SINOPEC

PREMIUM LUBRICANTS

AGRICULTURE

INTERNATIONAL LUBRICANT DISTRIBUTORS

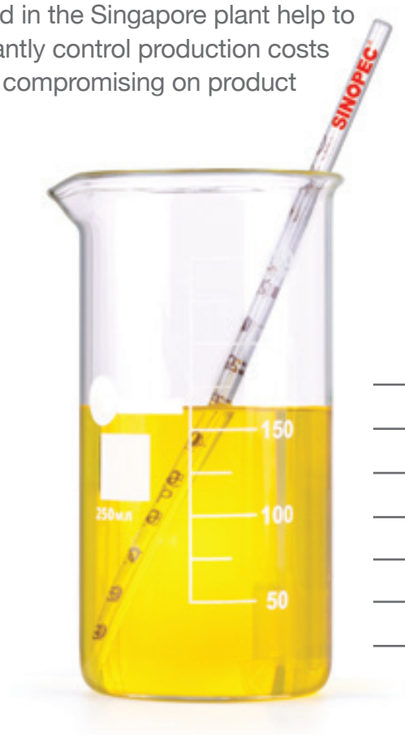
INTRODUCING SINOPEC

GLOBAL ACHIEVEMENT

The Sinopec Group is in fact the world's largest Petro-Chemical company by revenue and a global giant within the Lubricants Industry. According to Forbes in 2016, Sinopec is the second largest company in the world based on global turnover regardless of industry and currently the second largest oil refiner operating today. You can be assured you're in safe hands with a company that is successfully operating globally with the largest OEMs and latest technology.

To meet the increasing market demands for its premium lubricant and grease range, Sinopec has built an ultra-modern and one of the few globally labelled ultra-clean manufacturing facilities in Singapore where it has access to the highest quality base oil stocks, additives and R&D.

Technically advanced production efficiencies achieved in the Singapore plant help to significantly control production costs without compromising on product quality.



LEADING EDGE OIL TECHNOLOGY

Sinopec's success can be directly attributed to its dedicated focus on Research and Development. Sinopec works in close partnerships with **global OEMs** to formulate lubricants to exacting specifications that meet or exceed their approvals - as well as industry performance standards.

Sinopec's Premium Lubricants and Greases have caught the imagination of a worldwide generation of businesses and corporations seeking products that provide outstanding lubrication performance across every application imaginable. This includes both fixed and mobile plant, machinery and transportation equipment.

As for Australia, Sinopec's has made extensive investments to develop a comprehensive product range that is tailored to more than meet our most arduous applications and conditions. This is evidenced by an outstanding performance record both in the harshest field conditions and back in the lab.

- Exceeds industry standards
- Extends component life
- Outstanding performance in arduous conditions
- Exceptional anti-wear performance
- Global leader in refining and innovation
- OEM approved
- Blended in world-class Singapore plant

SINOPEC AGRICULTURAL OIL RANGE

To cope with increasing farm sizes, significantly higher yield expectations and improved operating efficiencies, the farming industry has placed unprecedented productivity demands on the equipment they use. As a result, original equipment manufacturers of agricultural machinery and ancillary equipment have employed the latest advances in technology to meet these demands.

From the large combine harvesters, crop sprayers, tractors, loading and transport vehicles, to quads and motorcylces, these tools-of-business for today's modern farms work exceptionally hard, for very long hours under Australia's extreme climate and environmental conditions. They need the best protection against metal wear - the primary contributor to accelerated component failure, and they need lubricants that maintain their lubrication properties to avoid very costly and unscheduled downtime caused by poor quality formulations.

Sinopec premium lubricants are formulated to meet or exceed OEM technical specifications as well as Australia's extremely harsh conditions experienced day after day, year after year.

PROTECTING OPERATING PROFITABILITY

Sinopec agricultural oils are formulated using premium base oils and additives that protect critical moving components. They also provide excellent protection against water contamination, corrosion and deposit build-up. Their stay-in-grade property helps to increase drain intervals, reduce service and maintenance costs, resulting in improved equipment life and increased operating profitability.

NATIONAL SUPPLY COVERAGE

Attributable to a successful growth in Australia is the extremely competitive pricing of the Sinopec lubricant range combined with an unmatched industry **technical support programme.**

With Australia's most innovative and efficient national supply network, our established and well-proven logistics combined with strategically located warehouses, ensures quick supply of Sinopec lubricants wherever, whenever, on time, across Australia.

In addition, sufficient stocks are held to ensure that customers experience continuity of supply.

TECHNICAL SUPPORT

A technical support team of highly trained personnel come with decades of experience gained from working closely with the world's prominent oil and lubricant companies and global OEM's – and they're at the disposal of all Sinopec lubricant customers.

INDEX

SINOPEC TULUX T600 LA 10W-40 DIESEL ENGINE OIL

Sinopec Tulux T600 LA 10W-40 Diesel Engine Oil is formulated with high viscosity index, synthetic technology base oils and advanced low-ash multi-functional additive technology to meet the particular requirements of the latest low-emission Euro IV and V and Australian ADR 80/02 and 80/03 trucks and buses. It can also be used for older trucks and buses. Sinopec Tulux T600 LA 10W-40 Diesel Engine Oil is a stable, stay-in-grade oil providing excellent control of piston cleanliness, wear, soot handling and lubricant stability.

FEATURES AND BENEFITS

Formulated with high viscosity index synthetic technology base oils, which provide improved oxidation control over conventional oils, reducing the formation of sludge and deposits and reducing oil thickening, thereby keeping the product in grade for longer, extending oil life, allowing longer oil drain intervals and reduced maintenance and inventory costs.

Very low oil evaporation loss leads to reduced oil consumption and reduced exhaust emissions.

Outstanding soot and deposit control provide protection against piston deposits and valve train wear, and ensure engine cleanliness and smooth running.

Low ash content provides excellent protection to modern low emission diesel engines, enabling them to meet stringent Euro IV and V and Australian ADR 80/02 and 80/03 emissions requirements.

Excellent control of aeration and foaming ensures protection of engine parts.

High acid neutralisation ability together with TBN retention, provide rust and corrosion protection and prolong engine life.

Fully compatible with exhaust gas after-treatment components.

Good elastomer compatibility ensures longer gasket and seal life, and prevents oil leakage.

Excellent low temperature properties ensure good fluidity at low temperatures and protect against start-up wear.

This ACEA E6 quality engine oil can be used in engines running on modern 5% biodiesel (B05) fuel.

TYPICAL DATA

SAE grade	10W-40
Kinematic viscosity, ASTM D 445 **cSt @ 40°C** **cSt @ 100°C**	 85.0 12.8
Dynamic viscosity, CCS, ASTM D 5293 **cP @ –25°C**	 6,540
Viscosity index, ASTM D 2270	149
NOACK volatility, ASTM D 5800	9.0
Sulfated ash, wt%, ASTM D 874	1.0
Total base number, mg KOH/g, ASTM D 2896	12
Pour point, °C, ASTM D 97	-34
Flash point (COC), °C, ASTM D 92	230
Density @ 15°C, kg/l, ASTM D 4052	0.8740

Note: *These data are given as an indication of typical values and not as exact specifications.*

RECOMMENDED APPLICATIONS

- Highly rated diesel engines meeting Euro IV and Euro V and Australian ADR 80/02 and 80/03 emissions requirements and running under very severe conditions, e.g. significantly extended oil drain intervals according to the manufacturer's recommendations.
- Engines fitted with particulate filters, designed for use in combination with low-sulfur diesel fuel.
- EGR engines, with or without particulate filters, and for engines fitted with SCR NOx reduction systems.

SPECIFICATION AND APPROVAL

ACEA	E6-12, E7-12, E4-12
API Service Classification	Diesel: CI-4, CH-4 and earlier HDDEO specifications
GB[1]	11122-2006 (CI-4)
JASO	DH-2
Allison	C4
Caterpillar	Cat ECF-1-a
DAF	Extended Drain Capability
Deutz	DQC III-10-LA (1)
Mack	EO-N
MAN	M 3477, M 3271-1
Mercedes Benz	228.51
MTU	MTU Type 3.1
Renault	RXD, RLD/RLD-2, RGD, RD-2
Scania	Low Ash
Volvo	VDS-3, CNG

[1]**Note:** *'GB' standards are the National Standards of the People's Republic of China.*

SINOPEC TULUX T600 15W-40 DIESEL ENGINE OIL

Sinopec Tulux T600 15W-40 Diesel Engine Oil is formulated with advanced low-SAPS (sulfated ash, phosphorus and sulfur) multi-functional additive and synthetic technology formulation to meet the latest requirements of a wide range of engine manufacturers. Suitable for use in heavy-duty diesel engines, including modern low-emission diesel engines and those using exhaust after-treatment systems. Also suitable for use in petrol/gasoline engines requiring an API SM quality oil.

FEATURES AND BENEFITS

Advanced low-ash additive system provides excellent protection for modern low-emission diesel engines equipped with EGR, DPF, SCR or other technologies.

Formulated with synthetic technology base oils which provide improved oxidation control over conventional oils, reducing the formation of sludge and deposits and reducing oil thickening, thereby keeping the product in grade for longer and extending oil and engine life.

Low oil evaporation loss leads to improved fuel economy and reduces oil consumption, exhaust emissions and engine wear.

High shear stability ensures that viscosity is maintained, even under severe, high-temperature service conditions, providing greater engine wear protection and extended engine life.

Excellent soot and deposit control provide protection against piston deposits and valve train wear, and ensure engine cleanliness and smooth running.

Excellent control of aeration and foaming ensures protection of engine parts.

High acid neutralisation ability together with TBN retention, provide rust and corrosion protection and prolong engine life.

Excellent thermal and oxidation stability protect the engine against rust, corrosion and wear caused by the formation of sludge and deposits.

Good elastomer compatibility ensures longer gasket and seal life.

Excellent low temperature properties ensure start up at low temperature and protect against start-up wear.

TYPICAL DATA

SAE grade	15W-40
Kinematic viscosity, ASTM D 445 **cSt @ 40°C** **cSt @ 100°C**	 112.6 15.16
Dynamic viscosity, CCS, ASTM D 5293 **cP @ –20°C**	 5,390
Viscosity index, ASTM D 2270	139
NOACK volatility, ASTM D 5800	9.5
Sulfated ash, wt%, ASTM D 874	1.0 max
Total base number, mg KOH/g, ASTM D 2896	9.0 min
Pour point, °C, ASTM D 97	–37
Flash point (COC), °C, ASTM D 92	230

Note: *These data are given as an indication of typical values and not as exact specifications.*

RECOMMENDED APPLICATIONS

- Heavy-duty diesel engines with EGR, DPF or other new technology low-emission systems, which require a low-ash lubricant in order to meet Euro III/IV/V and Australian ADR 80/00, 80/02 and 80/03 requirements.
- Heavy-duty diesel engines using exhaust after-treatment systems.
- Heavy-duty diesel engines operating continuously under very heavy or high load-factor conditions.
- On-highway application in heavy-duty vehicles operating under severe conditions, such as long-distance or urban traffic vehicles; also suitable in light-duty on-highway applications.
- Petrol/gasoline engines requiring an API SM quality oil.
- Suitable for mixed fleet use.
- Off-highway applications that use emission control systems.

SPECIFICATION AND APPROVAL

ACEA	E7-08, E9-08
API Service Classification	Diesel: CJ-4, CI-4 Plus, CI-4 and earlier HDDEO specifications
	Petrol/Gasoline: SM, SL and earlier specifications
Caterpillar	Cat ECF-3, Cat ECF-2, Cat ECF-1
Cummins	CES 20081
Detroit Diesel	93K218, 93K215, 93K214
Deutz	DQC III-10-LA
Mack	EO-N, EO-M Plus, EO-M, EO-O Premium Plus
MAN	3275
Mercedes Benz	MB 228.31
MTU	MTU Type 2.1
Renault	RLD-3
Volvo	VDS-4, VDS-3, VDS-2

SINOPEC TULUX T500 15W-40 CLASSIC DIESEL ENGINE OIL

Sinopec Tulux T500 15W-40 Classic Diesel Engine Oil is formulated with hydrocracked high viscosity index base oils and advanced multi-functional additive technology, it meets the requirements of a wide range of engine manufacturers. Provides superior soot control that protects against viscosity increase, sludge formation and piston deposits, and reduction in valve-train wear. It also keeps the engine clean and minimises energy loss due to frictional wear. Suitable for pre EPA 2007 diesel engines, where excellent soot control is required. Also suitable for use in engines with or without EGR systems. Key specifications: API CI-4/ SL, ACEA E7-08, Cat ECF 1-a, Cummins CES 20078.

FEATURES AND BENEFITS

Formulated with hydrocracked high viscosity index base oils, which provide improved oxidation control.

Outstanding soot and deposit control provide protection against piston deposits and valve train wear, and ensure engine cleanliness and smooth running.

Excellent control of aeration and foaming ensures protection of engine parts.

High quality base stocks and an advanced additive system work to reduce the build up of sludge and reduce oil thickening, thereby keeping the product in grade for longer and extending oil life.

High acid neutralisation ability together with TBN retention, provides rust and corrosion protection and prolongs engine life.

Excellent thermal and oxidation stability protect the engine against rust, corrosion and wear caused by the formation of sludge and deposits.

Good elastomer compatibility ensures longer gasket and seal life.

Excellent low temperature properties ensure smooth start up at low temperature and protect against start-up wear.

TYPICAL DATA

SAE grade	15W-40	20W-50
Kinematic viscosity, ASTM D 445		
cSt @ 40°C	107.58	173.8
cSt @ 100°C	14.15	19.00
Dynamic viscosity, CCS, ASTM D 5293		
cP @ –15°C	-	8,261
cP @ –20°C	6,630	–
Viscosity index, ASTM D 2270	133	124
NOACK volatility, ASTM D 5800	10	8
Sulfated ash, wt%, ASTM D 874	1.61	1.62
Total base number, mg KOH/g, ASTM D 2896	10.4	10.4
Pour point, °C, ASTM D 97	-36	-29
Flash point (COC), °C, ASTM D 92	234	244
Density @ 15°C, kg/l, ASTM D 4052	0.875	0.889

Note: *These data are given as an indication of typical values and not as exact specifications.*

RECOMMENDED APPLICATIONS

- Both light-duty and heavy-duty vehicles operating under severe conditions, such as long distance or urban traffic vehicles.
- Off-highway applications in the mining, quarrying, construction and agricultural industries.
- Industrial power generation engines.
- Heavy-duty diesel engines operating continuously under heavy or high load factor conditions.
- Mixed fleet use.

SPECIFICATION AND APPROVAL

ACEA	E7-08
API Service Classification	Diesel: CI-4, CH-4 and earlier HDDEO specifications
	Petrol/Gasoline: SL
GB[1]	11122-2006 (CI-4)
Caterpillar	Cat ECF-1-a
Cummins	CES 20078, 20077, 20076
Detroit Diesel	93K215
Mack	EO-M Plus
MAN	3275
Mercedes Benz	MB 228.3
MTU	MTU Type 2
Renault	RLD-2
Volvo	VDS-3, VDS-2

[1]**Note:** *'GB' standards are the National Standards of the People's Republic of China.*

SINOPEC STOU TRACTOR OIL (SAE GRADES: 10W-30 AND 15W-40)

Sinopec STOU Tractor Oil is a Super Tractor Oil Universal (STOU) formulated with high quality mineral base oils and a multi-functional additive system to meet the requirements of a wide range of agricultural equipment manufacturers. This multi-functional oil can be used in many different agricultural applications and is particularly useful in equipment where there is a common lubrication system supplying oil for different applications. It is available in 10W-30 and 15W-40 viscosity grades. Key specifications: API CG-4, GL-4; Allison C-4 John Deere JDM J27.

FEATURES AND BENEFITS

This multi-functional oil suitable for many agricultural and forestry applications, avoids the problems of accidental misapplication, which could cause equipment failure, and also saves on oil inventory costs.

Low pour point and high viscosity index ensure excellent low-temperature fluidity and good start-up and hydraulic performance, even under cold conditions, preventing start-up wear and ensuring smooth hydraulic operation.

A special friction modifier ensures smooth action in wet brakes and power take-off clutches, minimising vibration, chatter, stick–slip and squawk, and prolongs service life.

Good anti-wear performance protects moving parts from wear and metal fatigue, extending equipment life; excellent protection against gear scuffing, pitting and wear in applications where an API GL-4 product is required.

Excellent thermal and oxidation stability minimise the formation of deposits that could lead to component wear, and also ensure longer oil life.

Excellent protection against rusting and corrosion extends the life of system components.

Good anti-foaming properties ensure optimum oil film thickness is maintained and reduce oil leakage from the system.

Good compatibility with most common seals and elastomer materials used in agricultural equipment prolongs seal life and reduces leakage.

Available in two SAE viscosity grades to suit the particular service conditions and ambient temperatures.

TYPICAL DATA

SAE grade	10W-30	15W-40
Kinematic viscosity, ASTM D 445		
cSt @ 40°C	69.1	109.4
cSt @ 100°C	10.4	14.2
Dynamic viscosity, CCS, ASTM D 5293		
cP @ –25°C	6,100	-
cP @ –20°C	-	5,200
Viscosity index, ASTM D 2270	138	135
Sulfated ash, wt%, ASTM D 874	1.4	1.4
Total base number, mg KOH/g, ASTM D 2896	10.5	10.9
Pour point, °C, ASTM D 97	–33	–27
Flash point (COC), °C, ASTM D 92	224	226
Density @ 15°C, kg/l, ASTM D 4052	0.875	0.886

Note: *These data are given as an indication of typical values and not as exact specifications.*

RECOMMENDED APPLICATION

- Diesel engines, transmission and hydraulic systems, wet brakes and final drives of tractors and other agricultural or forestry equipment with common lubrication systems, where a STOU type lubricant is required.

SPECIFICATION AND APPROVAL

ACEA	E3
API Service Classification	Diesel: CG-4 and earlier HDDEO Specifications Gear lubricant: GL-4
Allison	C-4 (agricultural applications only)
Caterpillar	TO-2
Ford	M2C 159B/C
John Deere	JDM J27
Massey Ferguson	CMS M1145, CMS M1144, CMS M1139
New Holland	82009201/2/3
ZF	TE-ML-06A/B/C, TE-ML-07B

SINOPEC TULUX CF-2 TWO STROKE DIESEL ENGINE OIL (SAE GRADES: 40 AND 50)

Sinopec Tulux CF-2 2T Diesel Engine Oil is formulated with high quality base oil and a multi-functional additive system. Formulated especially for severe duty, two-stroke cycle diesel engine applications, it is available in two viscosity grades, SAE 40 and SAE 50.

FEATURES AND BENEFITS

Excellent deposit control characteristics reduce the build up of combustion chamber and valve-seat deposits, reducing wear and ensuring effective engine operation.

Medium-ash formulation reduces the incidence of valve guttering.

Good thermal and oxidation stability together with good detergency properties ensure the oil does not break down at high temperatures, keeps the engine clean and extends component life.

Excellent lubricity and anti-wear properties protect against engine wear and extend engine life.

Excellent anti-rust performance and acid neutralising properties protect the engine from rust and corrosion

Available as SAE 40 and SAE 50 monogrades, to suit specific application requirements.

TYPICAL DATA

SAE grade	40	50
Kinematic viscosity, ASTM D 445 cSt @ 40°C cSt @ 100°C	 147.6 14.85	 194.0 17.70
Viscosity index, ASTM D 2270	100	100
Sulfated ash, wt%, ASTM D 874	1.64	1.66
Total base number, mg KOH/g, ASTM D 2896	13.3	12.57
Pour point, °C, ASTM D 97	-13	-12
Flash point (COC), °C, ASTM D 92	256	266
Density @ 20°C, kg/l, ASTM D 4052	0.894	0.896

Note: *These data are given as an indication of typical values and not as exact specifications*.

RECOMMENDED APPLICATION

- Severe duty two-stroke cycle diesel engine applications that require a monograde API CF-2 or CD-II oil

SPECIFICATION AND APPROVAL

API Service Classification	API CF-2 and CD-II

SINOPEC TULUX CF PREMIUM 30 DIESEL ENGINE OIL

Sinopec Tulux CF Premium 30 Diesel Engine Oil is formulated with high-quality base oil and a high-TBN multi-functional additive system. Designed to meet the needs of off-highway, indirect-injected diesel engines, stationary motors and other diesel engines that use a broad range of fuel types.

FEATURES AND BENEFITS

Excellent deposit control characteristics reduce the build up of combustion chamber and valve-seat deposits and reduce piston-ring sticking, so minimising engine wear and ensuring effective operation.

The high-TBN formulation, together with anti-rust additives, neutralises acidic fuel combustion products and protects the engine bearings from corrosion and wear, extending engine life.

Good thermal and oxidation stability, together with good detergency properties, ensure the oil does not break down or thicken at high temperatures, keeps the engine components clean and extends oil and engine life.

Excellent lubricity and anti-wear properties protect against engine wear and extend engine life.

Effectively formulated with high-quality base oils to reduce oil consumption.

Very good for older type Japanese-designed diesel engines where high TBN is beneficial.

TYPICAL DATA

SAE grade	30
Kinematic viscosity, ASTM D 445 cSt @ 40°C cSt @ 100°C	 97.7 11.7
Viscosity index, ASTM D 2270	108
Sulfated ash, wt%, ASTM D 874	1.78
Total base number, mg KOH/g, ASTM D 2896	13.13
Pour point, °C, ASTM D 97	–25
Flash point (COC), °C, ASTM D 92	240
Density @ 20°C, kg/l, ASTM D 4052	0.887

Note: *These data are given as an indication of typical values and not as exact specifications.*

RECOMMENDED APPLICATIONS

- Diesel engines that require a monograde oil of API CF or CD quality.
- Off-highway, indirect-injected diesel engines and other diesel engines that use a broad range of fuel types, including those using fuel with sulfur content above 0.5%.
- Diesel engines used in power generation.
- Diesel engines used to power dozers, excavators and mining equipment.
- Diesel engines used in low-speed, high-torque applications.

SPECIFICATION AND APPROVAL

API Service Classification	Diesel: CF and CD
GB[1]	11122-2006 (CF)
JASO	DH-1

[1]Note: *'GB' standards are the National Standards of the People's Republic of China.*

SINOPEC TO-4 HEAVY-DUTY CLASSIC TRANSMISSION FLUID (SAE VISCOSITY GRADES: 10W, 30, 50 AND 60)

Sinopec TO-4 Heavy-duty fluids are specially designed to meet the demanding Caterpillar TO-4 specification. It offers excellent anti-wear properties and load carrying ability to reduce gear wear and extend the life of heavy-duty transmission systems, gearboxes and final drives, leading to increased productivity and reduced equipment downtime. Its outstanding oxidation stability, thermal stability and detergency prevent the build up of deposits and ensure long fluid life. Key specifications: Cat TO-4, ZF TE-ML 03C & TE-ML 07F (SAE 30), Allison C-4 (SAE 30).

FEATURES AND BENEFITS

Excellent anti-wear properties and load carrying ability reduce gear wear and extend the life of heavy-duty transmission systems, gearboxes and final drives, leading to improved performance and reduced equipment downtime.

Outstanding oxidation stability thermal stability and detergency prevent the build up of deposits and ensure long fluid life.

Advanced frictional properties provide the clutch friction retention and slippage control required in equipment that uses modern paper or elastomer disc materials.

Compatible with modern clutch materials and elastomers, to extend component life and prevent oil leakage.

Effective control of foaming together with good air release properties ensure smooth transfer of power and shifting performance, and reduce fluid loss in severe service conditions.

Very good low temperature properties protect against wear under cold start up and running conditions.

RECOMMENDED APPLICATIONS

- Heavy-duty transmissions, gearboxes, final drives and hydraulic systems used in off-highway applications, where a Caterpillar TO-4 product is recommended.
- Other heavy-duty applications in the mining, construction, quarrying and agricultural industries.
- Manual, power-shift and automatic transmissions where Allison C-4 fluids (SAE 10W and 30 grades) are recommended.
- Mobile hydraulic equipment applications.
- Applications where paper and elastomer disc materials are used, and advanced frictional properties are required to extend clutch life and provide slippage control under severe heavyload conditions.
- For more demanding or critical applications, for example where a ZF approved product is required, consider using the product Sinopec TO-4 Heavy-duty Transmission Fluid, which has a higher specification.

SPECIFICATION AND APPROVAL

Allison	C-4 (SAE 10W and 30)
Caterpillar	TO-4
Komatsu	KES 07.868.1 (SAE 30)
ZF	TE-ML 03C (SAE 30), TE-ML 07F (SAE 30)

TYPICAL DATA

SAE viscosity grade	10W	30	50	60
Kinematic viscosity, ASTM D 445				
cSt @ 40°C	41.5	98.0	196.5	294.1
cSt @ 100°C	6.7	11.2	18.4	25.5
Viscosity, Brookfield, ASTM D 2983				
cP @ -15°C	-	-	46,000	-
cP @ -25°C	-	38,000	-	-
cP @ -35°C	20,000	-	-	-
Viscosity index, ASTM D 2270	116	100	96	96
FZG gear scuffing, load stage, ASTM D 5182	12	12	12	12
Pour point, °C, ASTM D 97	–36	–30	–18	–9
Flash point (COC), °C, ASTM D 92	230	240	250	260

Note: *These data are given as an indication of typical values and not as exact specifications.*

SINOPEC HYDRAULIC TRANSMISSION MULTI-FUNCTIONAL FLUID 10W-30 (UTTO)

Sinopec Hydraulic Transmission Multi-functional Fluid 10W-30 is an extra high performance universal tractor transmission oil (UTTO), formulated with high quality hydro-treated base oils and a multi-functional additive system. It designed to meet or exceed hydraulic and transmission fluid requirements, and to reduce wet brake and power take-off (PTO) chatter. It ensures excellent performance in agricultural and commercial tractors operating in a wide range of environments and conditions, and is particularly useful in equipment where a common lubrication system supplies oil for different applications. Key specifications: API GL-4; Allison C-4 John Deere JDM 20C & 20D.

FEATURES AND BENEFITS

A multi-functional oil for hydraulic, transmission and wet brake systems, and suitable for high power tractors.

Excellent shear stability ensures good viscosity retention even in conditions of high temperature and heavy load, and prolongs the service life of hydraulic transmission systems.

Outstanding fluidity and good low temperature properties ensure smooth start up and operation even in cold weather.

A special friction modifier ensures smooth action in wet brakes and power take-off clutches, minimises vibration, chatter, stick–slip and squawk, and prolongs service life.

Good anti-wear performance protects moving parts

from wear and metal fatigue, ensures long equipment life, and provides excellent protection against gear scuffing, pitting and wear in applications where an API GL-4 product is required.

Excellent thermal and oxidation stability minimise the formation of deposits that could lead to component wear, and also ensure longer oil life.

Excellent protection against rusting and corrosion increases the service life of system components.

Good anti-foaming properties ensure optimum oil film thickness is maintained and reduces oil leakage fromthe system.

Good compatibility with most common seals and elastomer materials used in agricultural equipment prolongs seal life and reduces leakage.

TYPICAL DATA

SAE grade	10W-30
Kinematic viscosity, ASTM D 445	
cSt @ 40°C	63.38
cSt @ 100°C	10.08
Viscosity index, ASTM D 2270	145
Brookfield viscosity, ASTM D 2983	
cP @ –35°C	29,000
cP @ –20°C	4,350
Pour point, °C, ASTM D 97	–43
Flash point (COC), °C, ASTM D 92	236
Density @ 15°C, kg/l, ASTM D 4052	0.867

Note: *These data are given as an indication of typical values and not as exact specifications.*

RECOMMENDED APPLICATION

- Transmission and hydraulic systems, wet brakes and final drives of tractors and other agricultural or forestry equipment with common lubrication systems, where a UTTO type lubricant is required.

SPECIFICATION AND APPROVAL

API	GL-4
Allison	C-4 (agricultural applications only)
Case	M1206, MS1207, M1210
Caterpillar	TO-2
CNH	MAT 3525
Ford	ESN-M2C134-D (FNHA-2-C-201.00)
John Deere	JDM J20C and J20D
Kubota	UDT
Massey Ferguson	M1135, M1141, M1143
Volvo CE	WB-101
ZF	TE-ML-03E, TE-ML-05F

SINOPEC AUTOMATIC TRANSMISSION FLUID III-LD

Sinopec Automatic Transmission Fluid III-LD is a multi-functional fluid formulated with high viscosity index synthetic oils and selected additives. It is suitable for use in the automatic transmission systems of commercial vehicles where it allows extended drain intervals, even under severe service conditions. Key specifications: ZF TE-ML 14B, Voith H55.6335.3x, Allison C-4.

FEATURES AND BENEFITS

Outstanding oxidation stability, thermal stability and detergency ensure long fluid life, prevent the build up of deposits, and allow for extended drain intervals.

Excellent frictional characteristics improve transmission efficiency and shifting performance, and ensure consistent, reliable, trouble-free operation of transmission systems.

Excellent anti-wear performance and good oil film strength protect components from wear and ensure long transmission life.

Very good low temperature properties protect against wear under cold start-up and running conditions.

Effective control of foaming ensures good transfer of power and shifting performance, and reduces fluid loss in severe service conditions.

Fully compatible with common seal materials found in transmission systems, to extend seal life and prevent fluid leakage.

TYPICAL DATA

Kinematic viscosity, ASTM D 445 **cSt @ 40°C** **cSt @ 100°C**	 37.37 7.63
Viscosity, Brookfield, ASTM D 2983 **cP @ –30°C** **cP @ –40°C**	 3,200 12,500
Copper corrosion, 3 hours @ 150°C, ASTM D 130	1b
Flash point (COC), °C, ASTM D 92	206
Density @ 20°C, kg/l, ASTM D 4052	0.8538
Colour	Red

Note: *These data are given as an indication of typical values and not as exact specifications.*

RECOMMENDED APPLICATION

- Automatic transmission systems of commercial vehicles, including bus rapid transit (BRT) fleets, school bus fleets, emergency vehicles, recreation vehicles and commercial utility vehicles, where extended drain intervals are required.

SPECIFICATION AND APPROVAL

Allison	C-4
Voith	H55.6335.3x
ZF	TE-ML 14B

SINOPEC AUTOMATIC TRANSMISSION FLUID III-H

Sinopec Automatic Transmission Fluid III-H is a multi-functional fluid formulated with high viscosity index synthetic base oil and selected additives. It is suitable for use in the automatic transmission systems of many heavy vehicles, and in some power steering and hydraulic systems. Key specifications: Dexron III-H, Allison C-4.

FEATURES AND BENEFITS

Outstanding oxidation stability thermal stability and detergency ensure long fluid life and prevent the build up of deposits.

Excellent frictional characteristics improve transmission efficiency and shifting performance, and ensure consistent, reliable, trouble-free operation of transmission systems.

Excellent anti-wear performance and good oil film strength protect components from wear and ensure long transmission life.

Very good low temperature properties protect against wear under cold start-up and running conditions and ensure good low-temperature shift performance.

Effective control of foaming ensures good transfer of power and shifting performance, and reduces fluid loss in severe service conditions.

Fully compatible with common seal materials found in transmission systems, to extend seal life and prevent fluid leakage.

TYPICAL DATA

Kinematic viscosity, ASTM D 445 **cSt @ 40°C** **cSt @ 100°C**	 33.89 7.32
Viscosity, Brookfield, ASTM D 2983 **cP @ -30°C** **cP @ -40°C**	 2,400 9,000
Viscosity index, ASTM D 2270	185
Copper corrosion, 3 hours @ 150°C, ASTM D 130	1b
Pour point, °C, ASTM D 97	–40
Flash point (COC), °C, ASTM D 92	198
Density @ 20°C, kg/l, ASTM D 4052	0.845
Colour	Red

Note: *These data are given as an indication of typical values and not as exact specifications.*

RECOMMENDED APPLICATIONS

- All vehicles where GM DEXRON® III or Allison C-4 fluids are required.
- Many automatic transmissions, power steering and hydraulics systems in heavy-duty vehicles used, for example, in the construction industry.
- Hydrostatic drives and hydraulic systems in industrial, agricultural, mining and marine applications where GM DEXRON® III or Allison C-4 is specified.
- Some specific hydraulic systems that require an ISO VG 32, 46 or 68 fluids.
- Not recommended for use in continuously variable transmission (CVT) systems.

SPECIFICATION AND APPROVAL

Allison	C-4
GM	DEXRON® III-H

ILD MULTIVEHICLE HD SYNTHETIC AUTOMATIC TRANSMISSION FLUID

ILD Multivehicle Synthetic Automatic Transmission Fluid is formulated using high viscosity index synthetic base oils and advanced multifunctional additives. It is suitable for use in the automatic transmission systems of heavy-duty commercial vehicles that require Dexron VI, Allison TES 295, and Voith Turbo where it allows extended drain intervals, even under severe service conditions. ILD Multivehicle Synthetic Automatic Transmission Fluid also meets the requirements of most Asian automatic transmissions such as Aisin and Diamond, and many other European and North American specifications.

FEATURES AND BENEFITS

Outstanding oxidation stability, thermal stability and detergency to ensure long fluid life and prevent the buildup of deposits which allow for extended drain intervals.

Excellent frictional characteristics that improve transmission efficiency and shifting performance while ensuring consistent, reliable, trouble-free operation of transmission systems.

Superior anti-wear performance and good oil film strength protect components from wear and ensure long transmission life.

Effective control of foaming ensures smooth transfer of power and shifting performance, and reduces fluid losses in severe service conditions.

Low-temperature properties protect against wear under cold start-up and running conditions.

Meeting a wide range of manufacturer specifications to minimise inventory.

Fully compatible with common seal materials found in transmission systems, to extend seal life and prevent fluid leakage.

TYPICAL DATA

Kinematic viscosity, ASTM D 445 **cSt @ 40°C** **cSt @ 100°C**	 34.1 7.1
Viscosity Index	177
Flash point (COC), °C, ASTM D 92	210
Specific Gravity at 15°C	0.85

Note: *These data are given as an indication of typical values and not as exact specifications.*

RECOMMENDED APPLICATIONS

- On and off-highway heavy-duty automatic transmission where GM DEXRON® VI / III-H or Allison TES 295 quality fluid is required.
- Automatic transmission systems of commercial vehicles, including bus rapid transit (BRT) fleets, school bus fleets, emergency vehicles, recreation vehicles and commercial utility vehicles, where extended drain intervals are required.
- Passenger cars automatic transmission.
- Power steering and hydraulics systems in light and heavy-duty vehicles.
- Hydrostatic drives and hydraulic power transmission systems in industrial, agricultural, mining and marine applications where a GM DEXRON® III-H, II-D or Ford MERCON® quality fluid is specified.

SPECIFICATION AND APPROVAL

Allison	C-4
Ford	MERCON® V
JASO	1-A
Voith Turbo	H55.6335.XX (G607)
Volvo	97340 / 97341
MAN	339 Type V-1
General Motors	DEXRON® VI / III H / III G / IIIF / II D / IIE / II Meets specification for GM Dexron® VI
Allison	TES 295
Ford	MERCON® / MERCON® V BTR 85 and 95LE FNR5, WSS-M2C924-A, Ford Fiesta, ZF 6 Speed
Aisin Warner	AW-1/ JWS 3309 (3314, 3317, 3324)
Audi	G-052-162-A1 / G-055-005 / G-055-025 / G-055-162 / G-060-162 / G-052-990
BMW	LT 71141 / LA 2634 / ETL 7045E / ETL 8072B / P/P 83 22 0 142 516 / BMW Series 5
Chrysler	ATF's, ATF's + ¾ / AS68RC (Chrysler Mopar)
Honda	ATF-Z1 / DW-1
Hyundai	SP-III / SP-II / SP-1V / SPH-IV / JWS 3314 / JWS 3317 NWS-9638
JASO	JASO 1A
Kia	SP-III / SP-II / SP1V/ JWS 3314 / JWS 3317 Red-1
MAN	339 F / V1 / V2 / Z1 / Z2
Mazda	ATF-MV / M III
Mercedes Benz	236.1 / 236.2 / 236.3 / 236.5 / 236.6 / 236.7/ 236.9 / 236.10 / 236.11 (Daimler NAG-1), (LT71141) / 5 Speed 1996-2006 (Shell 3403)
Mitsubishi	Diamond SP-III / SPII / SP-1V / ATF J2
Nissan	Matic-K / Matic-J / Matic-D
Toyota	WS (JWS 3324) / T-IV / T-III / T-II
Voith	H55.6335.XX (G1363) / (G607) / DIWA,.2, .3, 0.3^{E} , 0.5

SINOPEC STOU TRACTOR OIL (SAE GRADES: 10W-30 AND 15W-40)

Sinopec STOU Tractor Oil is a Super Tractor Oil Universal (STOU) formulated with high quality mineral base oils and a multi-functional additive system to meet the requirements of a wide range of agricultural equipment manufacturers. This multi-functional oil can be used in many different agricultural applications and is particularly useful in equipment where there is a common lubrication system supplying oil for different applications. It is available in 10W-30 and 15W-40 viscosity grades. Key specifications: API CG-4, GL-4; Allison C-4 John Deere JDM J27.

FEATURES AND BENEFITS

This multi-functional oil suitable for many agricultural and forestry applications, avoids the problems of accidental misapplication, which could cause equipment failure, and also saves on oil inventory costs.

Low pour point and high viscosity index ensure excellent low-temperature fluidity and good start-up and hydraulic performance, even under cold conditions, preventing start-up wear and ensuring smooth hydraulic operation.

A special friction modifier ensures smooth action in wet brakes and power take-off clutches, minimising vibration, chatter, stick–slip and squawk, and prolongs service life.

Good anti-wear performance protects moving parts from wear and metal fatigue, extending equipment life; excellent protection against gear scuffing, pitting and wear in applications where an API GL-4 product is required.

Excellent thermal and oxidation stability minimise the formation of deposits that could lead to component wear, and also ensure longer oil life.

Excellent protection against rusting and corrosion extends the life of system components.

Good anti-foaming properties ensure optimum oil film thickness is maintained and reduce oil leakage from the system.

Good compatibility with most common seals and elastomer materials used in agricultural equipment prolongs seal life and reduces leakage.

Available in two SAE viscosity grades to suit the particular service conditions and ambient temperatures.

TYPICAL DATA

SAE grade	10W-30	15W-40
Kinematic viscosity, ASTM D 445 **cSt @ 40°C** **cSt @ 100°C**	 69.1 10.4	 109.4 14.2
Dynamic viscosity, CCS, ASTM D 5293 **cP @ –25°C** **cP @ –20°C**	 6,100 -	 - 5,200
Viscosity index, ASTM D 2270	138	135
Sulfated ash, wt%, ASTM D 874	1.4	1.4
Total base number, mg KOH/g, ASTM D 2896	10.5	10.9
Pour point, °C, ASTM D 97	–33	–27
Flash point (COC), °C, ASTM D 92	224	226
Density @ 15°C, kg/l, ASTM D 4052	0.875	0.886

Note: *These data are given as an indication of typical values and not as exact specifications.*

RECOMMENDED APPLICATION

- Diesel engines, transmission and hydraulic systems, wet brakes and final drives of tractors and other agricultural or forestry equipment with common lubrication systems, where a STOU type lubricant is required.

SPECIFICATION AND APPROVAL

ACEA	E3
API Service Classification	Diesel: CG-4 and earlier HDDEO Specifications Gear lubricant: GL-4
Allison	C-4 (agricultural applications only)
Caterpillar	TO-2
Ford	M2C 159B/C
John Deere	JDM J27
Massey Ferguson	CMS M1145, CMS M1144, CMS M1139
New Holland	82009201/2/3
ZF	TE-ML-06A/B/C, TE-ML-07B

SINOPEC GL-5 HEAVY-DUTY AUTOMOTIVE GEAR OIL (SAE VISCOSITY GRADES: 75W-90, 80W-90, 85W-90, 90 AND 85W-140)

Sinopec GL-5 Heavy-Duty Automotive Gear Oil is a range of high performance gear oils, formulated with high quality synthetic and mineral base oils, and an advanced multi-functional additive system to meet the requirements of API GL-5. Designed for the lubrication of hypoid gear sets in passenger vehicles and commercial vehicles, where they offer excellent extreme pressure (EP) and anti-wear properties. This protects gears operating at high speeds and tooth pressures from abrasion, wear and welding, even in severe high load and shock loading conditions, extending component life. Key specifications: API GL-5, MIL-L-2105D, MAN 342 Type M1.

FEATURES AND BENEFITS

Excellent extreme pressure and anti-wear performance protects gears operating at high speeds and tooth pressures from abrasion, wear and welding, even in severe high load and shock loading conditions, extending component life.

Excellent thermal and oxidation stability minimise the build up of deposits and varnish, reducing wear, extending component life and ensuring longer oil life.

Protection against corrosion and rusting extends equipment life, and reduces maintenance costs.

Good low temperature fluidity ensures optimum lubrication, even in cold start-up conditions, and prevents start-up wear.

Good anti-foaming properties ensure optimum oil film thickness, protecting components against wear, and minimise oil leakage.

Available in five viscosity grades to meet the specific needs of the application.

Multi-grade oils can be used over a wider temperature range, and so can reduce the need for seasonal oil change thus reducing maintenance costs.

Fully compatible with common seal materials to extend seal life and prevent fluid leakage.

RECOMMENDED APPLICATIONS

- Axles, final drives and power take-off units in trucks, buses and off-highway vehicles used in various industries, including the construction, agricultural, forestry and mining sectors.
- Differentials, gearboxes and steering gears, where a hypoid oil is required.
- Some industrial gear sets, where an extreme pressure (EP) gear oil is required.

SPECIFICATION AND APPROVAL

API	GL-5
GB[1]	13895-92
MIL	L-2105 D
MAN	342 Type M1
ZF	TE-ML 05A, TE-ML 19B, TE-ML 21A

[1]Note: *'GB' standards are the National Standards of the People's Republic of China.*

TYPICAL DATA

SAE viscosity grade	75W-90	80W-90	85W-90	90	85W-140
Kinematic viscosity, ASTM D 445 **cSt @ 40°C** **cSt @ 100°C**	 99.0 16.29	 170.0 16.93	 166.0 15.70	 208.0 17.52	 357.0 27.10
Viscosity index, ASTM D 2270	178	106	96	90	101
Copper corrosion, 3 hours @ 121°C, ASTM D 130	1b	1b	1b	1b	1b
Pour point, °C, ASTM D 97	–42	–30	–21	–13	–16
Flash point (COC), °C, ASTM D 92	205	208	218	228	228
Density @ 20°C, kg/l, ASTM D 4052	0.867	0.884	0.889	0.890	0.899

Note: *These data are given as an indication of typical values and not as exact specifications.*

SINOPEC FULLY SYNTHETIC HEAVY-DUTY AUTOMOTIVE GEAR OIL GL-5 75W-90

Sinopec Fully Synthetic Heavy-Duty Automotive Gear Oil GL-5 75W-90 is formulated with polyalphaolefin (PAO) base oil and selected multi-functional additives. The high viscosity index, excellent oxidation resistance and high load carrying capacity oil meets the lubrication requirements of hypoid gears in a variety of vehicles, providing an extended oil drain interval and ensuring excellent load carrying ability even under shock-loading conditions. The product's performance exceeds that of a conventional mineral-oil based GL-5 quality automotive gear oil. Key specifications: API GL-5, MT-1; MIL-PRF-2105E; ZF TE-ML 05A, 07A, 08, 12E, 16B, 16C, 16D, 17B, 19B.

FEATURES AND BENEFITS

The very high viscosity index provided by the fully synthetic formulation, ensures excellent low and high-temperature performance, and reduces gear wear at low-temperature start up.

Advanced sulphur–phosphorus extreme pressure (EP) additive technology provides outstanding load carrying capacity, and protects axles and gears operating under severe service conditions (e.g. low speed, high torque and high speed, high load).

Excellent thermal and oxidation stability protect against the formation of deposits and sludge, prolong oil service life and extend oil drain intervals.

The low coefficient of friction and high lubricity, provided by the PAO base oil, reduce resistance at start up and during operation, lowering power consumption and operating costs.

Good oil film thickness protects against gear wear, scoring and pitting, and also prevents corrosion or spalling of gear surfaces.

Good anti-foaming properties ensure a good oil film is maintained during service, and avoid oil overflow and leakage.

Fully compatible with the seal and gasket materials used in most conventional vehicles.

Good resistance against rust and corrosion extends component life.

The 75W-90 multi-grade can be used year round, without the need for seasonal change, and so can reduce oil inventory costs.

RECOMMENDED APPLICATIONS

- Drive axles (front or rear) of Heavy-Duty vehicles.
- Some transmission gears, especially hypoid gears, in heavy-duty vehicles.
- Axles and transmission systems that require a GL-5 quality oil.

TYPICAL DATA

SAE grade	75W-90
Kinematic viscosity, ASTM D 445 **cSt @ 40°C** **cSt @ 100°C**	 79.3 16.5
Viscosity, Brookfield, ASTM D 2983 **cP @ –40°C**	 47,000
Viscosity index, ASTM D 2270	225
Copper corrosion, 3 hours @ 121°C, ASTM D 130	1b
Pour point, °C, ASTM D 97	–42
Flash point (COC), °C, ASTM D 92	215
Density @ 20°C, kg/l, ASTM D 4052	0.8787
Colour	Yellow

Note: *These data are given as an indication of typical values and not as exact specifications.*

SPECIFICATION AND APPROVAL

API	GL-5, MT-1
MIL	MIL-PRF-2105E
SAE	J2360
ZF	TE-ML 05A, 07A, 08, 12E, 16B, 16C, 16D, 17B, 19B
ArvinMeritor	0-76-A/B/D
DAF	API GL-5 or J2360
Iveco	API GL-5 or J2360
Mack	GO-J
MAN	342 M-2
Renault	API GL-5 or J2360
Scania	STO 1:0
Volvo	API GL-5

SINOPEC LIMITED SLIP GEAR OIL ZLS (SAE VISCOSITY GRADES: 85W-90, 90 AND 85W-140)

Sinopec Limited Slip Gear Oil ZLS is a range of high performance gear oils, formulated with high quality mineral oils and an advanced multi-functional additive system. Designed to lubricate limited slip differentials, they meet the requirements of API GL-5 and are approved for use by the ZF Group. Excellent extreme pressure and anti-wear performance protects gears from abrasion and wear, even in severe high load and shock loading conditions, extending component life. Key specifications: API GL-5.

FEATURES AND BENEFITS

Specific frictional characteristics designed meet the special lubrication requirements of limited slip differentials.

Excellent extreme pressure and anti-wear performance protects gears from abrasion and wear, even in severe high load and shock loading conditions, extending component life.

Excellent thermal and oxidation stability minimise the build up of deposits, reducing wear, extending component life, and ensuring longer oil life.

Protection against corrosion and rusting extends equipment life and reduces maintenance costs.

Good low temperature fluidity ensures optimum lubrication, even in cold start-up conditions, and prevents start-up wear.

Good anti-foaming properties ensure optimum oil film thickness, protecting components against wear.

Available in three viscosity grades to meet the specific needs of the application.

Fully compatible with common seal materials to extend seal life and prevent fluid leakage.

RECOMMENDED APPLICATIONS

- Heavy-duty limited slip differential bearings, axle shafts and final drives under severe extreme pressure and shock loading service conditions, where API GL-5 performance is required.
- On-highway application in passenger cars, light and heavy-duty trucks, buses and vans fitted with limited slip differentials.
- Off-highway application in equipment used in the construction, mining, quarrying and agricultural sectors.
- Can also help with oil rationalisation as it can be used in non limited slip applications.

SPECIFICATION AND APPROVAL

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

TYPICAL DATA

SAE viscosity grade	85W/90	90	85W/140
Kinematic viscosity, ASTM D 445 cSt @ 100°C	15.95	16.52	26.44
Viscosity index, ASTM D 2270	96	75	96
Water, wt%, ASTM D 6304	trace	trace	0
Pentane insolubles, wt%, ASTM D 893	0.03	0.04	0.26
Sulfated ash, wt%, ASTM D 874	0.08	0.08	0.08
Pour point, °C, ASTM D 97	-27	-27	-24
Flash point (COC), °C, ASTM D 92	202	180	216

Note: *These data are given as an indication of typical values and not as exact specifications.*

SINOPEC GEAR FLUID FS/ES 75W-90 (SAE VISCOSITY GRADES: 75W-90)

Sinopec Gear Fluid FS/ES 75W-90 synthetic gear lubricant is a heavy-duty, extreme pressure, API GL-5 axle lubricant. It is compounded using a synthetic base stock, which has a high viscosity index and an exceptionally low pour point. This lubricant contains extreme pressure additives, as well as rust, oxidation and corrosion inhibitors to protect gears and bearings operated under a wide variety of load conditions. Key specifications: API GL-5, MT-1; MIL-PRF-2105E.

FEATURES AND BENEFITS

Outstanding oxidation resistance under extreme environments and heat to ensure long oil life.

Excellent extreme pressure capability to protect components under a wide range of load conditions.

High and low temperature performance exceeds those of conventional SAE 90, 75W-90 and SAE 80W-90 hypoid gear lubricants.

TYPICAL DATA

SAE grade	75W-90	SAE J-306
Viscosity, cSt 100°C 40°C	 16.6 122	ASTM D-445
Viscosity, SUS 210°F 100°F	 86.1 626	ASTM D-2161
Viscosity, cP -18°C (0°F) -40°C (-40°F)	 7,125 125,000	ASTM D-2983
Flash Point, °C (°F)	204 (400)	ASTM D-92
Chanel Point, °C	< -45	FTMS -3456
Density, g/l, 15.6°C (lbs/gal, 60 °F)	891 (7.42)	ASTM D-1298
Foam Test, ml Sequence I Sequence II Sequence III	 Pass Pass Pass	ASTM D-892
Copper Strip Corrosion 100°C (212°F) 121°C (250°F)	 1a pass 1a pass	ASTM D-130
FZG, Load Stage, Pass	12	ASTM D-5182
Thermal Heat Test, 149°C (300°F)	Pass	Rockwell 076E
Timken OK Load	50	ASTM D-2782

Note: *These data are given as an indication of typical values and not as exact specifications.*

RECOMMENDED APPLICATIONS

- Sinopec Gear Fluid FS/ES 75W-90 is recommended for applications where heat and wear present major problems.
- These applications include manual transmissions where EP type lubricants are recommended, differentials including limited slip, and transfer cases for heavy equipment, trucks, tractors and industrial gear drives.
- Automobiles, light duty trucks and farm machinery are other potential uses of this lubricant.

SPECIFICATION AND APPROVAL

API	GL-5, MT-1
MIL	MIL-PRF-2105E
SAE	J2360
ArvinMeritor	O-76-N
Dana Corporation	SHAES 256 Rev C, 429
International	TMS 6816
Mack	GO-J Plus

SINOPEC GEAR FLUID FS/ES 80W-140 (SAE VISCOSITY GRADES: 80W-140)

Sinopec Gear Fluid FS/ES 80W-140 synthetic lubricant is a heavy-duty, extreme pressure, GL-5 gear lubricant. It is compounded using a synthetic base stock, which has a high viscosity index and an exceptionally low pour point. This lubricant contains extreme pressure additives, as well as rust, oxidation and corrosion inhibitors to protect gears and bearings operated under a wide variety of load conditions. Key specifications: API GL-5, MT-1; MIL-PRF-2105E.

FEATURES AND BENEFITS

Outstanding oxidation resistance under extreme environments and heat to ensure long oil life.

Excellent extreme pressure capability to protect components under a wide range of load conditions.

High and low temperature performance exceeds those of conventional SAE 80W-90, SAE 90, and SAE 85W-140 hypoid gear lubricants.

TYPICAL DATA

SAE grade	80W-140	SAE J-306
Viscosity, cSt **100°C** **40°C**	 30.6 284	ASTM D-445
Viscosity, SUS **210°F** **100°F**	 149 1,470	ASTM D-2161
Viscosity, cP **0°C (32°F)** **-10°C (14°F)** **-12°C (10°F)** **-18°C (0°F)** **-20°C (-4°F)** **-26°C (-15°F)**	 — — 14,800 20,500 — 75,000	ASTM D-2983
Foam Test, ml **Sequence I** **Sequence II** **Sequence III**	 Pass Pass Pass	ASTM D-892
Copper Strip Corrosion **100°C (212°F)** **121°C (250°F)**	 1a pass 1a pass	ASTM D-130
FZG, Stage, Pass	12	ASTM D-5182

Note: *These data are given as an indication of typical values and not as exact specifications.*

RECOMMENDED APPLICATIONS

- Sinopec Gear Fluid FS/ES 80W-140 is recommended for applications where heat and wear present major problems.
- These applications include manual transmissions where EP type lubricants are recommended, differentials including limited slip, and transfer cases for heavy equipment, trucks, tractors and industrial gear drives.
- Automobiles, light duty trucks and farm machinery are other potential uses of this lubricant.

SPECIFICATION AND APPROVAL

API	GL-5, MT-1
MIL	MIL-PRF-2105E
SAE	J2360
ArvinMeritor	O-76-B (mineral), O-80 (synthetic)
Dana Corporation	SHAES 429
International	TMS 6816
Mack	GO-J

SINOPEC TRANS FLUID FS/ES SAE 50 (SAE VISCOSITY GRADE: SAE 50)

Sinopec Trans Fluid FS/ES SAE 50 is a specially formulated synthetic lubricant designed for extended drain and severe service in heavy-duty manual transmissions which require a non EP gear or transmission lubricant. It is specially formulated to protect the higher torque manual transmissions coupled with the increased horsepower engines.

FEATURES AND BENEFITS

Synthetic basestock with a high viscosity index provides superior all-climate, year round performance.

Superior component protection contains advanced anti-wear additive packages as well as rust, oxidation and corrosion inhibitors that protect bearings and synchronisers, reduce component wear, and promote longer transmission and lubricant life.

High temperature performance ensures stability when exposed to severe heat, oxidation and shear conditions.

Extended drain intervals approved for use as extended oil drain intervals as per Eaton Transmission Division PS-164 (500,000-mile drain) specification.

TYPICAL DATA

SAE Viscosity Grade	50	SAE J-300
Viscosity, cSt **40°C** **100°C**	 132 17.5	 ASTM D-445 ASTM D-445
Viscosity, SUS **100°F** **210°F**	 678 89.9	 ASTM D-2161 ASTM D-2161
Viscosity, cP **-40°C**	 104,000	 ASTM D-2983
Viscosity index	146	ASTM D-2270
Pour point °C (°F)	<-45 (<-49)	ASTM D-97
Flash point °C (°F)	221 (430)	ASTM D-92
Foam Test **Sequence I** **Sequence II** **Sequence III**	 PASS PASS PASS	 ASTM D-892 ASTM D-892 ASTM D-892
API Gravity 15.6/15.6°	33.0	ASTM D-287
Density, g/l, 15.6° (lbs/gal, 60°F)	860 (7.17)	ASTM D-1298
Copper strip corrosion	—	ASTM D-130
3 hrs @ 100° (212°F)	1a Pass	ASTM D-130
3 hrs @ 121° (250°F)	1a Pass	ASTM D-130

Note: *These data are given as an indication of typical values and not as exact specifications.*

RECOMMENDED APPLICATION

- Sinopec Trans Fluid FS/ES SAE 50 is recommended for use in heavy-duty manual transmission which includes application that requires Eaton Roadranger approved oil.

SPECIFICATION AND APPROVAL

API	MT-1
Eaton Transmission	PS-164 rev 7
Mack	TO-A Plus
International	TMS 6816
ArvinMeritor	O-81 (pending)
ZF	Freedomline

SINOPEC LDI AXLE GEAR OIL (SAE VISCOSITY GRADES: 80W-90, 85W-90 AND 85W-140)

Sinopec LDI Axle Gear Oil is a range of high performance gear oils, available in three viscosity grades. Formulated with highly refined, high viscosity index base oils and an advanced multi-functional additive system, it has outstanding thermal stability and oxidation stability, excellent load carrying capacity and offers extended oil drain intervals. Designed for the lubrication of heavily loaded gear sets operating in arduous conditions including shock loading and extended operating periods. Especially suited for use in machinery where GL-5 performance level is required as a minimum, for example in mining and heavy earthmoving equipment. Provides excellent performance in light and heavy-duty applications and high temperature operations. Meets the requirements of API GL-5 and MT-1, and a number of manufacturers' requirements.

FEATURES AND BENEFITS

Excellent thermal and oxidation stability minimise the build up of deposits and varnish, reducing wear, extending component life and ensuring longer oil life.

Excellent extreme pressure anti-wear performance and good shear stability protect gears operating at high speeds and tooth pressures from abrasion, wear and welding, even in severe high load and shock loading conditions, extending component life.

Protection against corrosion and rusting extends equipment life, and reduces maintenance costs.

Good anti-foaming properties ensure optimum oil film thickness, protecting components against wear, and minimise oil leakage.

Available in three viscosity grades to meet the specific needs of the application.

Multi-grade oils can be used over a wider temperature range, and so can reduce the need for seasonal oil change thus reducing maintenance costs.

Superior seal compatibility fully compatible with common seal materials, to extend seal life and prevent fluid leakage.

RECOMMENDED APPLICATIONS

- Axles, final drives and power take-off units in off-highway vehicles used in various industries, including the construction, mining, forestry and agricultural sectors.
- Differentials, gearboxes and steering gears, where a hypoid oil is required.
- Manual transmissions without synchronisers (non synchronised transmissions).
- Some industrial gear sets, where an extreme pressure (EP) gear oil is required.

SPECIFICATION AND APPROVAL

API	GL-5, MT-1
GB[1]	13895
MIL	L-2105 E
SAE	J2360
ArvinMeritor	O-76-A/B/D
Mack Trucks	GO-J
MAN	342 Type M2, M1
Scania	STO 1:0
ZF	TE-ML 05A, 07A, 08, 12E, 16B, 16C, 16D, 17B, 19B, 21A

[1]Note: *'GB' standards are the National Standards of the People's Republic of China.*

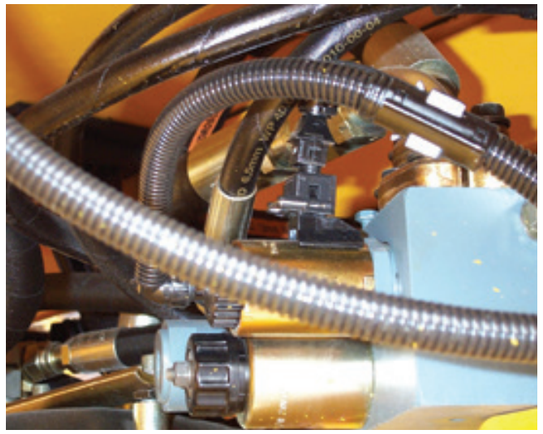
TYPICAL DATA

SAE viscosity grade	80W-90	85W-90	85W-140
Kinematic viscosity, ASTM D 445			
cSt @ 40°C	149	193	406
cSt @ 100°C	15.68	17.15	29.49
Viscosity index, ASTM D 2270	108	95	101
Viscosity, Brookfield, ASTM D 2983			
cP @ -26C	93,000	-	-
cP @ -12°C	-	16,500	55,000
Copper corrosion, 3 hours @ 121°C, ASTM D 130	1b	1b	1b
Pour point, °C, ASTM D 97	–33	–21	–18
Flash point (COC), °C, ASTM D 92	210	222	225
Foaming characteristics, ASTM D 892			
sequence I	0/0	0/0	0/0
sequence II	0/0	0/0	0/0
sequence III	0/0	0/0	0/0

Note: *These data are given as an indication of typical values and not as exact specifications.*

SINOPEC ANTI-WEAR HYDRAULIC OIL L-HM (ISO VISCOSITY GRADES: 32, 46, 68, 100 AND 150)

Sinopec Anti-wear Hydraulic Oil L-HM is a line of premium quality anti-wear lubricants blended using selected and carefully refined high-quality mineral oils, combined with a multi-functional additive system and available in a wide viscosity range from ISO Grade 32 to 150. This line of oils has been designed to meet the requirements of major hydraulic pump manufacturers, and its applications include hydraulic systems used in industrial and marine applications as well as in mobile machinery. Key specifications: DIN 51524 Part 2, ISO 11158 (L-HM), Cincinnati Lamb P-68/69/70, Parker Denison HF-0/1/2.



FEATURES AND BENEFITS

High-quality base oils combined with multi-functional additive technology provide outstanding anti-wear properties, rust protection, low varnish and deposit formation, good demulsibility, oxidation resistance, good antifoam properties and fast air release properties, to protect and extend the life of hydraulic pumps and systems.

Good hydrolytic stability and filterability ensure optimum product life and performance, and prevent filter blocking.

The wide selection of viscosity grades ensures that the optimum viscosity can be used for any hydraulic system operating temperature.

Fully compatible with common seal materials usually found in hydraulic systems, to extend seal life and prevent fluid leakage.

RECOMMENDED APPLICATIONS

- Hydraulic applications in a wide variety of industrial, marine and mobile equipment.
- Vane and gear pumps operating under high loads, as recommended by pump manufacturers.
- Severe service hydraulic systems, employing axial and radial piston pumps, as recommended by pump manufacturers.

SPECIFICATION AND APPROVAL

DIN	51524 Pt 2
GB[1]	11118.1-94 (L-HM) Premium
ISO	11158 (L-HM)
Cincinnati Lamb	P-68 (ISO 32), P-69 (ISO 68), P-70 (ISO 46)
Eaton Vickers	M-2950-S (ISO 46)
Parker Denison	HF-0, HF-1, HF-2 (ISO 32, 46, 68)

[1]Note: *'GB' standards are the National Standards of the People's Republic of China.*

SINOPEC L-HV LOW TEMPERATURE ANTI-WEAR HYDRAULIC OIL (ISO VISCOSITY GRADES: 15, 22, 32, 46, 68 AND 100)

Sinopec L-HV Low Temperature Anti-wear Hydraulic Oil is a line of premium quality anti-wear lubricants blended using selected and highly refined Group II and III premium oils combined with a multi-functional additive system. It carries **high viscosity index** and low pour point characteristics to meet the requirements of moderate to high pressure hydraulic systems operating outdoors in extreme hot and cold regions, where there is a wide variation in ambient temperature. This outstanding low-temperature fluidity provides excellent low-temperature start up, protecting from wear and extending component life. It provides outstanding anti-wear properties, rust protection, low varnish and deposit formation, good demulsibility, oxidation resistance, good anti-foam properties and fast air release properties, to protect and extend the life of hydraulic pumps and systems. Key specifications: DIN 51524 Part 3, ISO 6743/4 (L-HV), Cincinnati Lamb P-68/69/70, Parker Denison HF-0/1/2.

FEATURES AND BENEFITS

High viscosity index combined with low pour point ensures excellent low temperature fluidity and provides excellent low temperature start up, protecting the hydraulic system from wear and extending life.

Excellent shear stability properties ensure good oil film thickness is maintained in severe service conditions, protecting the components of the hydraulic system.

High quality base oils combined with multi-functional additive technology provide outstanding anti-wear properties, rust protection, low varnish and deposit formation, excellent demulsibility, oxidation resistance, good anti-foam properties and fast air release properties, to protect and extend the life of hydraulic pumps and systems.

Good hydrolytic stability and filterability ensure optimum product life and performance, and prevents filter blocking.

The wide selection of viscosity grades ensures that the optimum viscosity can be used for any hydraulic system operating temperature.

Fully compatible with common seal materials usually found in hydraulic systems, to extend seal life and prevent fluid leakage.

RECOMMENDED APPLICATIONS

- Moderate to high pressure hydraulic systems operating outdoors in severe cold regions or where there is a wide variation in ambient temperature, such as in the marine, construction, mining and oil industries.
- Vane and gear pumps operating under high pressure and low temperatures, as recommended by pump manufacturers.
- Severe service hydraulic systems, employing axial and radial piston pumps, as recommended by pump manufacturers.

SPECIFICATION AND APPROVAL

DIN	51524 Pt 3
GB[1]	11118.1-84 (L-HV)
ISO	6743/4 (L-HV)
Cincinnati Lamb	P-68 (ISO 32), P-69 (ISO 68), P-70 (ISO 46)
Parker Denison	HF-0

[1]Note: *'GB' standards are the National Standards of the People's Republic of China.*

SINOPEC HIGH PRESSURE ASHLESS ANTI-WEAR HYDRAULIC OIL L-HM (ISO VISCOSITY GRADES: 32, 46, 68 AND 100)

Sinopec High Pressure Ashless Anti-wear Hydraulic Oil L-HM is a line of premium quality anti-wear lubricants blended using selected and highly refined high quality mineral oils, combined with a nonzinc, ashless additive system and available in a wide viscosity range from ISO Grade 32 to 100. This line of oils has been designed to meet the very stringent requirements of the Denison T6H20C test, for use in high pressure and double pumps (piston pump and vane pump). Key specifications: DIN 51524 Part 2, ISO 11158 (L-HM), Cincinnati Lamb P-68/69/70, Parker Denison HF-0/1/2.

FEATURES AND BENEFITS

The non-zinc, ashless anti-wear additive system is non-corrosive to silver and yellow metal alloys, and so is fully compatible with hydraulic pumps containing either silver or copper components, thus prolonging pump life.

High quality base oils combined with ashless additive technology provide outstanding anti-wear properties, rust protection, low deposit formation, good demulsibility, oxidation resistance, good anti-foam properties and fast air release properties, to protect and extend the life of hydraulic pumps and systems.

Good hydrolytic stability and filterability ensures optimum product life and performance, and prevents filter blocking.

High viscosity index gives good viscosity characteristics over a wide temperature range; the wide selection of viscosity grades ensures that the optimum viscosity can be used for any hydraulic system operating temperature.

Fully compatible with common seal materials usually found in hydraulic systems, to extend seal life and prevent fluid leakage.

RECOMMENDED APPLICATIONS

- Severe hydraulic applications, such as in vane pumps and/or piston pumps running under high pressure conditions.
- High precision hydraulic systems containing copper or silver components.

Caution: *avoid mixing Sinopec High Pressure Ashless Anti-wear Hydraulic Oil L-HM grades with non-ashless anti-wear hydraulic oils as this may be detrimental to their performance.*

SPECIFICATION AND APPROVAL

DIN	51524 Pt 2
ISO	11158 (L-HM)
Cincinnati Lamb	P-68 (ISO 32), P-69 (ISO 68), P-70 (ISO 46)
Parker Denison	HF-0

SINOPEC FULLY SYNTHETIC SJ MA 10W-50 4T MOTORCYCLE OIL (SAE VISCOSITY GRADES: 10W-50)

Sinopec Fully Synthetic SJ MA 10W-50 4T Motorcycle Oil is formulated with high-quality synthetic base oils and a multi-functional additive system. It meets the requirements of the Japanese Automobile Standards Organisation (JASO), part of the Society of Automotive Engineers of Japan, as a JASO MA quality product. This premium multi-grade oil ensures outstanding operation in high-performance four-stroke gasoline motorcycle engines fitted with wet clutches.

RECOMMENDED APPLICATION

- High-performance, air or water cooled, four-stroke gasoline motorcycle engines, where a JASO MA quality oil is required.

SPECIFICATION AND APPROVAL

API Service Classification	Petrol/Gasoline: SJ
ISO	24254
JASO	MA, T903

FEATURES AND BENEFITS

Very good high-temperature oxidation stability, together with excellent detergent and dispersant properties, keep the engine clean and reduce deposit formation, leading to improved engine performance and power output, and extended engine and oil life.

High-quality synthetic base oil formulation ensures low oil evaporation loss and low oil consumption, even in engines running at very high temperatures.

Good anti-wear performance protects against engine and gearbox wear and extends component life.

Excellent high- and low-temperature viscosity characteristics enable the oil to be used over a wide operating temperature range, from –35°C to 50°C.

Optimum frictional characteristics ensure smooth wet clutch operation and gear changing, and prevent clutch slippage.

TYPICAL DATA

SAE grade	10W-50
Kinematic viscosity, ASTM D 445	
cSt @ 40°C	127.8
cSt @ 100°C	18.38
Viscosity index, ASTM D 2270	161
Dynamic viscosity, CCS, ASTM D 5293	
cP @ –25°C	4,470
High-temperature, high-shear viscosity (HTHS), ASTM D 5481	
cP @ 150°C	4.13
Sulfated ash, wt%, ASTM D 874	1.00
Pour point, °C, ASTM D 97	-43
Flash point (COC), °C, ASTM D 92	242
Density @ 20°C, kg/l, ASTM D 4052	0.846

Note: *These data are given as an indication of typical values and not as exact specifications.*

SINOPEC SL MA2 10W-30 4T MOTORCYCLE OIL (SAE VISCOSITY GRADES: 10W-30)

Sinopec SL MA2 10W-30 4T Motorcycle Oil is formulated with high-quality mineral oils and a multi-functional additive system. It meets the requirements of the Japanese Automobile Standards Organisation (JASO), part of the Society of Automotive Engineers of Japan, as a JASO MA2 quality product. This multi-grade oil is suitable for four-stroke gasoline motorcycle engines fitted with wet clutches.

FEATURES AND BENEFITS

Good detergent and dispersant properties, and good thermal stability, protect against combustion chamber deposits and exhaust port fouling, provide excellent piston skirt cleanliness and reduce piston ring sticking.

Good anti-wear performance protects against engine and gearbox wear and extends component life, even at high engine speeds.

Unique frictional characteristics ensure excellent wet clutch performance and smooth gear response.

Excellent catalyst compatibility ensures optimum performance and long life of the catalytic converter.
Good low-temperature fluidity ensures the engine is protected, even under low-temperature start-up conditions.

Excellent shear stability keeps the oil in grade for longer, even under the extreme conditions of hard off-road riding.
Formulated to ensure low oil consumption.

Available as a 10W-30 multi-grade oil.

TYPICAL DATA

SAE grade	10W-30
Kinematic viscosity, ASTM D 445	
cSt @ 40°C	78.30
cSt @ 100°C	11.66
Viscosity index, ASTM D 2270	142
Dynamic viscosity, CCS, ASTM D 5293	
cP @ –20°C	5,000
High-temperature, high-shear viscosity (HTHS), ASTM D 4683	
cP @ 150°C	3.20
Sulfated ash, wt%, ASTM D 874	0.77
Pour point, °C, ASTM D 97	-33
Flash point (COC), °C, ASTM D 92	224
Density @ 20°C, kg/l, ASTM D 4052	0.8637

Note: *These data are given as an indication of typical values and not as exact specifications.*

RECOMMENDED APPLICATIONS

- Air or water cooled, four-stroke gasoline motorcycle engines, where a JASO MA2 or API SL quality oil is required.
- Larger motorcycle engines with a capacity greater than 150 cc.
- Four-stroke gasoline engines used in generators, lawnmowers and light power equipment.
- A wide range of Japanese, North American and European four-stroke gasoline engines.

SPECIFICATION AND APPROVAL

API Service Classification	Petrol/Gasoline: SL
ISO	24254
JASO	T903 MA and MA2

SINOPEC SG MA 15W-40 4T MOTORCYCLE OIL (SAE VISCOSITY GRADES: 15W-40)

Sinopec SG MA 15W-40 4T Motorcycle Oil is formulated with high-quality mineral oils and a multi-functional additive system. It meets the requirements of the Japanese Automobile Standards Organisation (JASO), part of the Society of Automotive Engineers of Japan, as a JASO MA quality product. This multi-grade oil is suitable for four-stroke gasoline motorcycle engines fitted withwet clutches.

FEATURES AND BENEFITS

Good detergent and dispersant properties, and good thermal stability, protect against combustion chamber deposits and exhaust port fouling, provide excellent piston skirt cleanliness and reduce piston ring sticking.

Excellent shear stability keeps the oil in grade for longer, even under the extreme conditions of hard off-road riding.

Good anti-wear performance protects against engine and gearbox wear and extends component life.

Special frictional characteristics ensure smooth wet clutch operation and gear changing.

Good low-temperature fluidity ensures the engine is protected, even under low-temperature start-up conditions.

Excellent catalyst compatibility ensures optimum performance and long life of the catalytic converter.

Available as a 15W-40 multi-grade oil.

TYPICAL DATA

SAE grade	15W-40
Kinematic viscosity, ASTM D 445 cSt @ 40°C cSt @ 100°C	 114.0 15.40
Viscosity index, ASTM D 2270	143
Dynamic viscosity, ASTM D 5293 cP @ –20°C	 6,300
High-temperature, high-shear viscosity (HTHS), ASTM D 4683 cP @ 150°C	 4.17
Sulfated ash, wt%, ASTM D 874	0.70
Pour point, °C, ASTM D 97	–30
Flash point (COC), °C, ASTM D 92	234
Density @ 20°C, kg/l, ASTM D 4052	0.8762

Note: *These data are given as an indication of typical values and not as exact specifications.*

RECOMMENDED APPLICATIONS

- Air or water cooled, four-stroke gasoline motorcycle engines, where a JASO MA or API SG quality oil is required.
- Larger motorcycle engines with a capacity greater than 125 cc.
- Four-stroke gasoline engines used in generators, lawnmowers and light power equipment.

SPECIFICATION AND APPROVAL

API Service Classification	Petrol/Gasoline: SG
ISO	24254
JASO	T903 MA

SINOPEC FC TWO STROKE MOTORCYCLE OIL

Sinopec FC Two Stroke Motorcycle Oil is formulated with a blend of highquality base oils and an advanced additive system to ensure excellent engine cleanliness in applications such as high-performance two-stroke motorcycles, mopeds, scooters and snowmobiles, and in other two-stroke applications such as chainsaws and lawnmowers. It is pre-diluted to aid mixing when added to fuel.

FEATURES AND BENEFITS

Low-smoke formulation reduces the amount of smoke in exhaust emissions, reducing atmospheric pollution and ensuring a cleaner operating environment.

Good oxidation and thermal stability characteristics ensure reduced engine carbon and ash deposits, keeping the spark plugs, pistons, piston rings, exhaust ports and exhaust system clean and so ensuring optimum engine power and acceleration and avoiding potential pre-ignition problems.

Good anti-wear and anti-corrosion properties protect engine components from wear and corrosion, extending engine life.

Pre-diluted formulation can be used in oil-injection systems in modern two-stroke motorcycle engines, or can be mixed with fuel in pre-mix systems.

Recommended fuel:oil ratio between 25:1 and 50:1.

TYPICAL DATA

Kinematic viscosity, ASTM D 445 cSt @ 40°C cSt @ 100°C	 69.95 9.812
Viscosity index, ASTM D 2270	122
Sulfated ash, wt%, ASTM D 874	0.10
Pour point, °C, ASTM D 97	-18
Flash point (COC), °C, ASTM D 92	110
Density @ 20°C, kg/l, ASTM D 4052	0.867

Note: *These data are given as an indication of typical values and not as exact specifications.*

RECOMMENDED APPLICATIONS

- Two-stroke gasoline engines operating under severe conditions, for example in air-cooled, medium to high-duty motorcycles, mopeds, scooters and snowmobiles.
- Two-stroke gasoline engines in equipment such as chainsaws, brushcutters, hedgecutters and lawnmowers.

SPECIFICATION AND APPROVAL

GB[1]	GB/T 20420
ISO	L-EGC, 13738
JASO	FC, M 345

[1]**Note:** *'GB' standards are the National Standards of the People's Republic of China.*

SINOPEC L-DAB AIR COMPRESSOR OIL (ISO VISCOSITY GRADES: 68, 100, 150 AND 220)

Sinopec L-DAB Air Compressor Oil is a line of lubricants blended using highly refined mineral base oils and a selected additive system. It is designed for use in various stationary or mobile reciprocating air compressors in medium-duty applications, and is available in four viscosity grades, ISO 68, 100, 150 and 220.

FEATURES AND BENEFITS

Excellent lubricating properties protect moving compressor parts against wear and extend component life.

The highly refined mineral base oil has outstanding thermal and oxidation stability and low carbon-forming tendency compared with conventional mineral oils, and this leads to good compressor cleanliness, reduced deposits and improved compressor efficiency, even when air discharge temperatures are high (up to 220°C).

Reduced deposits in discharge lines reducing the risk of fires and explosions.

Good anti-rust and anti-corrosion properties protect cylinders and discharge valves from rusting and corroding, enhancing equipment life and performance, and prolonging service intervals.

Excellent water-separation characteristics ensure that condensed water vapour can easily be separated from the lubricant and prevent the formation of emulsions (which could block the oil/air separator (coalescer) in some compressors), therefore prolonging coalescer life, and reducing equipment downtime and maintenance costs.

Improved oil quality leads to longer maintenance and overhaul intervals and extended oil drain intervals, compared with poorer quality products.

RECOMMENDED APPLICATIONS

- All types of reciprocating air compressors where a DIN 51506 VDL oil is required, for oncethrough cylinder lubrication and also to lubricate compressor crankcases.
- Single-stage and multi-stage reciprocating air compressors.
- Compressors that handle air, inert gases (such as nitrogen, argon, neon and helium), carbon dioxide, carbon monoxide and blast furnace gas.
- Stationary and mobile units.
- Some rotary vane and screw compressors.

Caution: *not recommended for breathing air compressors.*

SPECIFICATION AND APPROVAL

DIN	51506 VDL
GB[1]	12691-90 (L-DAB)
ISO	6743-3A-DAB

[1] **Note:** *"GB" standards are the National Standards of the People's Republic of China.*

TYPICAL DATA

ISO viscosity grade	68	100	150	220
Kinematic viscosity, ASTM D 445 cSt @ 40°C cSt @ 100°C	 71.6 9.03	 101.1 11.13	 146.6 14.36	 217.7 18.6
Viscosity index, ASTM D 2270	100	94	95	95
Aging characteristics (200°C, air, Fe_2O_3), ISO 6617 evaporation loss, % Conradson carbon residue increase, %	 9.45 1.46	 5.76 1.14	 3.51 1.93	 – –
Foaming characteristics, sequence 1, ASTM D 892	50/0	50/0	50/0	50/0
Neutralisation number, mg KOH/g, ASTM D 664	0.46	0.22	0.59	0.63
Rust prevention, rating, ASTM D 665 distilled water	pass	pass	pass	pass
Copper corrosion, 3 hours @ 100°C, ASTM D 130	1b	1b	1b	1b
Sulfated ash, wt%, ASTM D 874	0.12	0.12	0.12	0.14
Pour point, °C, ASTM D 97	–15	–12	–7	–9
Flash point (COC), °C, ASTM D 92	237	270	258	278
Density @ 15°C, kg/l, ASTM D 4052	0.873	0.877	0.885	0.890

Note: *These data are given as an indication of typical values and not as exact specifications.*

SINOPEC L-DAH OIL INJECTION ROTARY AIR COMPRESSOR OIL (ISO VISCOSITY GRADES: 32, 46 AND 68)

Sinopec L-DAH Oil Injection Rotary Air Compressor Oil is a line of lubricants blended with hydrogenated base oils and an ashless additive system. It is designed for use in various kinds of moderate to heavy-duty, oil injection rotary compressors (screw and vane types). Able to prevent deposit formation on the rotating components of screw compressors and sliding parts of vane compressors, while ensuring high compressor efficiency. Key specifications: DIN 51506 VDL, ISO 6743-3A-DAH.

FEATURES AND BENEFITS

Excellent oxidation stability properties ensure that the oil does not break down or form deposits under the severe conditions encountered when oil and air come into close contact in rotary compressors, and so extend the life of the oil.

Prevention of deposit formation on the rotating components of screw compressors and sliding parts of vane compressors ensures high compressor efficiency is maintained.

Ashless anti-wear additive system protects the compressor's rotating and sliding surfaces from wear and so extends equipment life; and also minimises deposit formation.

Excellent anti-rust performance protects metal surfaces against corrosion, and so prolongs service intervals.

Excellent protection against foaming and good air release properties minimise lubricant carry-over to the discharge system, prevent air entrainment (which can lead to inadequate lubrication and equipment failure), and minimise foaming and overflow in tanks and reservoirs.

Good water-separation characteristics ensure that condensed water vapour can easily be separated from the lubricant and prevent the formation of emulsions (which could block the oil/air separator (coalescer) in rotary vane and screw type compressors), therefore prolonging coalescer life, and reducing equipment downtime and maintenance costs.

Oil drain intervals can be extended to 4,000 hours, even under conditions where there is a continuous air discharge temperature of up to 100°C.

RECOMMENDED APPLICATIONS

- The rotors, bearings and gears of various kinds of moderate duty, oil-injection rotary compressor (screw and vane type), where a DIN 51506 VBL quality oil is required.
- Oil-flooded rotary compressors, especially screw compressors, in which the ISO 32 and 46 grades are recommended.
- Vane compressors, in which the ISO 68 grade is recommended.
- Lubrication and cooling of all types of centrifugal and lobe compressors, turbo and high speed pumps.

Caution: *not recommended for use in breathing air compressors. Avoid mixing Sinopec LDAH Oil Injection Rotary Air Compressor Oil grades with non-ashless compressor oils as this may be detrimental to their performance.*

SPECIFICATION AND APPROVAL

DIN	51506 VDL
ISO	6743-3A-DAH

TYPICAL DATA

ISO viscosity grade	32	46	68
Kinematic viscosity, ASTM D 445 cSt @ 40°C cSt @ 100°C	 32.96 5.94	 45.60 7.37	 68.00 9.21
Viscosity index, ASTM D 2270	126	125	111
NOACK volatility, 1 hour @ 250°C, wt%, ASTM D 5800	6.0	6.2	3.0
Foaming characteristics, sequence 1, ASTM D 892	50/0	50/0	50/0
Neutralisation number, mg KOH/g, ASTM D 974	0.25	0.25	0.27
Copper corrosion, 3 hours @ 100°C, ASTM D 130	1b	1b	1b
Water separability, time to 40/37/3 @ 54°C, minutes, ASTM D 1401	4	5	20
Oxidation stability, time to 2 mg KOH/g, hours, ASTM D 943	>9,000	>6,000	>4,000
FZG test (A/8.3/90), fail load stage, DIN 51345	11	11	11
Sulfated ash, wt%, ASTM D 874	<0.05	<0.05	<0.05
Pour point, °C, ASTM D 97	–18	–15	–12
Flash point (COC), °C, ASTM D 92	220	236	242
Density @ 15°C, kg/l, ASTM D 4052	0.866	0.877	0.883

Note: *These data are given as an indication of typical values and not as exact specifications.*

SINOPEC 4506 SYNTHETIC COMPRESSOR OIL (ISO VISCOSITY GRADES: 32, 46 AND 68)

Sinopec 4506 Synthetic Compressor Oil is a line of lubricants blended using fully synthetic polyalphaolefin (PAO) base oils and selected additives, including anti-wear and extreme pressure (EP) additives and rust and oxidation inhibitors. Designed for use in both rotary (especially centrifugal and screw) and reciprocating air compressor applications, it is available in three viscosity grades: ISO 32, 46 and 68.

FEATURES AND BENEFITS

The synthetic base oil shows outstanding thermal and oxidation stability and low carbonforming tendency compared with conventional mineral oil-based products, and this leads to good compressor cleanliness, reduced deposits and improved compressor efficiency, even when air discharge temperatures are high (up to 220°C in reciprocating compressors).

Reduced deposits in discharge lines minimise the risk of fires and explosions.

Good lubricating and anti-wear/EP properties protect moving compressor parts against wear and extend component life.

Excellent heat conduction properties reduce the system operating temperature and extend oil life.

Good anti-rust and anti-corrosion properties protect cylinders and discharge valves from rusting and corroding, enhancing equipment life and performance, and prolonging service intervals.

Good water-separation characteristics ensure that condensed water vapour can easily be separated from the lubricant and prevent the formation of emulsions (which could block the oil/air separator (coalescer) in some compressors), therefore prolonging coalescer life, and reducing equipment downtime and maintenance costs.

Improved oil quality leads to longer maintenance and overhaul intervals and extended oil drain intervals (6,000 to 8,000 hours).

High viscosity index ensures excellent temperature–viscosity properties, and ensures wide operating temperature range.

Good anti-foam properties and compatibility with common seal materials prevent oil leakage from the system during operation.

RECOMMENDED APPLICATIONS

- Small, medium or large, single or multi-stage reciprocating or rotary air compressors (especially rotary screw and centrifugal types) in a variety of industries (e.g. the iron, cement, chemical, manufacturing and electronics industries).
- Rotary air compressors where the operating temperature range is between –50°C and 120°C.
- Reciprocating air compressors where the operating temperature range is between –40°C and 200°C (or up to 220°C for short periods).

Caution: *not recommended for breathing air compressors.*

SPECIFICATION AND APPROVAL

ISO	DAJ & DAC
SHRHYXY	4024–2006
ABB Group	Certified
Wuxi Compressor Company	Certified

TYPICAL DATA

ISO viscosity grade	32	46	68
Kinematic viscosity, ASTM D 445 cSt @ 40°C cSt @ 100°C	 31.1 5.78	 46.5 7.68	 64.7 9.94
Viscosity index, ASTM D 2270	130	133	138
Foaming characteristics, sequence 1, ASTM D 892	0/0	0/0	0/0
Neutralisation number, mg KOH/g, ASTM D 664	0.16	0.20	0.17
Water separability, time to 40/37/3 @ 54°C, minutes, ASTM D 1401	2	5	5
Copper corrosion, 3 hours @ 100°C, ASTM D 130	1b	1b	1b
Conradson carbon residue, %, ASTM D 189	0.02	0.02	0.02
Sulfated ash, wt%, ASTM D 874	0.00	0.00	0.00
Freezing point, °C, ASTM D 97	<–60	–58	–56
Flash point (COC), °C, ASTM D 92	252	260	270
Density @ 15°C, kg/l, ASTM D 4052	0.848	0.850	0.851

Note: *These data are given as an indication of typical values and not as exact specifications.*

SINOPEC 4502 SYNTHETIC COMPRESSOR OIL (ISO VISCOSITY GRADES: 32, 46, 68, 100, 150 AND 220)

Sinopec 4502 Synthetic Compressor Oil is a series of lubricants blended with fully synthetic di-esters and selected additives, including specific inhibitors added to extend life and to improve their ability to protect against corrosion. These lubricants can be used for severe duty, multi-stage compressors that provide outstanding deposit control and long lubricant life. Sinopec 4502 series products also provide excellent air separation and possess low foaming tendencies.

FEATURES AND BENEFITS

Excellent oxidation and high temperature stability compared with conventional mineral oil-based products.

Excellent heat conduction properties reduce the system operating temperature..

Excellent low-temperature start-up with rapid fluid circulation in broad temperature range.

Increased service intervals between cleaning of valves, parts and inter-coolers and extended oil drain intervals (6,000 to 8,000 hours).

Excellent separation from air and minimum foaming tendency in critical high temperature areas.

Minimises deposit formation.

High autogenous ignition temperatures and flash points, reduces fire and explosion risk.

Not compatible with mineral oils so as to decrease the properties of Sinopec 4502 series products.

RECOMMENDED APPLICATIONS

- High-severity rotary and reciprocating air compressors, especially effective in multi-stage units where there has been a history of excessive oil deposits, whether in large or small cylinders with high or low pressure.
- Rotary air compressors where the operating temperature range is between –40°C and 110°C.
- Reciprocating air compressors where the operating temperature range is between –35°C and 200°C (or up to 220°C for short periods).

Sinopec 4502 series are recommended for use in rotary screw compressors (ISO 32, 46 and 68) and reciprocating compressors (ISO 100, 150 and 220).
Caution: *not recommended for breathing air compressors*

SPECIFICATION AND APPROVAL

ISO	DAJ & DAC
Q/SH PRD	327-2010

TYPICAL DATA

ISO viscosity grade	32	46	68	100	150	220
Kinematic viscosity @ 40°C mm²/s, ASTM D 445	31.94	43.18	67.5	98.4	149.3	214.2
Foaming characteristics, sequence I, ASTM D892	0/0	0/0	0/0	10/0	10/0	10/0
Acid number, mgKOH/g, ASTM D664	0.16	0.19	0.17	0.19	0.18	0.20
Water separability, time to 40-37-3 @ 54°C minutes, ASTM D 1401	5	4.8	2.1	8	3.5	3
Copper corrosion, 3 hours @ 100°C, ASTM D 130	1b	1b	1b	1b	1b	1b
Conradson carbon residue, %, ASTM D189	0.02	0.02	0.03	0.03	0.03	0.03
Freezing point, °C, ASTM D97	-55	-52	-50	-48	-45	-35
Flash point (COC), °C, ASTM D 92	218	235	248	260	264	255

Note: *These data are given as an indication of typical values and not as exact specifications.*

SINOPEC HEAVY-DUTY LC MINING GREASE

Sinopec Heavy-Duty LC Mining Grease is an extreme pressure grease formulated with a lithium complex soap thickener and high viscosity mineral base oil, and is available in NLGI 1 and NLGI 2 grades. It contains rust and oxidation inhibitors, EP and anti-wear additives, as well as 4% of solids including molybdenum disulfide (MoS2 or 'moly'), which provide additional wear protection especially under the severe vibrating or oscillating conditions that are found in many mining applications. Available in NLGI 1 and 2.

FEATURES AND BENEFITS

Excellent extreme pressure and anti-wear properties protect heavily loaded or shock-loaded bearings from wear, extending equipment life.

Contains solid molybdenum disulfide to provide an additional measure of residual lubrication and protect metal surfaces against wear in applications where vibrating or oscillating movement tends to squeeze out the grease from between metal surfaces.

Lithium complex soap thickener ensures a high dropping point, which means that the grease can be used at higher temperatures in severe service applications (operating temperature range is from –10°C to +150°C), and also confers excellent mechanical stability so that the grease structure does not break down in service.

High base oil viscosity ensures a good oil film thickness is maintained even under severe high-temperature conditions, protecting components against wear.

Excellent water resistance means that the grease stays in place and is not washed or sprayed off in wet conditions, reducing the need for frequent re-application.

Excellent protection against rusting and corrosion ensures long component life, and extends maintenance intervals.

Good thermal and oxidation stability ensure longer grease life under high-temperature conditions, providing optimum lubrication, extending equipment life and reducing maintenance requirements.

Available in two NLGI grades the NLGI grade 1 product may be used in centralised lubrication systems where good pump ability is required.

RECOMMENDED APPLICATIONS

- Off-road equipment used in the mining industry, particularly to lubricate slow-moving plain and rolling element bearings under severe conditions of very high loads, shock loading and vibrating or oscillating conditions.
- Heavy-duty construction, earthmoving, mobile and stationery equipment, especially in those applications operating under very high loads, shock loading and vibrating or oscillating conditions.
- Some heavy-duty applications that are difficult to access, and for which long lubrication intervals are required.

TYPICAL DATA

NLGI grade	1	2
Appearance, visual	Black	Black
Thickener type	Lithium complex	Lithium complex
Base fluid type	Mineral	Mineral
Kinematic viscosity of base oil, ASTM D 445 cSt @ 40°C	330	410
Cone penetration, ASTM D 217 Wx60, mm^{-1}	322	275
Dropping point, °C, ASTM D 2265	269	273
Oil separation, 24 h @ 100°C, %, FTMS 791C-321.3	6	1
Four ball wear, 60 min @ 392 N, mm, ASTM D 2266	0.5	0.45
Four ball EP, weld point, N, ASTM D 2596	4903	6076
Timken OK load, N, ASTM D 2509	200	222
Water washout, 1 h @ 38°C, %, ASTM D 1264	6	1
Copper corrosion, T2 copper strip, 24 h @ 100°C, rating, ASTM D 4048	pass	pass

Note: *These data are given as an indication of typical values and not as exact specifications.*

SINOPEC HPXT GREASE

Sinopec HPXT Grease is an extreme pressure, heavy-duty wheel bearing and chassis grease, formulated with a lithium complex soap thickener and high quality mineral base oil. It contains rust and oxidation inhibitors, EP and anti-wear additives to ensure excellent performance and long life, even in severe service conditions such as high temperatures, shock loading and where water contamination is possible. Available in NLGI 1.

FEATURES AND BENEFITS

Lithium complex soap thickener ensures a high dropping point, which means that the grease can be used at higher temperatures in severe service applications (operating temperature range is from –30°C to +180°C), and also confers excellent mechanical stability so that the grease structure does not break down in service.

Excellent adhesive properties ensure the grease sticks

to metal surfaces even under high temperature conditions, and provides an optimum oil film thickness to protect the moving parts and provide long service life.

Excellent extreme pressure and anti-wear properties protect heavily loaded or shock loaded bearings from wear, extending equipment life.

Excellent water resistance means that the grease stays in place and is not washed or sprayed off in wet conditions, reducing the need for frequent re-application.

Excellent protection against rusting and corrosion ensures long component life, and extends maintenance intervals.

Good thermal and oxidation stability ensure longer grease life under high temperature conditions, providing optimum lubrication, extending equipment life and reducing maintenance requirements.

The consistency meets the requirements of wheel bearing applications, and avoids the grease being flung out of the bearing by centrifugal forces, so ensuring longer relubrication intervals.

RECOMMENDED APPLICATIONS

- Automotive wheel bearings, particularly those operating under the high temperature, high load conditions that are caused by braking at high speed.
- General lubrication of chassis points (e.g. shackles, tie rod ends, steering knuckles, control arms and king pins), electric motors and water pumps of passengers cars, buses and trucks.
- Applications requiring an NLGI GC-LB wheel bearing and chassis grease where the operating temperature range is between –30°C and +180°C.

TYPICAL DATA

NLGI grade	2
Appearance, visual	Smooth, blue, buttery
Thickener type	Lithium complex
Base fluid type	Mineral
Cone penetration, ASTM D 217 Wx60, mm^{-1} Wx100,000, % change from Wx60	 286 9
Dropping point, °C, ASTM D 2265	326
Oil separation, 30 h @ 100°C, %, FTMS 791C-321.3	0.8
Four ball wear, 60 min @ 392 N, mm, ASTM D 2266	0.44
Timken OK load, N, ASTM D 2509	178
Water washout, 1 h @ 79°C, %, ASTM D 1264	2
Water spray-off, 5 min @ 38°C, %, ASTM D 4049	7.7
Oxidation stability, 100 h @ 99°C & 758 kPa, pressure drop, kPa, ASTM D 942	12
Car wheel bearing test (accelerated) 20 h @ 160°C, leakage, g, ASTM D 4290	1.9
Corrosion prevention, 48 h @ 52°C, rating, ASTM D 1743	pass
Copper corrosion, T2 copper strip, 24 h @ 100°C, rating, ASTM D 4048	pass

Note: *These data are given as an indication of typical values and not as exact specifications.*

SINOPEC LITHIUM BASE GREASE WITH MOLYBDENUM DISULFIDE

Sinopec Lithium Base Grease with Molybdenum Disulfide is a grease with excellent extreme pressure and anti-wear properties suitable for heavy load equipment such as bearings, shaft couplings, and gears in mining and steel industries.

FEATURES AND BENEFITS

Excellent extreme pressure and anti-wear properties effectively reduce abrasion between friction pairs.

Reduce friction coefficient and resistance of friction pairs.

Outstanding mechanical stability and oxidation stability to ensue longer drain period.

RECOMMENDED APPLICATION

- Suitable for high load equipment such as bearing, shaft coupling and gear in mining and steel industries where temperature range is between –20°C and +120°C.

TYPICAL DATA

NLGI grade	1	2	3
Appearance, visual	Smooth, Black, Buttery		
Thickener type	Lithium		
Base fluid type	Mineral		
Kinematic viscosity, ASTM D 445 cSt @ 100°C (range)	9 - 12	9 - 12	9 - 12
Cone penetration, ASTM D 217 W×60, mm^{-1} W×100,000, mm^{-1}	329 340	289 314	240 280
Dropping Point °C, ASTM D 566	194	199	200
Oil Separation, 24 h @ 100°C, %, FTMS 791C-321.3	6.6	2.8	0
Apparent viscosity, -15°C, 10 s^{-1}, Pas, GOST 7163	198	320	891
Oxidation Stability, 100h @ 99°C. & 758 kPa, pressure drop, kPa, ASTM D942	19	30	49
Corrosion prevention, 48 h @ 52°C, rating, ASTM D 1743	pass	pass	pass
Water washout, 1 h @ 38°C, %, ASTM D 1264	3.5	1.25	1.25
Four ball EP, maximum non-seizure load P_B, N, ASTM D 2596	618	618	618

Note: *These data are given as an indication of typical values and not as exact specifications.*

SINOPEC EXTREME PRESSURE LITHIUM BASE GREASE

Sinopec Extreme Pressure Lithium Base Grease is an extreme pressure grease, formulated with a lithium soap thickener and high quality mineral base oil. It contains rust and oxidation inhibitors, and extreme pressure and anti-wear additives to ensure excellent performance and long life, even in severe service conditions where high temperatures, shock loading and water contamination are possible.

FEATURES AND BENEFITS

Excellent extreme pressure and anti-wear properties protect heavily loaded or shockloaded bearings from wear, extending equipment life.

Lithium soap thickener ensures good mechanical stability, so the grease structure does not soften or break down in service.

High quality base oil ensures a good oil film thickness is maintained, even in high temperature applications, protecting components from wear.
Excellent protection against rust and corrosion ensures long component life, and extends maintenance intervals.

Good thermal and oxidation stability ensure longer grease life under high-temperature conditions, providing optimum lubrication, extending equipment life and reducing maintenance requirements.

Grease adheres strongly to metal surfaces, sealing out dirt and abrasive materials, to ensure longer lubricating intervals.

Available in NLGI grades 00, 0, 1 and 2 to meet the requirements of specific applications.

RECOMMENDED APPLICATIONS

- Bearings and gears of medium to heavily loaded mechanical equipment, where an extreme pressure/anti-wear grease is required for extra protection.
- Applications where the temperature range is from –20°C to 120°C.

TYPICAL DATA

NLGI grade	00	0	1	2
Appearance, visual	Smooth, Puce, Buttery			
Thickener type	Lithium			
Base fluid type	Mineral			
Kinematic viscosity, ASTM D 445 cSt @ 100°C (range)	9 - 12	9 - 12	9 - 12	9 - 12
Cone penetration, ASTM D 217 W×60, mm^{-1} W×100,000, mm^{-1}	414 440	374 400	323 350	293 317
Dropping Point °C, ASTM D 566	173	178	184	196
Oil Separation, 24 h @ 100°C, %, FTMS 791C-321.3	-	-	8.0	3.2
Corrosion prevention, 48 h @ 52°C, rating, ASTM D 1743	pass	pass	pass	pass
Copper corrosion, T2 Copper strip, 24 h @ 100°C, rating, ASTM D 4048	pass	pass	pass	pass
Timken OK load, N, ASTM D 2509	156	156	156	156
Four ball EP, P_B, N, ASTM D 2596	618	618	618	618
Apparent viscosity, -10°C, 10 s^{-1}, Pas, GOST 7163	58	114	126	349
Impurities, quantity/cm^3, JIS K 2220 5.9 25 µm or larger 75 µm or larger 125 µm or larger	240 80 0	240 80 0	200 0 0	280 80 0

Note: *These data are given as an indication of typical values and not as exact specifications.*

BRAKE FLUID

SINOPEC DOT 4 SYNTHETIC BRAKE FLUID

Sinopec DOT 4 Synthetic Brake Fluid meets DOT 4 specification for excellent brake and clutch performance, preventing vapour lock problems and brake fade. Key specifications: FMVSS No. 116 DOT 4, SAE J1704.

FEATURES AND BENEFITS

High wet and dry equilibrium reflux boiling point (ERBP) minimises vapour formation on braking at high-speed or highload conditions and maintains the fluid's hydraulic properties, thus ensuring good braking performance.

Borate ester in the formulation acts as a water scavenger and helps to maintain the ERBP during service, so maintaining the quality of braking performance as the fluid ages.

Good fluidity, even at low temperatures, enables optimum braking performance.

A buffered alkaline pH protects iron and steel-containing system components from acidic corrosion, ensuring long component life.

Selected corrosion inhibitors protect aluminium, copper, zinc and tin-containing system components from corrosion, ensuring long life.

Good compatibility with common seal materials used in braking systems minimises fluid leakage and reduces component wear caused by inadequate lubrication, ensuring good braking performance.

Excellent thermal and oxidation stability properties prevent fluid breakdown and deposit formation, maximising fluid life and performance.

Fully compatible with other brake fluids that meet the DOT 3 or DOT 4 specifications also compatible with DOT 5.1.

TYPICAL DATA

Equilibrium reflux boiling point (ERBP), °C, ISO 4925	**260**
Wet ERBP, °C, ISO 4925	165
Kinematic viscosity, ISO 4925	
cSt @ -40°C	1,120
cSt @ 100°C	2.14
pH, ISO 4925	8.9
Corrosion, 120 h @ 100°C, mass change of metal strips, mg/cm², ISO 4925	
tinned iron	0.00
steel	0.00
aluminium	0.00
cast iron	0.00
brass	0.09
copper	0.10
Effect on rubber, ISO 4925	pass

Note: *These data are given as an indication of typical values and not as exact specifications.*

RECOMMENDED APPLICATION

- Hydraulic disc, drum and anti-skid brakes and clutch systems of all passenger cars and commercial vehicles that require a DOT 4 or DOT 3 performance synthetic fluid.

Caution: *do not use where a mineral oil-based fluid or a DOT 5 silicone-based fluid is required.*

SPECIFICATION AND APPROVAL

FMVSS	DOT4
GB[1]	12981-2003 HZY4
ISO 4925	Class 4
SAE	J1704

[1] **Note:** *"GB" standards are the National Standards of the People's Republic of China.Republic of China.*

COOLANT

SINOPEC ENVIRONMENTALLY FRIENDLY ENGINE COOLANT YF-2A

Sinopec Environmentally Friendly Engine Coolant YF-2A is formulated using ethylene glycol and a balanced mixture of organic acid based corrosion inhibitors. This environmentally friendly product contains no amines, borates, nitrites, phosphates or silicates, and is suitable for use as a coolant and anti-freeze in the radiator systems of most types of internal combustion engines. This coolant is premixed.

FEATURES AND BENEFITS

The advanced anti-corrosion system provides excellent protection against crevice corrosion in aluminium and cavitation corrosion erosion in cast iron, protecting the radiator components and ensuring longer life.

The non-silicate formulation protects against the formation of gels and deposits, even in the presence of hard water, ensuring improved coolant stability and longer effective coolant life.

Excellent heat transfer properties enable high temperature engine parts (especially the aluminium heat-transfer surfaces found in some modern engines) to be effectively cooled and protected from damage.

Can offer a single coolant/anti-freeze for use in a wide range of vehicles, so ideal for mixed fleet use.

Fully compatible with rubber tubing and sealing materials, and so prolongs the service life of water pump and seals.

Good stability enables the product to be stored year round without problems.

This environmentally friendly product contains no harmful, toxic or carcinogenic chemicals, and is not damaging to water or soil ecosystems.

RECOMMENDED APPLICATIONS

- Radiator systems of petrol, diesel, LPG and CNG-fuelled engines in most passenger cars, trucks and buses.
- Radiator systems of modern aluminium alloy engines.
- Radiator systems of diesel engines fitted with cast iron cylinder liners.

Caution: *Sinopec Environmentally Friendly Engine Coolant YF-2A is not suitable for use in passenger cars and light commercial vehicles that have zinc or zinc-alloy type components in the cooling system, for example earlier models of Holden Commodore in Australia. It is, however, suitable for use in most passenger cars and light duty commercial vehicles.*

SPECIFICATION AND APPROVAL

ASTM	D 3306, D 4985
BS	6580:2010
JIS	K 2234
SAE	J1034

DIESEL EXHAUST FLUID

SINOPEC GALANCE AQUEOUS UREA SOLUTION AUS 32

SINOPEC Galance Aqueous Urea Solution AUS 32 is formulated using high purity urea and water. This product is a 32.5% solution designed for use in diesel engines with SCR technology. It is clear, non-toxic and safe to handle.

FEATURES AND BENEFITS

- Clear, non-toxic and safe to handle.
- Strict alkalinity control, ensure the service life of the product
- Ultra-low metallic content, avoid catalyst poisoning, effectively extending the life of the SCR system
- Ultra-low biuret phosphate and aldehydes content, avoid blockage of the catalyst pores and nozzle, effective protection the SCR injection system
- Reducing the emissions of NOx and the fuel consumption with SCR technology

RECOMMENDED APPLICATIONS

SINOPEC Galance Aqueous Urea Solution AUS 32 (AdBlue) is suitable for use in:

- Heavy commercial vehicle using SCR system to comply with Euro 5 and 6.
- Diesel engines with SCR technology.

SPECIFICATION AND APPROVAL

SINOPEC Galance Aqueous Urea Solution AUS 32 meets the performance requirements of the following industry specifications:

ISO	22241
DIN V	70070
JIS	2247
BS ISO	22241

TYPICAL DATA

SINOPEC Galance Aqueous Urea Solution AUS 32	
Urea content,%(m/m)	32.4
Density at 20 ,kg/m^3	1090.0
Refractive index at 20	1.3828
Alkalinity as NH3,%(m/m)	0.01
Biuret,%(m/m)	0.21
Aldehydes, mg/kg	0.2
Insoluble matter, mg/kg	5.6
Phosphate (PO_4), mg/kg	0.2
Calcium, mg/kg	0.0
Iron, mg/kg	0.0
Copper, mg/kg	0.0
Zinc, mg/kg	0.0
Chromium, mg/kg	0.0
Nickel, mg/kg	0.0
Aluminium, mg/kg	0.0
Magnesium, mg/kg	0.0
Sodium, mg/kg	0.2
Potassium, mg/kg	0.1
Identity	Yes

Note: *These data are given as an indication of typical values and not as exact specifications.*

TRUCKWASH

SINOPEC TRUCKWASH DETERGENT CONCENTRATE

Sinopec Truckwash Detergent is formulated with a new generation water-based detergent and contains specially selected surfactants and corrosion inhibitors. It is designed for cleaning the exterior surfaces of trucks and other vehicles without damaging paintwork. It can be applied manually or used in high pressure cleaning equipment, where it provides optimum performance.

FEATURES AND BENEFITS

Excellent cleaning performance ensures surfaces are left clean and streak-free.

Safe for use on all exterior vehicle surfaces including paintwork, metal, rubber, plastic and glass.

Contains corrosion inhibitors which protect metal surfaces against rusting.

Water based and non-flammable.

Sinopec Truckwash is diluted with tap water before use, and applied at a concentration of between 1 and 5%.

RECOMMENDED APPLICATIONS

- Cleaning tenacious dirt and grime from heavily soiled vehicles, such as trucks and buses, used in road transport operations.
- Cleaning contaminants, such as coal dust and soot, encountered in off-highway vehicle applications in mining, earthmoving and similar operations.
- Cleaning trams and trains, as well as passenger cars and other light vehicles.
- Hand washing operations using a 1 to 5% solution in water, applied using a sponge or cloth.
- High pressure cleaning or foaming equipment – using a 1 to 5% solution in water, for optimum cleaning performance.

DEGREASERS

ILD HEAVY-DUTY SOLVENT BITUMEN DEGREASER

ILD Heavy-Duty Solvent Bitumen Degreaser was developed with the most severe degreasing applications in mind such as bitumen from vehicles and equipment. The formulation has biodegradable emulsifiers.

FEATURES AND BENEFITS

Ease of application spray, brush or wipe on.
Heavy-duty degreasing applications.
Can be used on most metals.
High flash point.
Emulsifies in water.

RECOMMENDED APPLICATION

- Heavy-duty degreasing applications.

ILD WATER BASED QB ENVIRO DEGREASER

ILD Water Based QB Enviro Degreaser is designed for use as a highly effective and economical general purpose cleaner/degreaser for a wide range of industries including, building maintenance, transport and mining industries.

FEATURES AND BENEFITS

Removes grease and grime readily due to its superior emulsification properties.

It is very versatile and can be used in a wide variety of applications.

RECOMMENDED APPLICATION

- Multi-purpose degreasing applications.

ILD ENVIRO SOLVENT FREE DEGREASER

ILD Enviro Solvent Free Degreaser is a concentrated detergent formulation suitable for use on all automotive surfaces and may be used to clean any washable item including greasy overalls and tarpaulins. It is also suitable as a hand cleaner.

FEATURES AND BENEFITS

Contains no solvents or caustic.
Safe on all automotive surfaces.
Will not promote or sustain rust.

RECOMMENDED APPLICATION

- Multi-purpose degreasing applications.

ILD GENERAL PURPOSE SOLVENT DEGREASER

ILD General Purpose Solvent Degreaser is designed for soaking engine parts, cleaning engines, and machinery and built up grease and oily residues from workshop floors. Formulated using biodegradable emulsifiers.

FEATURES AND BENEFITS

Ease of application spray, brush or wipe on rinse off.
Heavy-duty cleaning applications.
High flash point.
Emulsifies in water.

RECOMMENDED APPLICATION

- Heavy-duty degreasing applications.

ILD QB SOLVENT DEGREASER

ILD QB Solvent Degreaser is designed for soaking engine parts, cleaning engines, and machinery and built up grease and oily residues from workshop floors where quick break degreasing is required.

FEATURES AND BENEFITS

Ease of application spray, brush or wipe on.
Heavy-duty cleaning applications.
Can be used on all metals, glass, wood, ceramics & concrete.
High flash point.
Insoluble in water.

RECOMMENDED APPLICATION

- Multi-purpose degreasing applications.

ILD SOLVENT PARTS CLEANER

ILD Solvent Parts Cleaner is a water-based organic acid cleaner specifically designed for the removal of concrete build up on concrete trucks, works extremely well as aluminium cleaner. Also a very effective locomotive cleaner for the removal of brake dust or coal dust on wagons or any mining vehicle.

FEATURES AND BENEFITS

Safer than commonly used wheel cleaners.
Effectively removes heavy build-up of soils, including concrete, coal and brake dust.
Water soluble.
Safe on aluminium, steel, glass and good quality paints.
Contains no phosphates, silicates, or heavy metal salts.
All surfactants are biodegradable.
Does not contain hydrofluoric acid.

DEGREASERS

ILD MULTICLEAN HEAVY-DUTY WATER BASED DETERGENT

ILD Multiclean Heavy-Duty Water Based Detergent is a concentrated detergent formulation suitable for use on all automotive surfaces and may be used to clean any washable item including greasy overalls, tarpaulins and is also suitable as a hand cleaner.

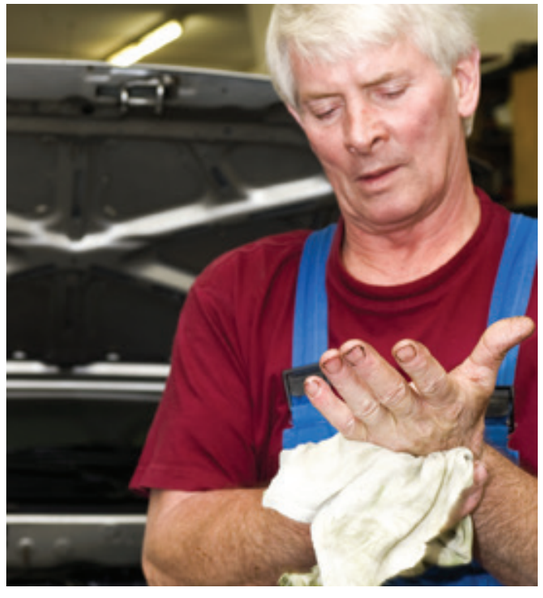
FEATURES AND BENEFITS

Contains no solvents or caustic.
Safe on all automotive surfaces.
Will not promote or sustain rust.

HAND CLEANER

ILD SOLVENT FREE CITRUS HAND CLEANER

ILD Solvent Free Citrus Hand Cleaner has been developed with the end user in mind, while in our research stage we surveyed a number of automotive mechanics and found the same issues with solvent based hand cleaners - great at removing oil and grease yet after months of daily use left the hands dry and in extreme cases skin was cracked and flaky.



FEATURES AND BENEFITS

Solvent free.
Lanolin to soften hands.
Has pleasant citrus odour.
Non-flammable.
Removes oil, grease and general soiling.
Conveniently supplied in 1L, 5L, 20L, 200L and 1000L containers.

NOT JUST A LUBRICANTS COMPANY

STORAGE SOLUTIONS

ILD are more than just a lubricant supplier. ILD supply not only superior Technical Value Added Services to reduce your overheads and downtime but can also offer additional value and cost saving initiatives by way of Lubrication Storage and Fluid Management Systems and Facilities.

ILD supplies Sinopec lubricants, including the latest premium grades and applications across all major industry categories.

- Brake Fluid
- Compressor Oils
- Coolants
- Degreasers – Solvent & Water Based
- Diesel Engine Oils
- Gas Engine Oils
- Automotive Gear Oils
- Industrial Gear Oils
- Greases
- Heat Transfer Oils
- Hydraulic Oils
- Marine Oils
- Passenger Car Engine Oils (Petrol & Diesel)
- Two Stroke Motorcycle Oils
- Rock Drill Oils
- Transformer Oils
- Transmission Oils
- Truck Wash
- Turbine Oils

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