°C	67.8	98.2	148.0	214.8	309.8	437.8	664.8	967.0
Kinematic Viscosity@100°C	9.1	11.8	15.4	19.4	24.9	30.3	40.7	51.3
Viscosity Index	110	110	106	102	103	102	101	100
Density@15°C	0.867	0.873	0.876	0.878	0.880	0.884	0.886	0.887
Pour Point (°C)	-29	-25	-21	-15	-13	-12	-17	-15
Timken Ok Load (kg)	27	27	27	27	27	27	27	27
FZG Load Stage	12	12	12	12	12	12	12	12
Copper Corrosion@100°C3hrs	1a	1a	1a	1a	1a	1a	1a	1a
Flash Point (°C)	235	254	248	280	285	290	268	240



Kixx EP Roll

Specialized Extreme Pressure Industrial Gear Oil

DESCRIPTION

Kixx EP Roll is Mineral Oil based advanced heavy duty industrial gear oil. It offers outstanding lubrication under severe operating conditions, help reducing friction and, High resistance to micro- pitting for optimal gear protection.

APPLICATION

- Recommended for many types of enclosed gearboxes especially those running continuously at temperatures up to 80°C or exposed to low temperatures.
- Suitable for severe service conditions such as heavy loads and low speeds.
- Particularly recommended for certain systems where extra long oil life is required such as wind turbines or systems which are inaccessible or require infrequent lubrication.

PERFORMANCE STANDARDS

- AGMA 9005-E02 [EP]
- U.S. Steel 224
- David Brown Table E S1.53.101
- DIN 51517 Part 3

BENEFITS

- Excellent Gear Wear & Corrosion protection
- Energy Saving – reduced operating costs
- Protects against rust and corrosion.

KEY PROPERTIES

Test Items	220
AGMA	5EP
Kinematic Viscosity,mm2/s@40 ° C	220.8
Kinematic Viscosity,mm2/s@100 ° C	23.0
Viscosity Index	130
Pour Point, ° C	-33
Flash Point,COC, ° C	>250
Timken OK Load, kg	27
FZG, Load Stage	>12

Kixx Turbine

High Performance Turbine Oil

ISO VG 32, 46, 68, 100, SIEMENS, ALSTOM



DESCRIPTION

Kixx Turbine is a high performance turbine oil which meets various international and turbine maker’s specifications. Based on the optimized formulation using high quality base oils, anti-oxidants, rust and corrosion inhibitors and anti-foamers, Kixx Turbine contributes to stable and efficient operation of various turbines (for electricity generation, manufacturing plant, large vessels, and so on), turbo compressors, general circulating and lubrication systems in machineries.

APPLICATIONS

- Various steam, gas and hydraulic turbines operated under moderate operating conditions
- Various turbo machineries operated under moderate operating conditions
- Machines and lubrication systems which face problems due to sludge and varnish under high temperature conditions
- Machines and lubrication systems designed to use oils which meet the following performance specifications

PERFORMANCE STANDARDS

- Kixx Turbine obtains the following turbine maker’s approval.**
- Siemens TLV 9013 04 (non- EP, ISO VG32, 46), 9013 05 (non- EP, ISO VG32, 46)
- Kixx Turbine meets the following performance specifications.**
- DIN 51515 Part 1, 2
 - AIST Turbine Standard 120, 125
 - BS 489: 1999
 - SEB 181229-1, 2
 - GB 11120-2011 L-TSA, L-TGA
 - ASTM D4304
 - ISO 8068 L-TSA, L-TGA
 - ALSTOM HTGD 90117 (ISO VG32, 46, 68)
 - GE GEK 121608 (without Gear Box, ISO VG32), 32568J (ISO VG32), 107395A (ISO VG32), 46506E (ISO VG32), 28143 Light (ISO VG32), 28143 Heavy (ISO VG100)

BENEFITS

- Extended oil service life**
High oxidation stability resists oil thickening and deposit formation in service, eliminating the need for unscheduled change of turbine oil.
- Longer equipment life**
Good air release minimizes lubrication film breakdown and malfunction in oil circulation pumps.
- Trouble-free operation**
Good water separation characteristic ensures smooth operation and system efficiency by preventing rust and corrosion in key machine elements.

ENVIRONMENT, HEALTH and SAFETY

Information is available on this product in the Caltex Material Safety Data Sheet (MSDS) and Caltex Customer Safety Guide. Customers are encouraged to review this information, follow precautions and comply with laws and regulations concerning product use and disposal

KEY PROPERTIES

ISO Viscosity Grade	32	46	68	100
Density @15°C, kg/liter	0.840	0.850	0.861	0.871
Kinematic Viscosity @40°C, mm²/s	31.6	46.2	68.1	100
Kinematic Viscosity @100°C, mm²/s	5.76	7.37	9.23	11.5
Viscosity Index	125	122	112	102
Pour Point,°C	-24	-21	-18	-18
Flash Point(COC),°C	236	242	260	270
Copper Corrosion	1a	1a	1a	1a
Total Acid Number(TAN), mgKOH/g	0.10	0.10	010	0.10
Oxidation Stability(RPVOT), minutes	>1000	>1000	>1000	>1000

Kixx Turbine R&O

High Performance Turbine Oil

ISO VG 32, 46



DESCRIPTION

Kixx Turbine R&O is a high performance turbine oil which meets various international and turbine maker’s specifications. Based on the optimized formulation using high quality base oils, anti-oxidants, rust and corrosion inhibitors and anti-foamers, Kixx Turbine R&O contributes to stable operation of various turbines (for electricity generation, manufacturing plant, large vessels, and so on), turbo compressors, general circulating and lubrication systems in machineries.

APPLICATIONS

- Various steam, gas and hydraulic turbines operated under moderate operating conditions
- Various turbo machineries operated under moderate operating conditions
- Machines and lubrication systems designed to use oils which meet the following performance specifications

PERFORMANCE STANDARDS

- Kixx Turbine R&O meets the following performance specifications.**
- DIN 51515 Part 1, 2
 - AIST Turbine Standard 120, 125
 - BS 489: 1999
 - SEB 181229-1, 2
 - GB 11120-2011 L-TSA, L-TGA
 - ASTM D4304
 - ISO 8068 L-TSA, L-TGA
 - ALSTOM HTGD 90117 (ISO VG32, 46)
 - Siemens TLV 9013 04 (non- EP, ISO VG32, 46), 9013 05 (non- EP, ISO VG32, 46)
 - GE GEK 32568J (ISO VG32), 107395A (ISO VG32), 46506E (ISO VG32), 28143 Light (ISO VG32), 28143 Heavy (ISO VG100)

BENEFITS

- Extended oil service life**
Good oxidation stability resists oil thickening and deposit formation in service, eliminating the need for unscheduled change of turbine oil.
- Longer equipment life**
Good air release minimizes lubrication film breakdown and malfunction in oil circulation pumps.
- Trouble-free operation**
Good water separation characteristic ensures smooth operation and system efficiency by preventing rust and corrosion in key machine elements.

ENVIRONMENT, HEALTH and SAFETY

Information is available on this product in the Caltex Material Safety Data Sheet (MSDS) and Caltex Customer Safety Guide. Customers are encouraged to review this information, follow precautions and comply with laws and regulations concerning product use and disposal

KEY PROPERTIES

ISO Viscosity Grade	32	46
Density @15°C, kg/liter	0.854	0.861
Kinematic Viscosity @40°C, mm²/s	31.6	46.2
Kinematic Viscosity @100°C, mm²/s	5.54	7.04
Viscosity Index	113	110
Pour Point,°C	-21	-21
Flash Point(COC),°C	230	238
Copper Corrosion	1a	1a
Total Acid Number(TAN), mgKOH/g	0.10	0.10
Oxidation Stability(RPVOT), minutes	>800	>800

Kixx Turbine GT

High Performance Gas Turbine Oil

ISO VG 32



DESCRIPTION

Kixx Turbine GT is a high performance gas turbine oil which meets various international and turbine maker's specifications. Especially, Kixx Turbine GT obtains Mitsubishi Power(formerly, Mitsubishi Hitachi Power Systems)'s turbine oil approval which consists of higher requirements about properties and performance. Based on the optimized formulation using high quality base oils and high performance phenol-free anti-oxidation system, Kixx Turbine GT assures efficient and trouble-free operation of various gas turbines under moderate and severe conditions.

APPLICATIONS

- Various medium and large-sized gas turbines operated under severe operating conditions
- Various turbo machineries operated under severe operating conditions
- Machines and lubrication systems which face problems due to sludge and varnish under high temperature conditions
- Machines and lubrication systems designed to use oils which meet the following performance specifications

PERFORMANCE STANDARDS

Kixx Turbine GT obtains the following turbine maker's approvals.

- MHPS MS04-MA-CL002 (R-4)
- Siemens TLV 9013 04 (non- EP), 9013 05 (non- EP)

Kixx Turbine GT meets the following performance specifications.

- DIN 51515 Part 1, 2
- AIST Turbine Standard 120, 125
- BS 489: 1999
- SEB 181229-1, 2
- GB 11120-2011 L-TSA, L-TGA, L-TGSB
- ASTM D4304
- ISO 8068 L-TSA, L-TGA, L-TGSB
- ALSTOM HTGD 90117
- GE GEK 121608 (without Gear Box), 32568J, 107395A, 46506E, 28143 Light

BENEFITS

Extended oil service life

High oxidation stability resists oil thickening and deposit formation in service, eliminating the need for unscheduled change of turbine oil.

Prevention of sharp drop in oxidation stability

Phenol-free anti-oxidation system prevents sharp drop in oxidation stability, due to abrupt loss of anti-oxidant owing to volatilization at early stage of initial start-up.

Longer equipment life

Good air release minimizes lubrication film breakdown and malfunction in oil circulation pumps.

Trouble-free operation

Good water separation characteristic ensures smooth operation and system efficiency by preventing rust and corrosion in key machine elements.

ENVIRONMENT, HEALTH and SAFETY

Information is available on this product in the Caltex Material Safety Data Sheet (MSDS) and Caltex Customer Safety Guide. Customers are encouraged to review this information, follow precautions and comply with laws and regulations concerning product use and disposal

KEY PROPERTIES

ISO Viscosity Grade	32
Density @15°C, kg/liter	0.844
Kinematic Viscosity @40°C, mm²/s	31.8
Kinematic Viscosity @100°C, mm²/s	5.78
Viscosity Index	125
Pour Point,°C	-27
Flash Point(COC),°C	238
Copper Corrosion	1a
Total Acid Number(TAN), mgKOH/g	0.10
Oxidation Stability(RPVOT), minutes	>1200

Fully Synthetic

Kixx Chain BIO

Fully Synthetic,
Biodegradable Chain Saw Oil



ISO VG 46

DESCRIPTION

Kixx Chain BIO is an advanced biodegradable chain saw oil which qualifies for KWF(Kuratorium für Waldarbeit und Forsttechnik) performance requirements. It is readily biodegradable with a low level of ecotoxicity and bioaccumulation, so that the use for chain saws operated in environmentally sensitive area is particularly suited. Fully synthetic esters, blended with state-of-the-art additives, provide Kixx Chain BIO with outstanding lubrication performance and environmental acceptability

APPLICATION

- Chain Saw (as a bar lubricating oil)
- Forestry machineries operated under mild load condition

PERFORMANCE STANDARDS

Kixx Chain BIO meets performance standards as below.

- EU Ecolabel for biodegradable chain saw oil
- German BLUE ANGEL, DE-UZ 178
- German KWF, Requirements for Verifying Usability of Chain Lubricants (Ver. 2017)

CUSTOMER BENEFITS

Longer bar life and stable operation of chain saw

With excellent wear protection, the damage of bar can be minimized. Thus, stable operation of chain saw will be guaranteed based on good lubrication between chain and bar.

Wide temperature application

Excellent viscosity-temperature characteristics can minimize the variation in kinematic viscosity with variation in operating temperature, and reduce the risk of malfunction in chain saw under low temperature condition.

Environment protection

Formulation consists of biodegradable materials (98% of bio-based carbon content, ASTM D6866) and its excellent biodegradability (more than 60 % after 28 days, OECD 301 B) provide ultimate environment protection.

Good storage stability

By physical and chemical stability caused by optimized formulation, properties and performances are maintained for long storage time.

KEY PROPERTIES AND PERFORMANCES

Density @15 °C	ISO 12185	kg/L	0.864
Kinematic Viscosity @40 °C	ISO 3104	cSt	46.75
Kinematic Viscosity @100 °C		cSt	8.190
Flash Point, C.O.C.	ISO 2592	°C	248
Pour Point	ISO 3016	°C	-36
Rust Prevention	ISO 7120	-	Pass
Copper Corrosion	ISO 2160	-	1a

Kixx Compressor P

High Performance Reciprocating Compressor Oil

ISO VG 32, 46, 68, 100, 150



DESCRIPTION

Range of mineral compressor lubricants, meeting DIN 51 506 class VDL specifications and exhibiting high load carrying capacity. Kixx Compressor P are blended from selected high quality paraffinic base oils. A well balanced additive package provides excellent oxidation resistance, corrosion protection, and outstanding EP characteristics. It provides a smooth, economical compressor operation especially under severe conditions.

APPLICATIONS

Kixx Compressor P are recommended for stationary and portable compressors, operating at compression temperatures up to 220°C including compressors with oil lubricated pressure space, e.g. single and multistage reciprocating compressors or single or multistage centrifugal compressors.

The 46 grade is primarily recommended for use in oil-flooded screw compressors as well as centrifugal compressors. At high compression pressures, such as in multistage reciprocating compressors, the higher viscosity grade may be used. Kixx Compressor P has been tested and approved by "Rheinische-Westfälischer Überwachungsverein e.V." in Germany and it meets DIN 51 506 VDL.

PERFORMANCE STANDARDS

- DIN 51506 VDL
- ISO L DAA/DAB

CUSTOMER BENEFITS

Oxidation Stability

Resistance to oxidation at high temperatures prevents carbon formation in the air compressor chambers, discharge lines and air vessels.

Rust Protection

Assures protection against rust and corrosion.

Antifoam Properties

Prevents accumulation of surface foam in the crankcase.

Low Evaporation Loss

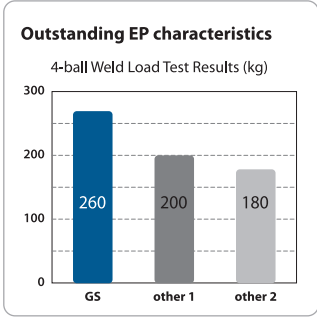
Guarantees minimum consumption of product.

KEY PROPERTIES

ISO VG	32	46	68	100	150
Density, kg/L @15°C	0.858	0.864	0.867	0.867	0.875
Kinematic Viscosity,mm²/s@40°C	32.87	46.07	68.16	98.51	146
Kinematic Viscosity,mm²/s@100°C	5.622	6.865	8.969	11.66	15.1
Viscosity Index	109	104	106	107	104
Pour Point °C	-36	-36	-42	-39	-30
Flash Point °C	222	250	250	284	265
Rust test, distilled water	Pass	Pass	Pass	Pass	Pass

UNIQUE FEATURES

- A well balanced additive package provides excellent corrosion protection and outstanding EP characteristics.
- It provides a smooth, economical compressor operation especially under severe conditions.



Kixx Compressor S

High Performance Rotary Screw Compressor Oil

ISO VG 32, 46



DESCRIPTION

Kixx Compressor S is a premium performance, hydrocracked mineral based compressor oil containing a special oxidation inhibitor and a rust inhibitor. It is designed specifically for use in oil flood lubricated positive displacement rotary compressor.

APPLICATIONS

- Oil flood lubricated rotary screw air compressors.
- Oil flood lubricated sliding vane air compressors.
(Not recommended for use in breathing air compressors.)

PERFORMANCE STANDARDS

- DIN 51506 VDL
- ISO L DAH/DAG

CUSTOMER BENEFITS

Extended Oil Service Life

The outstanding oxidation stability of the hydrocracked mineral base oil and special inhibitor system resists oil breakdown at the elevated temperatures encountered during intimate inter-mixing of oil and air in rotary compressor service.

Minimum maintenance and downtime

The outstanding oxidation stability also resists the formation of harmful varnish and sludge deposits which are promoted by contact with condensed water vapor, dust and other particulate contaminants. The highly effective film forming corrosion inhibitor plates out on metal surface to protect the system against rust.

Trouble-free operation

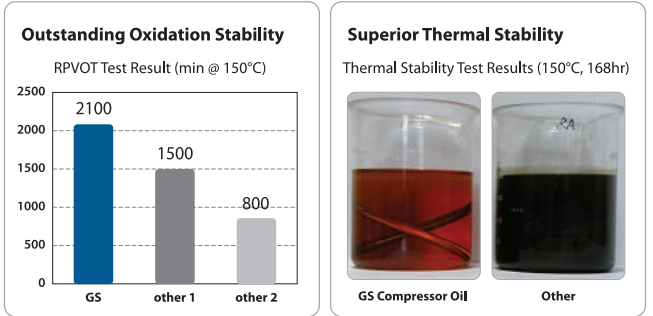
The excellent air release and anti-foam properties of the highly refined base oil and inhibitor system minimize lubricant carry-over, protect against interruption of lubrication due to air entrained in the oil, and minimize the possibility of foaming and overflow in tanks and reservoirs. Excellent water separating characteristics make it easy to remove water b draining.

KEY PROPERTIES

ISO VG	32	46
Color, ASTM	L0.5	L0.5
Density, kg/L @15°C	0.848	0.8519
Kinematic Viscosity, mm²/s @ 40°C	32.4	46.95
Kinematic Viscosity, mm²/s @ 100°C	5.78	7.371
Viscosity Index	121	119
Pour Point °C	-39	-36
Flash Point °C	224	250
Copper Corrosion, 100°C/3hr	1a	1a

UNIQUE FEATURES

- The outstanding oxidation stability of the hydrocracked meniral base oil and special inhibitor system
- The superior thermal stability resists the formation of harmful varnish and sludge deposits



Kixx RF P 85

Eco-friendly refrigeration compressor oil based on POE(Polyol Ester)



DESCRIPTION

Kixx RF P 85 is a highly refined polyol ester-based refrigeration compressor oil blended with state-of-the-art additives that has miscibility with various refrigerant, especially with low GWP refrigerant. It is an advanced eco-friendly refrigeration compressor oil that has excellent wear protection performance and chemical stability. (* GWP: Global warming Potential)

APPLICATION

Refrigeration compressor oil for a compressor in a cooling cycle which use below refrigerant gas, especially for rotary and scroll type compressors that requires high viscosity

- HFC : R32, R410A, R134a
- HC : R290
- HFO : R1234yf

PERFORMANCE STANDARDS

- Samsung Electronics

CUSTOMER BENEFITS

Excellent Miscibility

With two-layer separation temperature below -30°C it enables stable operation of equipment without layer separation between refrigerant and refrigerator oil at a wide range of temperatures

Wear Protection

With high viscosity index and tailored made additives it ensures excellent wear performance by securing viscosity of oil and wear protection layer in various operating condition.

Chemical Stability

It is very stable and does not make any reaction in contact with various metal material, especially with copper, which is the main cooling cycle line material.

KEY PROPERTIES

Items	Test	Unit	HFC			HC	HFO
			R32	R410a	R134a	R290	R1234yf
Kinematic Viscosity@40 °C	ASTM D445	cSt	82.5				
Density @15 °C	ASTM D4052	Kg/L	1.03				
Viscosity Index	ASTM D2270	-	98				
TAN	ASTM D664	mgKOH/g	0.06				
Pour Point	ASTM D6749	°C	-35				
Flash Point	ASTM D92	°C	275				
4-Ball AW @40kgf, mm	ASTM D4172	Mm	0.95				
Miscibility 20vol% Oil, °C	ASHRAE 86	°C	-39.6	-50.7	-49.6	-50.8	-56.6
Pin on Vee AW, mg	ASTM D2670	Mg	7.0	6.1	6.7	12.3	6.5
Chemical Stability	ASHRAE 97 (175°C, 2weeks)						
Cu Plating		-	No Reaction				
TAN Changes		-	-0.02	-0.01	-0.01	+0.02	+0.01

Kixx Spindle

Spindle Oil

ISO VG 10, 15



DESCRIPTION

Kixx Spindle is a premium, low viscosity spindle bearing oil formulated from highly refined mineral oil, antiwear agents and rust and oxidation inhibitors. It is designed for the lubrication of high speed textile machines and automated tools.

APPLICATIONS

- Textile machine spinning frame spindles
- Automated machine tools
- High speed, lightly loaded spindles, or where the use of higher viscosity oils leads to unacceptably high temperatures (ISO 10)
- Industrial circulating oil system
- Hydraulic systems where lower viscosity, anti-wear lubricants are recommended
- Cincinnati-Miacron specification P-62 (ISO 10) for light spindle oils

CUSTOMER BENEFITS

Maximizes equipment life

The anti-wear additive package protects bearing surfaces from wear when increasing load and temperature can cause break-down of the oil film.

Reduces maintenance cost

Selected oxidation inhibitors help prevent formation of damaging deposits and varnish at elevated temperatures. Effective rust and corrosion inhibitors protect equipment under humid operating conditions.

Long service life

Highly refined base oils and effective oxidation inhibitor system provide excellent resistance to degradation and thickening of the oil in service.

KEY PROPERTIES

ISO VG	10	15
Density, kg/L @15°C	0.852	0.855
Kinematic Viscosity, mm²/s @ 40°C	9.85	15.73
Kinematic Viscosity, mm²/s @ 100°C	2.59	3.51
Viscosity Index	89	100
Copper Corrosion, 3hr@100°C	1a	1a
Rust Prevent Characteristics	Pass	Pass
TAN, mg KOH/g	0.07	0.08

Kixx Way Lube

Machine Tool Slideway Lubricant

ISO VG 32, 68, 220



DESCRIPTION

Kixx Way Lube is a high quality, machine tool slideway lubricant formulated from highly refined mineral oil, EP and tackiness additives, friction modifier, and rust and corrosion inhibitors.

APPLICATIONS

- Machine tool slideways and guides
- Horizontal slideways (ISO 68)
- Light-to-moderate applications (ISO 68)
- Vertical slideways (ISO 220)
- More severe applications (ISO 220)
- Suitable for use with Bijur Automatic Lubricant delivery systems
- Other industrial applications requiring a tacky, non-corrosive product with EP properties.
- Cincinnati Machine specification P-53 Combination Hydraulic and Way oil (ISO 32)
- Cincinnati Machine specification P-47 Heavy-Medium Way oil (ISO 68)
- Cincinnati Machine specification P-50 Heavy Way oil (ISO 220)

CUSTOMER BENEFITS

Smooth, chatter-free operation

Special friction modifier provides high lubricity to reduce friction and drag which can cause stick-slip and machine tool chatter, adversely affecting surface finish on machined pieces.

Accurate table positioning

Friction modifier and tackiness additive provides a high strength, thick oil film that enables accurate table positioning and prevents wear of system components.

Reduced downtime

EP additive system produces a protective film under heavily loaded conditions to prevent scoring of slideways and guides. Rust and corrosion inhibitor protects machine fluids.

Stay in place

Special tackiness agent prevents fluid from draining away from lubricated surfaces, particularly on vertical ways. Tackness and high film strength minimizes squeeze-out of the lubricant on heavily loaded ways, and prevents fluid wash out by emulsifiable cutting fluids.

KEY PROPERTIES

ISO VG	32	68	220
Density, kg/L @15°C	0.854	0.868	0.881
Kinematic Viscosity, mm²/s @ 40°C	29.48	71.14	205.2
Kinematic Viscosity, mm²/s @ 100°C	5.41	9.43	19.65
Viscosity Index	120	110	110
Copper Corrosion, 3hr@100°C	1a	1a	1a
Pour Point, °C	-39	-30	-24

Kixx Rockdrill

Pneumatic Percussion Tool Lubricant

ISO VG 100



DESCRIPTION

Kixx Rockdrill is a high performance lubricant for percussion-type air tools, which is formulated from highly refined mineral oils, EP, oiliness and tackiness additives, emulsifiers, rust and corrosion inhibitors, and antifoam and anti-fogging agents.

APPLICATIONS

- Percussion-type air tools operating under wet or dry conditions, including: Rock drills
- Concrete and pavement breakers (jackhammers)
- Tampers
- Rammers
- Riveting and chipping hammers, etc.
- Centralized lubricators of larger crawler-mounted drill rigs
- Ambient temperature guidelines for adequate atomization of air-line lubricators: 5°C to 25°C

CUSTOMER BENEFITS

Maximum working life of equipment

Special EP and high film strength oiliness additives withstand shock loads under boundary lubrication conditions and protect components against wear.

Protects surfaces in wet conditions

Superior emulsification properties prevent water wash-off from critical areas when operating with wet air, or during hollow rod "wet drilling" operations. Effective rust and corrosion inhibitor system protects critical components in wet air or "wet drilling" operation.

Trouble-free operation

Highly refined base oils with low carbon forming characteristics and special oxidation inhibitor prevent the formation of sludge and deposits which can produce sluggish valve action. Effective anti-foam inhibitor resists foaming in air-line lubricators to enable easy control of oil feed by ensuring regular supply of lubricant to the tool. Special anti-misting additive minimizes oil fog formation in equipment exhausts.

KEY PROPERTIES

ISO VG	100
Kinematic Viscosity, mm²/s @ 40°C	96.0
Kinematic Viscosity, mm²/s @ 100°C	11.5
Viscosity Index	107
Copper Corrosion, 3hr@100°C	1a
Pour Point °C	-27

Kixx Therm

Heat Transfer Fluid

ISO VG 32, 46



DESCRIPTION

Kixx Therm is a highly refined, thermally stable paraffinic petroleum oil formulated for use as a heat transfer fluid in both closed and open heat transfer systems with forced circulation.

APPLICATIONS

- Open systems operating at temperatures up to 200°C.
 - Closed systems (sealed with cold oil or inert gas) operating at bulk oil temperatures up to 320°C.
- For long, trouble-free service in closed systems, the maximum film temperature on the heater surfaces should be limited to 340°C. Systems must have forced circulation of the heat transfer fluid.

CUSTOMER BENEFITS

- Maximum energy efficiency**
Excellent heat transfer properties enable easy circulation and efficient transfer of heat.
- Resists deposit formation**
Outstanding oxidation and thermal stability resists formation of sludges and coke deposits, providing long oil service life.
- Rapid response at start-up**
Low temperature flow characteristics allow prompt circulation.
- Economical low pressure operation**
Low vapor pressure at elevated temperatures minimizes evaporation, vapor lock and pump cavitation, allowing efficient operation at lower system pressures, avoiding the need for expensive high pressure high pressure piping and heat exchangers.

KEY PROPERTIES

ISO VG	32	46
Density, kg/L @15°C	0.861	0.867
Kinematic Viscosity, mm²/s @ 40°C	30.28	43.27
Kinematic Viscosity, mm²/s @ 100°C	5.236	6.6
Viscosity Index	103	104
Copper Corrosion, 3hr@100°C	1a	1a
Flash Point °C	230	238

Kixx Trans I

Inhibited Transformer Oil

IEC 60296:2000



DESCRIPTION

Kixx Trans I is a highly refined, inhibited transformer oil for use in severe conditions, such as high ambient temperatures. It should also be used where oxidation resistance and thermally stable insulating oils are needed. It meets the IEC 60296:2000 transformer oil specifications.

APPLICATIONS

- Transformers
- Oil-immersed switchgear
- Circuit breakers
- Oil-filled capacitors
- Tap changers
- Electrical reclosures
- Fuses

PERFORMANCE STANDARDS

- IEC 60296:2000 Inhibited

CUSTOMER BENEFITS

- Extended Service Life**
Effective anti-oxidation inhibitor limits the formation of sludges, deposits and soluble compounds which break down the electrical properties of the oil in severe, high ambient temperature or extended service conditions.
- Prolongs transformer life**
Excellent conductive heat transfer properties improve cooling of transformer components.
Low solvency protects electrical wire enamels.
- Maximizes life of oil-immersed switches**
Rapid quenching of arcs reduces contact erosion.
- Maintains transformer efficiency**
High dielectric strength and low dissipation factor provide excellent insulating characteristics.

KEY PROPERTIES

IEC 60296:2000 Type	Inhibited
Breakdown Voltage, KV	70
Kinematic Viscosity, mm²/s @ 40°C	7.57
Kinematic Viscosity, mm²/s @ 100°C	2.23
PCB Contents	Not detected
Pour Point,°C	-45
Flash Point, PM,°C	146
Corrosive Sulfur	Non corrosive



Kixx Process

Process Oil

2, 4, 6, 8, 150, 220



DESCRIPTION

Kixx Process is a highly saturated paraffinic process oil with very good color and low aromatic content. GS Caltex’s modern all- hydroprocessing technology assures that these oils have a light color and are odorless.

APPLICATIONS

Kixx Process oils function as processing aids or as extender oils in rubber compounding.

They are used to :

- Reduce the amount of time required for mixing
- Reduce the amount of heat generated in mixing
- Maximize the dispersion of components
- Extend product volume
- Reduce product cost while maintaining the physical properties of the rubber compound

Kixx Process oils are ideal for use in compounding a wide variety of finished rubber products, including :

- Footwear
- Agricultural spray
- Furniture polish
- Textiles
- Wire and cable insulation
- Adhesive, sealants and coatings
- Polymer modified asphalts
- Asphalt extender
- Automobile interior moldings
- Automotive under hood parts
- Tires, tire whitewalls, tubes and inner liners
- Insulation
- Gels
- Dielectric fluids
- Drilling fluids
- Carpet underlayment
- Heat transfer fluids

- Foam
- Household products
- Roofing compounds
- Rubber membranes
- Weather-stripping

CUSTOMER BENEFITS

Kixx Process oils deliver value through :

- Exceptional oxidation stability
- Very good color stability
- Low volatility and low weight loss

Kixx Process oils are recommended for applications where discoloration, staining, sludging, or fogging must be minimized.

KEY PROPERTIES

Product	PO 2	PO 4	PO 6	PO 8	PO 150	PO 220
Density, kg/L @15°C	0.8993	0.8312	0.8394	0.8447	0.8547	0.8562
KinematicViscosity,mm²/s@40°C	7.232	19.03	31.07	49.39	28.61	43.32
Kinematic Viscosity,mm²/s@100°C	2.157	4.136	5.761	7.896	5.160	6.799
Viscosity Index	98	120	129	129	110	112
Saybolt Color	30	30	30	30	30	30
Pour Point,°C	-45	-18	-20	-20	-19	-30
Aniline Point, °C	96.5	113.7	119.3	124.7	110.6	116.6
Carbon type % Paraffinic	65.18	79.62	77.65	79.15	68.99	71.5
Carbon type % Naphthenic	34.46	20.38	22.35	20.35	31.01	28.5
Carbon type % Aromatic	0.36	0	0	0	0	0
Flash Point °C	158	226	234	260	224	240



Kixx Chain BIO

Fully Synthetic,
Biodegradable Chain Saw Oil



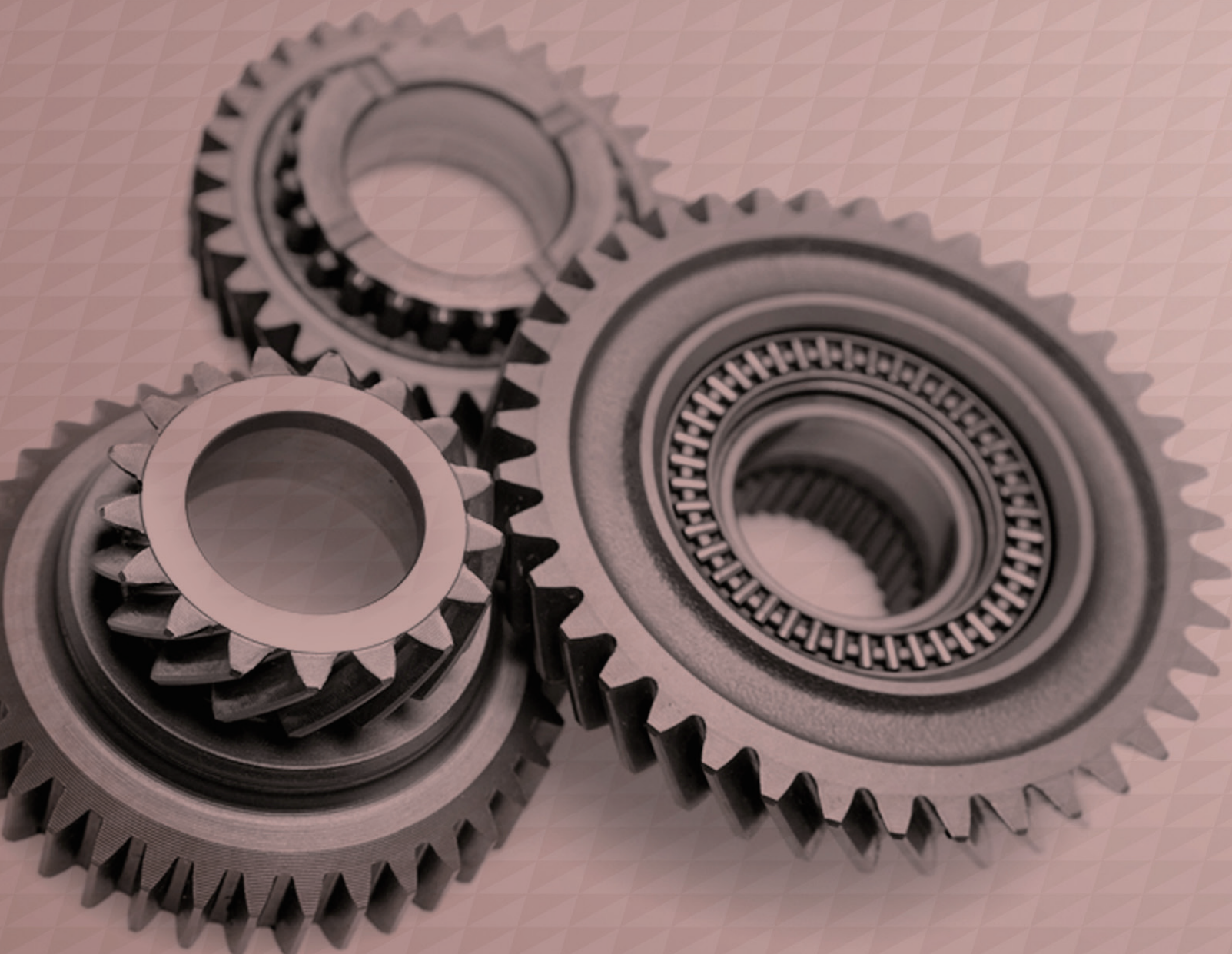
Kixx

The perfect fit for your machinery

06 Grease

Kixx Grease Liplax
Kixx Grease Moly EP
Kixx Grease Therma
Kixx Grease EP
Kixx Grease

Grease



Kixx Grease Liplex

Automotive Wheel Bearing & Chassis Grease

NLGI 2, GC-LB



DESCRIPTION

Kixx Grease Liplex is a premium, multipurpose EP automotive wheel bearing and chassis grease containing a lithium complex thickener, EP additives, rust and oxidation inhibitors and tackiness additives. It is red in color.

APPLICATIONS

- Automotive wheel bearings
- Chassis lubrication
- Highway and off-highway applications
- Construction equipment
- Agricultural tractors
- Heavy-duty transport
- General industrial greasing

Usable temperature range in continuous service: -30 to 165°C
Maximum temperature for short term exposure is 220°C.

PERFORMANCE STANDARD

- NLGI Service Category GC-LB
- DIN 51502 KP 2 P-30

CUSTOMER BENEFITS

Saves maintenance costs

Effective EP additive protects against bearing wear under severe conditions and shock loading. The effective rust and corrosion inhibitors protect metal surfaces, even in conditions of severe water exposure.

Minimizes downtime

High dropping point minimizes leakage from bearings at elevated temperatures and excellent oxidation resistance ensures long grease life. The natural water resistance of the lithium complex thickener, combined with the additional tackiness additive, prevents water washout.

Minimizes inventory costs

Multipurpose capability allows use in a wide range of automotive and industrial applications, reducing the number of different greases required and eliminating product misapplication.

KEY PROPERTIES

NLGI Grade	2
Dropping Point, °C	263
Oil Viscosity, mm ² /s @ 40°C	200
Penetration, Worked @ 25°C	280
Thickener Type	Lithium Complex
Thickener (Lithium Complex), m %	11
Water Washout @ 79°C, 1hr	0.65
4 ball EP, kgf	250

Kixx Grease Moly EP

Heavy Load EP Grease

NLGI 2



DESCRIPTION

Kixx Grease Moly EP is a dark gray, multipurpose EP grease primarily designed for construction, mining and agricultural equipment where an extra measure of protection in shock loading conditions is required. It contains a highly refined ISO VG 220 mineral base oil, lithium soap thickener, EP additives, rust and oxidation inhibitors, plus molybdenum disulfide solid film lubricant.

APPLICATIONS

- Automotive
- Construction
- Earthmoving, quarrying and mining
- Agricultural equipment
- Chassis grease point lubrication
- Pins, bushings and other sliding surface or pivot points
- All types of anti-friction bearings
- Ball joints
- Universal joints (U-joints)
- High and shock load applications

Usable temperature range in continuous service is -30 to 130°C.
Maximum temperature for short term exposure is 175°C.

CUSTOMER BENEFITS

Saves on heavy-duty maintenance

Effective EP additive and molybdenum disulfide solid film lubricant protect against component wear under high load conditions and/or shock loading. Rust and corrosion inhibitors protect metal surfaces in wet operating conditions. Even if insufficient grease is used, some molybdenum disulfide tends to stay in place and protect metal surfaces.

Long service life

Excellent oxidation resistance ensures enhanced grease service life.

Ease of application

Good pumpability characteristics of the lithium thickener provide suitable flow properties for grease pump application systems.

Wide range of applications

Multipurpose capability allows use in a wide range of heavy-duty automotive and industrial applications, reducing the number of different greases

KEY PROPERTIES

NLGI Grade	2
Dropping Point, °C	195
Molybdenum Disulfide, m %	3
Oil Viscosity, mm ² /s @ 40°C	208
Oil Viscosity, mm ² /s @ 100°C	18.2
Penetration, Worked @ 25°C	275
Thickener (Lithium), m %	7.5

Kixx Grease Therma

High Temperature Grease

NLGI 2, GC-LB



DESCRIPTION

Kixx Grease Therma is a non-melting, EP grease formulated from a highly refined ISO 100 mineral base oil, an organoclay (bentonite) thickener, and an effective EP agent for high temperature applications where frequent re-application is available.

APPLICATIONS

- Industrial ball and roller bearings in high temperature applications.
- Exhaust fan bearings
- Furnace door bearings
- Kiln car wheel bearings
- Roll neck bearings
- High temperature conveyor bearings
- Rotary kiln bearings

Usable temperature range: Continuous service -20 to 135°C
With frequent relubrication 260°C

CUSTOMER BENEFITS

Minimizes equipment failure

The special non-melting organoclay thickener prevents grease loss from bearings at high temperature.

Wide temperature range application

May be used in applications up to 135°C with normal re-greasing, and up to 260°C with very frequent regreasing, making it suitable for use in a wide range of high temperature industrial applications.

Prevents failure in wet conditions

Organoclay thickener gives excellent resistance to water washout.

KEY PROPERTIES

NLGI Grade	2
Penetration, Worked @ 25°C	280
Dropping Points, °C	Not applicable
Thickener (modified bentonite)	12
Oil Viscosity mm ² /s @ 40°C	92.5
Oil Viscosity mm ² /s @ 100°C	10.5
Timken OK Load, kg	20

Kixx Grease EP

Multipurpose EP Grease

NLGI 0, 1, 2, 3



DESCRIPTION

Kixx Grease EP is a multipurpose EP grease containing highly refined mineral base oils, lithium thickener, extreme pressure (EP) additives and rust and oxidation inhibitors. It is suitable as a multipurpose automotive grease for general purpose applications.

APPLICATIONS

- Automotive wheel bearings
- Chassis grease point lubrication
- Industrial plain and rolling element bearings
- General plant lubrication
- Centralized lubrication systems (NLGI 0 and 1)
- Construction equipment bearings
- Earthmoving, quarrying and mining
- Agricultural equipment

Usable temperature range in continuous service is:
NLGI 1 -30 to 130°C
NLGI 2 -30 to 130°C
NLGI 3 -20 to 130°C
Maximum temperature for short term exposure is 175°C (NLGI 1, 2 and 3).

CUSTOMER BENEFITS

Saves maintenance costs

Effective EP additive protects against component wear under high load conditions. Rust and corrosion inhibitors protect metal surfaces.

Long service life

Excellent oxidation resistance ensures enhanced grease service life.

Ease of application

Good pumpability characteristics of the lithium thickener provide suitable flow properties for grease pump application systems (NLGI 2)

Minimizes inventory costs

Multipurpose capability allows use in a wide range of industrial and automotive applications reducing the number of different greases required and eliminating product misapplication.

KEY PROPERTIES

NLGI Grade	0	1	2	3
Dropping Point, °C	210	225	235	245
Penetration, Worked @ 25°C	364	314	269	235
Thickener Type	Lithium	Lithium	Lithium	Lithium
Thickener Content, mass %	4.28	5.64	7.92	11.22
Water Washout @ 79°C, 1hr		7.5	3	1.6

Kixx Grease EP

Centralized Lubrication System Grease

NLGI 000 / 00



DESCRIPTION

Kixx Grease EP is a semi-fluid type grease containing lithium thickener, mineral base oil, EP additives, rust and oxidation inhibitors, for use in centralized lubrication systems and concrete pump cars.

APPLICATIONS

- Concrete pump cars
 - Centralized lubricating systems
 - Application where EP semi-fluid grease is required
- Usable temperature range in continuous service is : -30 to 120°C

CUSTOMER BENEFITS

Long service life

Good oxidation stability enables long service life.

Anti-wear property

Good anti-wear property protects equipment.

Good pumpability

Good pumpability allows pumping at low temperature.

Rust and corrosion protection

Rust and corrosion inhibitors protects equipment against rust and corrosion.

KEY PROPERTIES

NLGI Grade	000	00
Dropping Point, °C	164	183
Oxidation stability, kgf/cm²	0.35	0.35
Copper Corrosion @ 100°C, 24h	No Tarnish	No Tarnish
Penetration, Worked @ 25°C	460	417
Evaporation loss, wt%	0.30	0.25

Kixx Grease

General Purpose Automotive and Industrial Grease

NLGI 2, 3



DESCRIPTION

Kixx Grease is a smooth, buttery texture, yellowish, translucent, general purpose automotive and industrial grease with adhesive properties manufactured from lithium soap and containing an oxidation inhibitor.

APPLICATIONS

- Most automotive grease applications including wheel bearings, ball joints, universal joints and linkages.
- Industrial ball and roller bearing, plain bearing, niddle bearing.
- General industrial applications where EP characteristics are not needed.

CUSTOMER BENEFITS

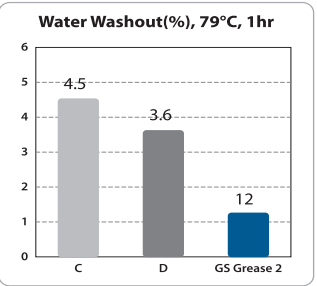
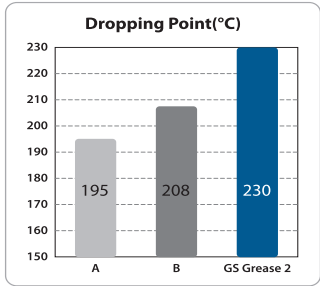
- Protects bearings from damage under light-load or shock-load conditions.
- Lubricates effectively in wet conditions due to its resistance to water washout.
- Provides long service life through high oxidation stability.
- Resists leakage from bearing through good mechanical stability.
- Does not run down and gives continuous lubrication thanks to its excellent tackiness.

KEY PROPERTIES

NLGI Grade	2	3
Dropping Point, °C	235	263
Penetration, Worked @ 25 °C	272	236
Thickener Type	Lithium	Lithium
Thickener Content, mass %	8.5	10
Water Washout @ 79°C, 1hr	2.49	1.27
4 ball EP, kgf	200	200
Life Performance, hrs @ 165 °C	80	80
Usable Temperature Range	-30 to 150	-20 to 160

UNIQUE FEATURES

Kixx Grease is a is multipurpose grease with ISO 220 base oil, oxidation and corrosion inhibitors. It has high drop point leading to wide usable temperature range.



Kixx

The perfect fit for your machinery

07 Marine

Kixx Marine C
Kixx Marine S
Kixx Marine 10
Kixx Marine 20
Kixx Marine 30
Kixx Marine 40
Kixx Marine 50

Marine



Kixx Marine C

Cross Head Cylinder Oil for Low Sulfur



DESCRIPTION

Kixx Marine C is a high-performance SAE 50 cylinder lubricant intended for lubricating slow-speed engines at very high mechanical and thermal loads. It is blended from highly refined, paraffinic base oils and carefully selected additives to provide superior ring and liner wear protection and excellent piston cleanliness in slow-speed crosshead engines. It is developed specifically for high pressure and high-temperature applications.

APPLICATIONS

- Recommended for lubricating the cylinders of all large slow-speed marine diesel engines operating at high specific power outputs and high thermal loads

CUSTOMER BENEFITS

Wear Protection

Ensures protection against excessive cylinder liner and piston ring wear, thus allowing prolonged service intervals.

Detergent and Dispersant Properties

Prevents ring sticking and minimizes deposit formation throughout the combustion chamber exhaust areas.

Excellent Lubrication Properties

Maintains an oil film under severe, high load conditions, thereby reducing frictional wear and preventing scuffing of liners, pistons and rings.

Storage Stability

Completely stable at all ambient temperatures. Will not separate or deteriorate in long term storage.

Compatibility

Fully miscible and compatible with single-phase alkaline diesel cylinder lubricants generally known to the international marine trade.

KEY PROPERTIES

TBN (Base Number, mg KOH/g)	40	55	70
SAE Grade	50	50	50
Kinematic Viscosity, mm ² /s @ 40°C	231.6	230	220
Kinematic Viscosity, mm ² /s @ 100°C	21.0	20.0	20.5
Viscosity Index	107	106	105
FZG Fail Load Stage	11	11	11
Sulfated Ash, m %	9	9	9
Pour Point, °C	-21	-17	-15

Kixx Marine S

Cross Head System Oil



DESCRIPTION

Kixx Marine S is a premium quality, alkaline diesel engine oil designed for crankcase (system) lubrication of large, low speed diesel engines in marine and stationary applications.

APPLICATIONS

Crankcase lubrication of:

- Large, low speed (less than 250 rpm), two-cycle crosshead diesel engines
- Particularly suitable for engines with oil-cooled pistons
- Older-type marine trunk piston engines with separate cylinder lubrication
- Marine and stationary applications

CUSTOMER BENEFITS

Time Extension Between Overhauls

Special detergent and ashless dispersant additive system ensures crankcases and lubricating oil lines are kept free of deposits. The combination of detergency and excellent oxidation stability provides clean piston cooling galleries and chambers.

Protection of Bearings from Corrosive Wear

Level of alkalinity reserve ensures that acidic combustion products (which enter the crankcase due to leaks in the connecting rod seals) are effectively neutralized to protect bearings and bright metals against corrosive wear.

Easy Oil Purification

Combination of highly refined basestocks and special detergent additive system provides excellent water tolerance and separation properties which enable efficient purifier operation. Therefore, water washing is neither necessary nor recommended.

KEY PROPERTIES

TBN (Base Number, mg KOH/g)	5.3	5.4
SAE Grade	20	30
Kinematic Viscosity, mm ² /s @ 40°C	65.5	108
Kinematic Viscosity, mm ² /s @ 100°C	8.5	11.9
Viscosity Index	100	98
FZG Fail Load Stage	12	12
Sulfated Ash, m %	0.7	0.7

SERVICE CONSIDERATIONS

Marine system oils are designed for use with active purification systems. As such systems continuously remove contaminants from the oil, long service lives are possible and it is not usual to change out the lubricant on a fixed schedule. Accordingly, it is important that the oil's condition be monitored and the change-out period be determined by means of regular oil analysis and interpretation in accordance with manufacturers' guidelines. While Kixx Marine S has excellent water separation properties, water washing is neither necessary nor recommended. However, contamination with other engine oils may drastically affect its ability to maintain these excellent water separation characteristics.



Kixx Marine 10

10-TBN Trunk Piston Engine Oil

DESCRIPTION

Kixx Marine 10 is a lower alkaline reserve (12 Base Number) trunk piston engine oil (TPEO). It is designed for use in medium-speed trunk piston engines burning distillate fuels with sulfur content up to 1.5% in marine or stationary service.

APPLICATIONS

- Medium-speed trunk piston engines in stationary power generation
- Medium-speed trunk piston engines (marine service)
- Engine reduction gears

CUSTOMER BENEFITS

Maintains power output

The detergent/dispersant additive system provides control of high temperature deposits in areas such as the undercrown of the piston and the piston ring belt area, enabling piston rings to function efficiently.

Prolongs oil life

Base Number (BN) level and superior alkalinity retention characteristics maintain sufficiently high BN under all service conditions to ensure corrosive acids formed by the combustion of fuel sulfur are effectively neutralized, thereby minimizing liner wear.

Efficient purifying system performance

Excellent water separation characteristics enable water to be centrifuged out with essentially no loss of additive.

KEY PROPERTIES

TBN (Base Number, mg KOH/g)	12	12
SAE Grade	30	40
Viscosity, mm²/s @ 40°C	96.0	137
Viscosity, mm²/s @ 100°C	11.0	14.0
Viscosity Index	99	98
FZG Fail Load Stage	11	11
Sulfated Ash, m %	1.6	1.6



Kixx Marine 20

20-TBN Trunk Piston Engine Oil

DESCRIPTION

Kixx Marine 20 is a medium alkaline reserve (20 Base Number) trunk piston engine oil (TPEO). Specifically designed for use in high specific output medium speed trunk piston engines burning lower sulfur content (up to 2.0%) heavy residual fuels or marine diesel fuel. Particularly suited to high load factor operations in marine or stationary service and where heavy fuels with high asphaltene content (such as those containing visbroken residues) are used.

APPLICATIONS

- Medium-speed trunk piston engines including latest designs in stationary power generation, especially in high load factor operations
- Medium-speed trunk piston engines in marine service

CUSTOMER BENEFITS

Wear Protection

High alkalinity levels control cylinder liner wear effectively and protect bearings from corrosion. High-performance antiwear additives provide excellent protection against adhesive wear for cams, camshaft and bearings. Kixx Marine 20 also provides a high degree of water tolerance and antifoam protection.

Detergent-Dispersant Properties

Keeps crankcase and oil control rings clean. Prevents deposit formation throughout the engine. Reduces lube oil filter blockage. Effectively handles insolubles.

Oxidation Stability

Oxidation inhibitors protect the oil against thermal stresses, protect engine parts from corrosion and reduce undercrown deposits while promoting extended lubricant life.

Rust Prevention

Prevents corrosion of engine parts when engine is not in operation.

Balanced Additive Combination

Provides minimum maintenance and downtime, long engine life and economical operation.

KEY PROPERTIES

TBN (Base Number, mg KOH/g)	20	20
SAE Grade	30	40
Viscosity, mm²/s @ 40°C	97.5	139
Viscosity, mm²/s @ 100°C	11.0	14.0
Viscosity Index	98	97
FZG Fail Load Stage	12	12
Sulfated Ash, m %	2.5	2.5



Kixx Marine 30

30-TBN Trunk Piston Engine Oil

DESCRIPTION

Kixx Marine 30 is a high alkaline reserve (30 Base Number) trunk piston engine oil (TPEO) designed for use in high specific output mediumspeed trunk piston engines burning residual fuels (up to 4.5% sulfur). Particularly suited to high load factor operations in marine or stationary service and where heavy residual fuels with high asphaltene content (via broken residue) are used.

APPLICATIONS

- Medium-speed trunk piston engines including latest designs in stationary power generation, especially in high load factor operations
- Medium-speed trunk piston engines in marine service

CUSTOMER BENEFITS

Wear Protection

High alkalinity levels control cylinder liner wear effectively and protect bearings from corrosion. High-performance antiwear additives provide excellent protection against adhesive wear for cams, camshaft and bearings. Kixx Marine 30 also provides a high degree of water tolerance and antifoam protection.

Detergent-Dispersant Properties

Keeps crankcase and oil control rings clean. Prevents deposit formation throughout the engine. Reduces lube oil filter blockage. Effectively handles insolubles.

Oxidation Stability

Oxidation inhibitors protect the oil against thermal stresses, protect engine parts from corrosion and reduce undercrown deposits while promoting extended lubricant life.

Rust Prevention

Prevents corrosion of engine parts when engine is not in operation.

Balanced Additive Combination

Provides minimum maintenance and downtime, long engine life and economical operation.

KEY PROPERTIES

TBN (Base Number, mg KOH/g)	30	30
SAE Grade	30	40
Viscosity, mm²/s @ 40°C	96.8	136
Viscosity, mm²/s @ 100°C	11.1	14.2
Viscosity Index	100	102
FZG Fail Load Stage	12	12
Sulfated Ash, m %	3.6	3.4



Kixx Marine 40

40-TBN Trunk Piston Engine Oil

DESCRIPTION

Kixx Marine 40 is a high alkaline reserve (40 Base Number) trunk piston engine oil (TPEO) designed for use in high specific output mediumspeed trunk piston engines burning residual fuels (up to 4.5% sulfur). Particularly suited to high load factor operations in marine or stationary service and where heavy residual fuels with high asphaltene content (via broken residue) are used.

APPLICATIONS

- Medium-speed trunk piston engines including latest designs in stationary power generation, especially in high load factor operations
- Medium-speed trunk piston engines in marine service

CUSTOMER BENEFITS

Wear Protection

High alkalinity levels control cylinder liner wear effectively and protect bearings from corrosion. High-performance antiwear additives provide excellent protection against adhesive wear for cams, camshaft and bearings. Kixx Marine 40 also provides a high degree of water tolerance and antifoam protection.

Detergent-Dispersant Properties

Keeps crankcase and oil control rings clean. Prevents deposit formation throughout the engine. Reduces lube oil filter blockage. Effectively handles insolubles.

Oxidation Stability

Oxidation inhibitors protect the oil against thermal stresses, protect engine parts from corrosion and reduce undercrown deposits while promoting extended lubricant life.

Rust Prevention

Prevents corrosion of engine parts when engine is not in operation.

Balanced Additive Combination

Provides minimum maintenance and downtime, long engine life and economical operation.

KEY PROPERTIES

TBN (Base Number, mg KOH/g)	40
SAE Grade	40
Viscosity, mm²/s @ 40°C	139
Viscosity, mm²/s @ 100°C	14.0
Viscosity Index	97
FZG Fail Load Stage	12
Sulfated Ash, m %	4.8

Kixx Marine 50

50-TBN Trunk Piston Engine Oil



DESCRIPTION

Kixx Marine 50 is a high alkaline reserve (50 Base Number) trunk piston engine oil (TPEO) designed for use in the newer generation, high specific output medium speed trunk piston engines burning residual fuels (up to 4.5% sulfur). Particularly suited to high load factor operations in marine or stationary service and where heavy residual fuels with high asphaltene content (via broken residue) are used.

APPLICATIONS

- Medium-speed trunk piston engines including latest designs in stationary power generation, especially in high load factor operations
- Medium-speed trunk piston engines in marine service

CUSTOMER BENEFITS

Wear Protection

High alkalinity levels control cylinder liner wear effectively and protect bearings from corrosion. High-performance antiwear additives provide excellent protection against adhesive wear for cams, camshaft and bearings. Kixx Marine 50 also provides a high degree of water tolerance and antifoam protection.

Detergent-Dispersant Properties

Keeps crankcase and oil control rings clean. Prevents deposit formation throughout the engine. Reduces lube oil filter blockage. Effectively handles insolubles.

Oxidation Stability

Oxidation inhibitors protect the oil against thermal stresses, protect engine parts from corrosion and reduce under crown deposits while promoting extended lubricant life.

Rust Prevention

Prevents corrosion of engine parts when engine is not in operation.

Balanced Additive Combination

Provide minimum maintenance and downtime, long engine life and economical operation.

KEY PROPERTIES

TBN (Base Number, mg KOH/g)	50
SAE Grade	40
Viscosity, mm ² /s @ 40°C	138
Viscosity, mm ² /s @ 100°C	14.3
Viscosity Index	101
FZG Fail Load Stage	12
Sulfated Ash, m %	6.1

KICK OUT UNCERTAINTY FROM YOUR BUSINESS WITH KixxLUBO

There are more things to consider. From more detailed machines, more strict regulations, and to more diverse demands from customers. Kixx LUBO is your only key to add certainty to the uncertain future. No matter how much of **base oil** you may need at anytime or anywhere, so that your lubricants will stay strong and your success will become a certainty, we will be your trustworthy partner with the best quality products and services.



gscaltex.com/en/Business/BaseOil/G2



World Scale Production Capacity •Crude oil 785,000bbl/day •Base oil 26,000bbl/day

Reliable Quality Management •The latest cutting edge hydrocracking process •Strict quality control throughout all stages from production, storage to shipment

Compatible Production Portfolio •Group II : 150N/220N/600N •Group III : 2/4/6/8cSt



Kixx *All Ways with You*

As a new master brand of **GS** for both automotive and industrial lubricants, Kixx's new slogan of 'All Ways with You' shows our promise of being with you on every journey and moment.

GLOBAL CERTIFICATE



GM DEXOS1



BMW



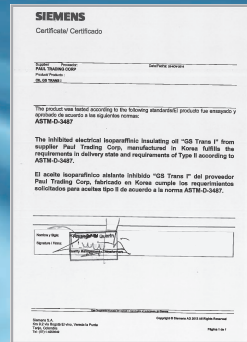
Mercedes-Benz



Mercedes-Benz



VOLVO



SIEMENS TRANS-I



VOLVO



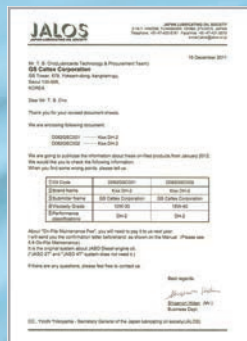
Cummins



MAN M 3275



EMD_GS LOCOS



JASO



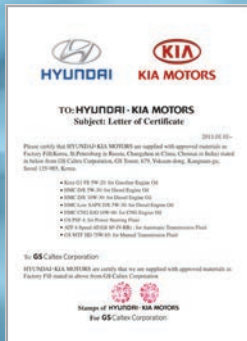
Bosch Rexroth RDE 90245



SIEMENS



ALSTOM



HYUNDAI KIA MOTOR



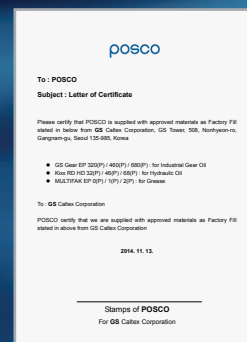
HHIC



Doosan Infracore



FLENDER Revision 16



POSCO



ISO 9001



ISO 14001



TS 16949

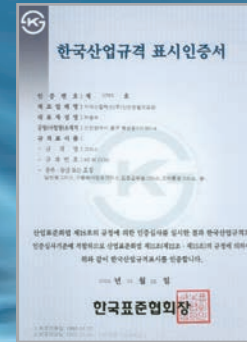


DEXRON-VI

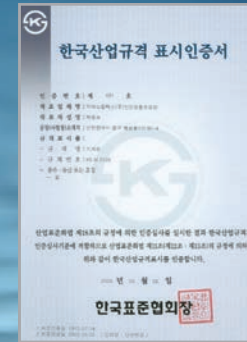


API

KOREAN CERTIFICATE



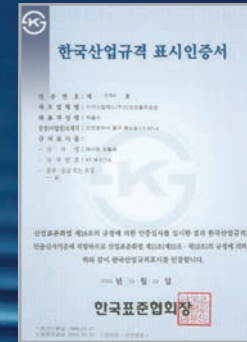
(KS) GREASE



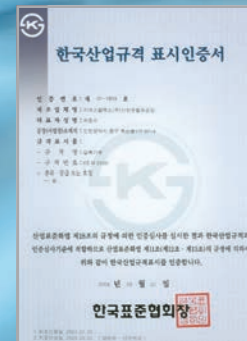
(KS) MACHINERY OIL



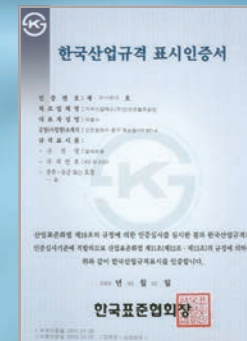
(KS) GEAR OIL



(KS) BEARING OIL



(KS) COMPRESSOR OIL



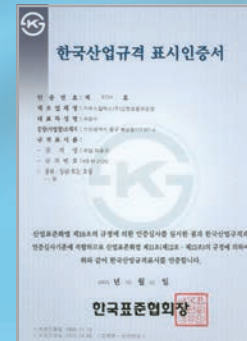
(KS) HEAT TRANSFER OIL



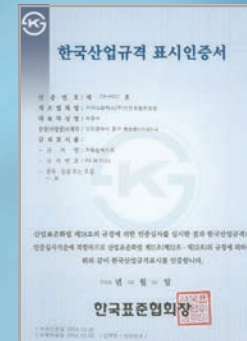
(KS) QUENCHING OIL



(KS) ENGINE OIL



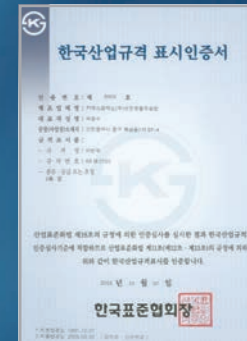
(KS) HYDRAULIC OIL



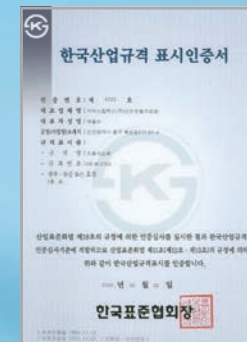
(KS) ATF



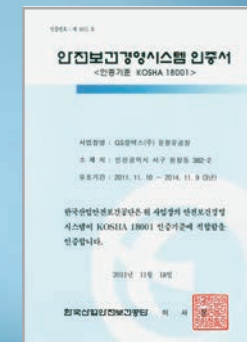
(KS) CUTTING OIL



(KS) TURBINE OIL



(KS) PROCESS OIL



KOSHA18001

	GRADE	Type	APPLICATION
Worm gear 	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
Spiral bevel gear 	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.
Hypoid gearAPI 	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

SAE J300 Jan. 2015			(SAE: Society of Automotive Engineers)		
SAE Viscosity Grade	Low Temp. Cranking Vis., Max at Temp, cP at °C	Low Temp. Pumping Vis., Max with no yield stress at Temp, cP at °C	High Temp. Vis. cSt at 100°C		High Temp. High Shear Vis. At 150°C, 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.

(SAE J306 Feb. 2019)			
SAE Viscosity Grade	Maximum Temperature for Viscosity of 150,000cP	Viscosity at 100°C, 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	-

(ISO: International Organization for Standardization)		
ISO Viscosity Grade	Viscosity at 40°C, 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

1. API

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.

Diesel Engines		
Category	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 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	Obsolete	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	Obsolete	Introduced in 1990. For high-speed, four-stroke, naturally aspirated and turbocharged engines. Can be used in place of CD, CE oils.
CF-2	Obsolete	Introduced in 1994. For severe duty, two-stroke cycle engines. Can be used in place of CD-II oils.
CF	Obsolete	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	Obsolete	We do not produce this grade.

Copyright 2004 - American Petroleum Institute. All rights reserved.
API, the API logo, the API Service Symbol (Donut), the API Service Symbol with CI-4 PLUS logo and the API Certification Mark (Starburst) are
either trademarks or registered trademarks of the American Petroleum Institute in the United States and/or other countries.
Printed in U.S.A. Creative Services I 24137 I 09.04 I Product No. F1551MC



Which oil is right for you?

2. 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”

Category	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.
A7/B7	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.

Category	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	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

***Source:** 1) ACEA EUROPEAN OIL SEQUENCES 2016, <https://www.acea.be/> Copyright – European Automobile Manufacturer Association. All rights reserved.
2) Introduction part: <https://www.oilspecifications.org/acea.php> Copyright – oilspecifications.org. All rights reserved.



Kixx lubricants are engineered with premium quality base oil
produced here at **GS** Caltex Yeosu Complex.



GS Tower, 508, Nonhyeon-ro, Gangnam-gu,
Seoul 135-985, Korea
Tel : (82)-2-2005-6803, 6808
www.KixxOil.com

