



PERFORMANCE IN MOTION

# SINOPEC *Lubricants*

## ACCURACY OF INFORMATION

Data provided in this brochure is typical and subject to change as a result of continuing product research and development. The information given was correct at the time of printing. The typical values given are subject to variations in the testing procedures and the manufacturing process may also result in slight variations. Sinopec guarantees that its lubricants meet any industry and OEM specifications referred to this data sheet. Sinopec cannot be held responsible for any deterioration in the product due to incorrect storage or handling. Information on best practice is available from your local distributor.

## PRODUCT AND ENVIRONMENTAL SAFETY

The products should not cause any health problems when used in the applications suggested and when the guidance provided in the Material Safety Data Sheet (MSDS) is followed. Please consult the MSDS for more detailed advice on handling; MSDSs are available from your local distributor. Do not use the product in applications other than those suggested. As with all products, please take care to avoid environmental contamination when disposing of this product. Used oil should be sent for reclamation/recycling or, if not possible, must be disposed of according to relevant government/authority regulations. The SINOPEC trademark is registered and protected.



**Energy integratron  
Strong protection  
Super dynamic power**



# SINOPEC

# TULUX

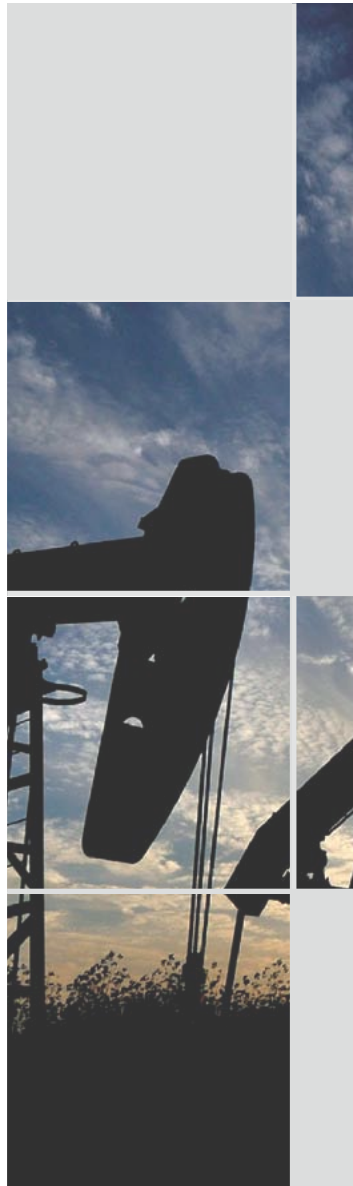
**Diesel engine oil**

**SINOPEC** *Lubricants*

# COMPANY

## Introduction

In **2014** SINOPEC ranked the **3<sup>rd</sup>**  
In Fortune **500**  
World's fourth largest lubricant company ,  
**largest** in Asia



# SINOPEC

## LUBRICANTS

**NEW FACTORY  
NEW PACKAGE  
NEW MILESTONE**



Old Packages



NEW ARRIVALS

### Performance in motion

Sinopec Lubricant (Singapore) Pte Ltd is located at Tuas South Singapore, covering an area of 242,811 square meters. The initial production capacity of the company is 100,000 metric tons per year, and it will produce high-grade lubricants and greases to meet the increasing regional market demands.

Sinopec Lubricant (Singapore) Pte Ltd is the key to the global expansion of Sinopec. It will be functioning as the regional hub, the important production center, and the service and logistics center, enabling Sinopec to better serve the customers in **Australia, South East Asia, the Middle East, Africa and South America.**

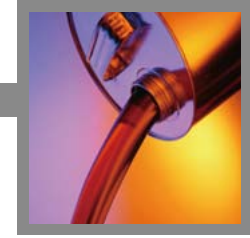


**SINOPEC**

LUBRICANT COMPANY, SINOPEC CORP.

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Sinopec Lubricant Co., LTD. is directly affiliated to China Petroleum & Chemical Corporation, one of the Global 500 Companies. Equipped with world-class automatic blending and packaging production line, Sinopec Lubricant Co., LTD. produces over 700 kinds of lubricating oils and greases under 20 categories which are widely used in fields of Aerospace, Automobile, Machinery, Metallurgy, Mining, Petrochemical Engineering and Electronics, Etc. As a Partner of China's Aviation Program, Sinopec Lubricant provides lubrication services for Shenzhou Manned Space Flight and Chang'e Lunar Probe Satellite, making great contributions to the development of China Aerospace Progress. Sinopec Lubricant Co., LTD. is dedicated to promoting China's lubrication requirements. It regularly participates in international competitions and strives to establish Long-term Partnership with relevant industries for mutual development and progress.





# TULUX

**Diesel engine oil**

**TULUX T600**



**TULUX T500**



**TULUX T400**  
**TULUX T300**



**TULUX CF/SF**  
**CD/SF**



**TULUX T600F**  
**5W-40**

**TULUX T600F LA**  
**10W-40**

**TULUX T600F LD**  
**10W-40**

**TULUX T600**  
**15W-40**

**TULUX T500 SUPER**  
**15W-40**

**TULUX T500**  
**CLASSIC**  
**15W-40**

**TULUX T400**  
**10W-30**  
**15W-40**  
**20W-50**

**TULUX T300**  
**CF-4/SG**  
**15W-40**  
**20W-50**

**TULUX CF**  
**PREMIUM**  
**30**

**TULUX CF/SF**  
**30,40,50**

**TULUX CD/SF**  
**40,50**

## TULUX

### A SUPER DYNAMIC FAMILY

At any given moment, your engines have to face various challenges from muddy, dusty and rainy environment to extreme coldness, overtime operation and other tough conditions. For a problem free and smooth operations truck drivers and business owners choose Tulux as their first choice in vehicles, machinery and other equipment protection.

Integrating lubrication technologies specially designed for space flight, SINOPEC Tulux heavy-duty diesel engine oil effectively reduces generation of harmful acid substances and soot and cleans carbon deposits with unique product formulae and additive mixing technologies as well as innovative factors for energy Integration and strong protection; It features super strong wear resistance and enables lasting protection at high temperature and smooth start at low temperature.

Tulux—  
Energy integratron and strong protection  
Super dynamic power

20-25

16-19

12-15

4-11

# TULUX T600F

## 5W-40

Diesel Engine Oil

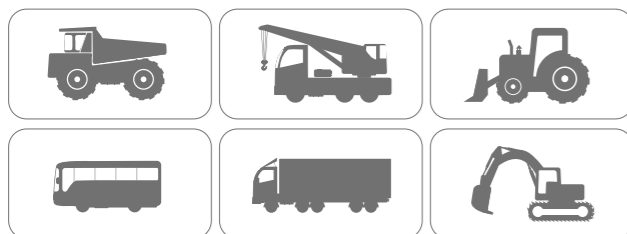
## API CJ-4/SM

Fully Synthetic

ACEA E7

MB 228.31

VOLVO VDS-4



### Product description

Sinopec Tulux T600F 5W-40 Diesel Engine Oil is a premium quality, heavy duty diesel engine oil formulated with fully synthetic base oils and an additive package containing advanced dispersants and detergents. It is suitable for use in high speed, four-stroke cycle diesel engines fitted with exhaust gas aftertreatment systems designed to meet Euro IV (ADR 80/02) and Euro V (ADR 80/03) exhaust emissions standards.



### Applications

**Sinopec Tulux T600F 5W-40 Diesel Engine Oil is suitable for use in:**

- Heavy duty diesel engines fitted with modern exhaust gas aftertreatment systems, e.g. exhaust gas recirculation (EGR), diesel particulate filters (DPF) or selective catalytic reduction (SCR).
- Heavy duty diesel engines without exhaust gas aftertreatment systems.
- High speed, four-stroke cycle diesel engines adopting other new technologies and meeting Euro IV (ADR 80/02) and Euro V (ADR 80/03) emissions standards.
- Heavy duty diesel engines requiring an API CJ-4 quality oil.
- Gasoline engines requiring an API SM quality oil.

Note: fuel sulfur levels above 15 ppm may impact on exhaust aftertreatment system durability and/or oil drain interval.



### Features and benefits

- Excellent dispersant/detergent properties protect the oil from soot-related viscosity increase, prevent the formation of sludge and piston deposits, and reduce valve-train and soot-related wear, keeping the engine clean and reducing energy loss due to frictional wear.
- Outstanding shear stability protects the oil from viscosity loss due to shear in highly-rated diesel engines, keeping the oil in grade and extending oil life, and ensuring optimum oil film thickness on moving engine parts.
- High-TBN formulation, together with anti-corrosion properties, neutralises acidic combustion products and protects engine bearings from corrosion and wear also enables longer oil-drain intervals and so reduces maintenance costs.
- Very low oil evaporation loss reduces oil consumption and exhaust emissions.
- High viscosity index base oil and effective antioxidant system protect the engine at high temperatures and prolong engine service life.
- Fully compatible with common elastomers used in engine seals, so reduces oil leakage.
- Meets a wide range of industry and OEM specifications, so useful in mixed-fleet operation where it can reduce inventory costs.

### Typical data

SAE grade	5W-40
Viscosity, cSt @ 100°C, ASTM D 445	14.31
High-temperature, high-shear viscosity (HTHS), cP @ 150°C, ASTM D4683	3.83
Sulfated ash, wt%, ASTM D 874	0.99
TBN, mg KOH/g, ASTM D 2896	10.8
Pour point, °C, ASTM D 97	-41
Flash point (COC), °C, ASTM D 92	228

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

### Industry and OEM specifications

ACEA	E7 and earlier specifications	Detroit Diesel	DDC 93K214/93K215/93K218
API Service Classification	Diesel: CJ-4, CI-4 Plus, CI-4, CH-4, CG-4, CF-4 and earlier HDDEO specifications	Mack	EO-O Premium Plus
	Petrol/Gasoline: SM	MAN	3575
ASTM	D4485-2010	Mercedes Benz	228.31
Caterpillar	ECF-3	MTU	Type 2.1
Cummins	CES 20081	Volvo	VDS-4
		Renault	RLD-3



# TULUX T600F LA

## 10W-40

Diesel Engine Oil

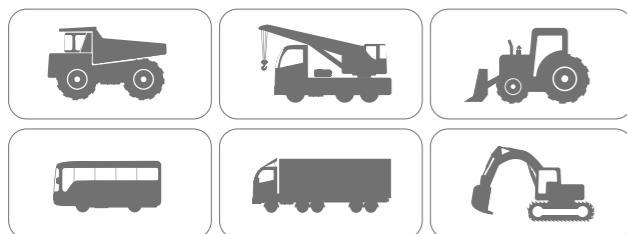
## ACEA E6/E4/E7/E9

Fully Synthetic

API CJ-4

MB 228.51/228.31

VOLVO VDS-4



### Product description

Sinopec Tulux T600F LA 10W-40 Diesel Engine Oil is formulated with high viscosity index, synthetic base oils and advanced low-ash multifunctional 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 T600F 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.



### Applications

**Sinopec Tulux T600F LA 10W-40 Diesel Engine Oil is suitable for use in:**

- 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.



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

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

### Industry and OEM specifications

ACEA	E6-12, E4-12, E7-12, E9-12	Caterpillar	Cat ECF-3
API Service Classification	Diesel: CJ-4	Cummins	CES 20081
JASO	DH-2	Mack	EO-O PremiumPlus and EO-N Premium Plus
Mercedes Benz	228.51, 228.31	Renault	RLD-3, RLD-2
Man	M 3477, M3573, M 3271-1	Deutz	DQC IV-10 LA
MTU	MTU Type 3.1 and 2.1	DDC	93K218
Volvo	VDS-4, VDS-3	Scania	LDF3 ( field trail running)

# TULUX T600F LD

## 10W-40

Diesel Engine Oil

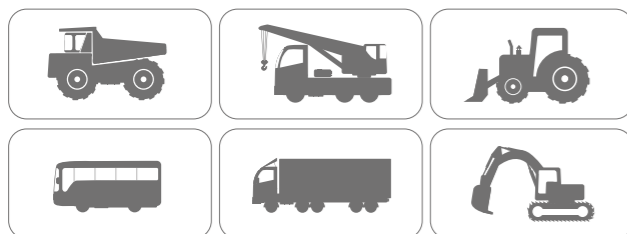
## ACEA E4/E7

Fully Synthetic

MB 228.5

MAN M3277

SCANIA LDF-3



### Product description

Sinopec Tulux T600F LD 10W-40 Diesel Engine Oil is one of the Sinopec Tulux range of super premium heavy duty diesel oils. This advanced formulation contains high viscosity index, synthetic base oils and an advanced multifunctional additive system to provide outstanding lubrication to modern, high-performance diesel engines used in severe on- and off-highway applications.

Sinopec Tulux T600F LD 10W-40 Diesel Engine Oil is a stable, stay-in-grade oil providing excellent control of piston cleanliness and wear, and advanced soot handling and lubricant stability.

### Applications

**Sinopec Tulux T600F LD 10W-40 Diesel Engine Oil is suitable for use in:**

- Naturally aspirated and turbocharged diesel powered engines built by European manufacturers.
- On-highway light and heavy-duty trucking.
- Off-highway industries: including construction, mining, quarrying and agriculture.



### 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.
- Excellent control of aeration and foaming ensures protection of engine parts.
- High acid neutralisation ability, together with TBN retention, provide rust and corrosion protection, extended oil drain potential and prolong engine life.
- 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.
- Offers excellent overall performance and protection as expected from the Sinopec Tulux range of heavy duty diesel oil grades.

### Typical data

SAE grade	10W-40	NOACK volatility, ASTM D 5800	9.3
Kinematic viscosity, ASTM D 445		Sulfated ash, wt%, ASTM D 874	1.9
cSt @ 40°C	83.7	TBN, ASTM D 2896	15.6
cSt @ 100°C	13.0	Pour point, °C, ASTM D 97	-34
Dynamic viscosity, CCS, ASTM D 5293		Flash point (COC), °C, ASTM D 92	230
cP @ -25°C	5,890	Density @ 15°C, kg/l, ASTM D 4052	0.875
Viscosity index, ASTM D 2270	156		

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

### Industry and OEM specifications

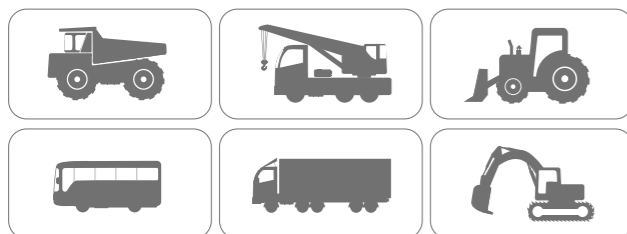
ACEA	E7-08, E4-08	MTU	MTU Type 3
API Service Classification	CF	Renault	RXD, RLD-2
GB	11122-2006(CF)	Scania	LDF-3, LDF-2
Man	M 3277	Volvo	VDS-3
Mercedes Benz	228.5	Mack	Mack EO-M PLUS
MTU	MTU Type 3	Cummins	CES 20072

# TULUX T600

**15W-40**  
Diesel Engine Oil

**API CJ-4/SM**

**ACEA E7/E9**  
**MB 228.31**  
**MAN M3277**  
**VOLVO VDS-4**



## Product description

Sinopec Tulux T600 15W-40 Diesel Engine Oil is formulated with hydro-cracked high viscosity index base oils and advanced low-SAPS (sulfated ash, phosphorus and sulfur) multifunctional additive technology to meet the 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.



## Applications

**Sinopec Tulux T600 15W-40 Diesel Engine Oil is suitable for use in:**

- 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.

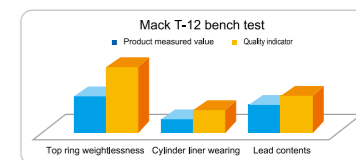


## Features and benefits

- Advanced low-ash additive system provides excellent protection for modern low-emission diesel engines equipped with EGR, DPF or other technologies.
- Formulated with hydro-cracked high viscosity index 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.

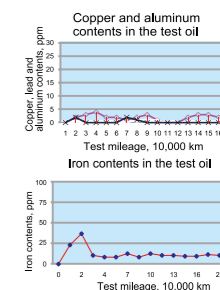
### Engine bench tests

Mack T-12 bench test: Compared with the specified indicators, the engine top ring weightlessness reduces by 50%; Cylinder liner wearing lowers by 30% and the increased value of lead contents in lubricants decreases by 37%.



### After the 240,000km (an oil drain cycle of 20,000km) driving test

The test oil has a maximum iron content of 35ppm; A majority of oil samples contain less than 20ppm of iron, which is at least 60% less than the specified indicator for oil drain; The test oil has a maximum copper and aluminum content of less than 5ppm, which is at least 70% less than the specified indicator for oil drain.



## Typical data

SAE grade	15W-40
Kinematic viscosity, ASTM D 445	
cSt @ 40°C	112.6
cSt @100°C	15.16
Dynamic viscosity, CCS, ASTM D 5293	
cP @ -20°C	5,390
Mini-rotary viscometer (MRV), ASTM D 4684	
cP @ -25°C	16,900

HTHS, cP @ 150°C, ASTM D 4683	4.3
Viscosity index, ASTM D 2270	139
NOACK volatility, ASTM D 5800	9.5
Sulfated ash, wt%, ASTM D 874	1.0
TBN, mg KOH/g, ASTM D 2896	9.5
Pour point, °C, ASTM D 97	-37
Flash point (COC), °C, ASTM D 92	230
Density @ 15°C, kg/l, ASTM D 4052	0.8740

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

## Industry and OEM specifications

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	
API Service Classification	CJ-4/SM
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

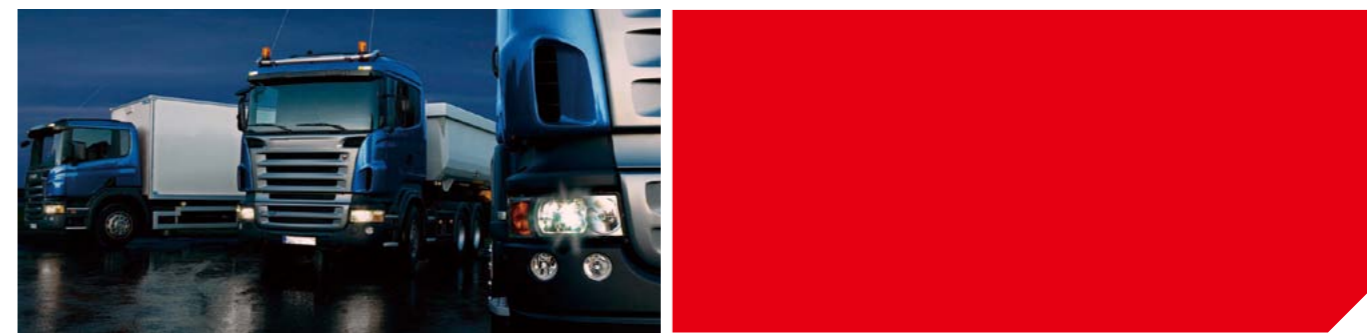
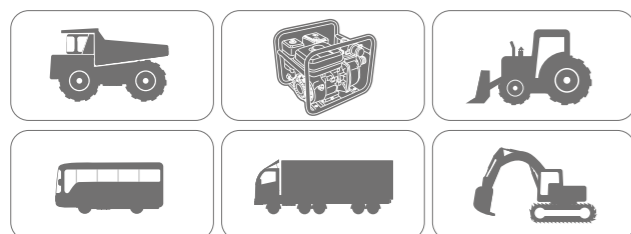


# TULUX T500 SUPER

**15W-40**  
Diesel Engine Oil

**API CI-4+/SL**

**ACEA E7**  
**JASO DH-1**  
**MB 228.3**  
**MAN M3275**



## Product description

Sinopec Tulux T500 Super 15W-40 Diesel Engine Oil is a premium-quality, heavy-duty diesel engine oil formulated with highly refined base oils and an advanced dispersant/detergent-containing additive system. For use in high-speed, four-stroke cycle diesel engines designed to meet 2004 exhaust emissions standards. Ensures engine durability in engines where exhaust gas recirculation (EGR) is used. Not suitable for engines with DPF.



## Applications

**Sinopec Tulux T500 Super 15W-40 Diesel Engine Oil is suitable for use in:**

- High-speed, four-stroke cycle diesel engines designed to meet 2004 exhaust emissions standards, which require an oil of API CI-4+ quality.
- Such engines running on diesel fuels ranging in sulfur content up to 0.5% weight.
- Heavy-duty diesel engines fitted with exhaust gas recirculation (EGR) or selective catalyst reduction (SCR) systems.
- Highly rated diesel engines meeting Euro IV and Euro V and Australian ADR 80/02 and 80/03 emissions requirements.
- Most heavy-duty diesel engines, except those fitted with diesel particulate filters (DPF).

## Features and benefits

- Excellent dispersant/detergent properties protect the oil from soot-related viscosity increase, prevent the formation of sludge and piston deposits, and reduce valve-train and soot-related wear, keeping the engine clean and reducing energy loss due to frictional wear.
- Outstanding shear stability protects the oil from viscosity loss due to shear in highly-rated diesel engines, keeping the oil in grade and extending oil life, and ensuring optimum oil film thickness on moving engine parts.
- High-TBN formulation, together with anti-corrosion properties, neutralises acidic combustion products and protects engine bearings from corrosion and wear; also enables longer oil-drain intervals and so reduces maintenance costs.
- Very low oil evaporation loss reduces oil consumption and exhaust emissions.
- High viscosity index base oil and effective antioxidant system protect the engine at high temperatures and prolong engine service life.
- Fully compatible with common elastomers used in engine seals, so reduces oil leakage.
- Meets a wide range of industry and OEM specifications, so useful in mixed-fleet operation where it can reduce inventory costs.

## Typical data

SAE grade	15W-40	Pour point, °C, ASTM D 97	-37
Viscosity, ASTM D 445		Flash point (COC), °C, ASTM D 92	222
cSt @ 100°C	14.8	Density @ 20°C, kg/l, ASTM D 4052	0.857
Sulfated ash, wt%, ASTM D 874	1.37		
TBN, mg KOH/g, ASTM D 2896	11.6		

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

## Industry and OEM specifications

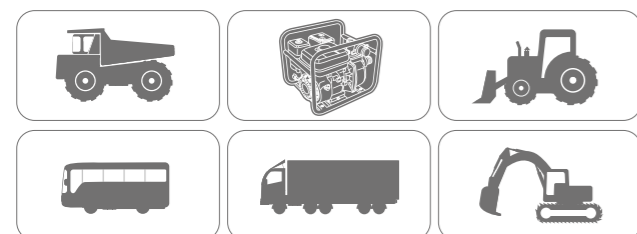
ACEA	E7	Detroit Diesel	93K214
API Service Classification	Diesel: CI-4+, CF and earlier HDDEO specifications Petrol/Gasoline: SL	Mack	EO-N Premium Plus 03, EO-M Plus, EO-M
Global	DHD-1	MAN	3275/271
JASO	DH-1	Mercedes Benz	228.3, 228.1
Caterpillar	ECF-2, ECF-1A	MTU	Type 1, Type 2
Cummins	CES 20078/77/76/72/71	Volvo	VDS-3

# TULUX T500

**Classic**  
Diesel Engine Oil

**API CI-4/SL**

**ACEA E7**  
**JASO DH-1**  
**MB 228.3**  
**VOLVO VDS-3**



## 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.

## Typical data

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

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

## Industry and OEM specifications

ACEA	E7-08	GB <sup>1</sup>	11122-2006 (CI-4)
API Service Classification	Diesel: CI-4, CH-4 and earlier HDDEO specifications	API Service Classification	CI-4/SL
	Petrol/Gasoline: SL		

Note: 'GB' standards are the National Standards of the People's Republic of China.

Caterpillar	Cat ECF-1-a	Mercedes Benz	MB 228.3
Cummins	CES 20078, 20077, 20076	MTU	MTU Type 2
Detroit Diesel	93K215	Volvo	VDS-3, VDS-2
Mack	EO-M plus	Renault Truck	RLD-2
Man	3275		

## Product description

Sinopec Tulux T500 Classic Diesel Engine Oil is formulated with hydrocracked high viscosity index base oils and advanced multifunctional additive technology to meet the requirements of a wide range of engine manufacturers. Suitable for pre EPA 2007 diesel engines, where excellent soot control is required. Also suitable for use in engines with or without EGR systems. Available as 15W-40 and 20W-50 multigrades to suit specific application requirements.



## Applications

**Sinopec Tulux T500 Classic Diesel Engine Oil is suitable for use in:**

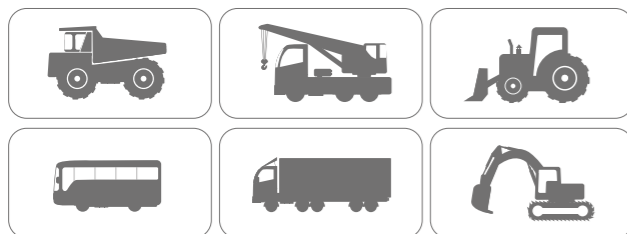
- Both light-duty and heavy-duty vehicles operating under severe conditions, such as long-distance or urban traffic vehicles.
- Off-highway applications in the mining, quarrying, construction and agricultural industries.
- Industrial power generation engines.
- Heavy duty diesel engines operating continuously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



# TULUX T400

Diesel Engine Oil

API CH-4/SJ



## Product description

Sinopec Tulux T400 Diesel Engine Oil is a premium quality, heavy duty diesel engine oil formulated with highly refined base oils and an additive package containing advanced dispersants and detergents. It is designed for both on-highway and off-highway use in high-speed, four-stroke cycle diesel engines designed to meet Euro III (ADR 79/01) emissions standards. Available in three multigrades: 10W-30, 15W-40 and 20W-50.



## Applications

### Sinopec Tulux T400 Diesel Engine Oil:

- High-speed, four-stroke cycle diesel engines, requiring an API CH-4 quality oil to meet Euro III (ADR 79/01) emissions standards.
- Heavy duty, turbocharged diesel engines of container trailers operating at high pressures.
- Large, heavy duty diesel engines used in off-road applications in the agricultural, mining and construction industries.
- Heavy duty power generation units.
- Gasoline engines requiring an API SJ quality oil.

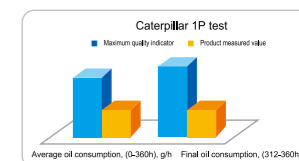


## Features and benefits

- Excellent detergent and dispersant properties provide soot and deposit control, protect against piston deposits and valve train wear, and ensure engine cleanliness and smooth running.
- Good shear stability properties ensure that viscosity is maintained, even under severe, high-temperature service conditions, providing improved engine wear protection and extended engine life.
- Outstanding antiwear properties protect against cylinder liner and bearing wear extending engine life.
- Excellent TBN retention and protection against acid corrosion caused by fuel combustion products.
- Excellent oxidation stability reduces oil thickening during use and prolongs oil drain intervals.
- Low oil evaporation loss leads to improved fuel economy and reduces oil consumption and exhaust emissions.
- Meets the Euro III (ADR 79/01) emissions standard; suitable for engines running on fuels with up to 0.5% sulfur content.
- Good elastomer compatibility ensures longer gasket and seal life and reduces oil leakage.

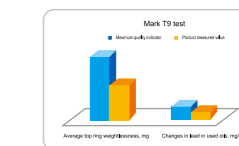
### Effectively reduces engine oil consumption

It effectively controls engine oil consumption and reduces influence of volatile substances in engine oils on engine emission systems. During the 360h big power bench test under tough working conditions, the engine oil consumption was only 5.7g/h, 54% less than the specified requirement. This effectively reduces engine oil consumption.



### Excellent wearing resistant capability

- Protect engine cylinder liner and bearings.



## Typical data

SAE grade	10W-30	15W-40	20W-50
Viscosity, cSt @ 100°C, ASTM D 445	10.69	15.07	17.97
Sulfated ash, wt%, ASTM D 874	1.3	1.36	1.12
TBN, mg KOH/g, ASTM D 2896	9.41	10.5	9.48
Pour point, °C, ASTM D 97	-39	-34	-26
Flash point (COC), °C, ASTM D 92	218	218	225
Density @ 20°C, kg/l, ASTM D 4052	0.868	0.879	0.886

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

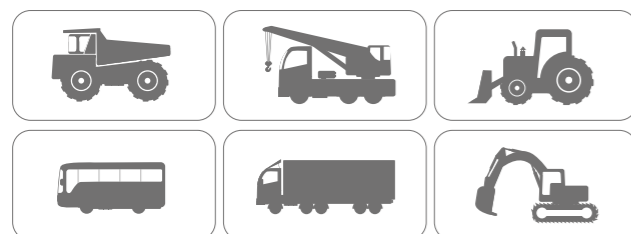
## Industry and OEM specifications

API Service Classification	Diesel: CH-4, CG-4, CF-4 and earlier HDDEO specifications	Mack	EO-M Plus (15W-40)
	Petrol/Gasoline: SJ <td>MAN</td> <td>271 (15W-40)</td>	MAN	271 (15W-40)
Caterpillar	ECF-1-a (15W-40)	Mercedes Benz	228.1/228.3/229.1 (15W-40)
Cummins	CES 20076/71 (15W-40) CES 20078 (20W-50)	MTU	Type 1 (15W-40)
		Renault	RD/RD-2 (15W-40)
		Volvo	VDS-2 (15W-40)

# TULUX T300 CF-4/SG

Diesel Engine Oil

API CF-4/SG



## Product description

Sinopec Tulux T300 CF-4/SG Diesel Engine Oil is formulated with high viscosity index base oils and advanced multifunctional additive technology to meet the requirements of a wide range of engine manufacturers.

## Applications

**Sinopec TULUX T300 CF-4/SG Diesel Engine Oil is suitable for use in:**

- Suitable for heavy duty diesel engines, particularly suitable for super turbo-charged heavy duty diesel direct injection engines where API CF-4 and former API HDDEO or API SG grade engine oil are recommended.
- Suitable for on road transport vehicles and off road equipment, including bulldozers, grabs, mining equipment and dynamotors, power generation units and other types of diesel engines which require an API CF-4,CF or CD oil.



## Features and benefits

- Formulated with high-quality mineral or synthetic base oils in combination with an advanced additive system.
- Good anti-oxidation, and anti-wear performances, effectively reduce the build-up of sludge and reduce oil thickening, thereby keeping the product in grade for longer and extending oil life, prolonging engine service life.
- Outstanding soot and deposit control provide protection against piston deposits and valve train wear, and ensure engine cleanliness and smooth running.
- Low oil evaporation loss leads to reduced oil consumption and reduced exhaust emissions.
- High acid neutralisation ability, together with TBN retention, provides rust and corrosion protection and prolongs engine life.

## Typical data

SAE grade	10W-30	15W-40	20W-50
Viscosity, cSt @ 100°C, ASTM D 445	11.18	15.66	18.90
Sulfated wt%, ASTM D 874	1.39	1.53	1.41
Sulphur Content, wt%	0.35	0.28	0.4
Phosphorus, wt%	0.110	0.120	0.106
TBN, mg KOH/g, ASTM D 2896	11.0	10.5	10.5
Pour point, °C, ASTM D 97	-39	-30	-18
Flash point (COC), °C, ASTM D 92	230	240	224

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

## Industry and OEM specifications

API Service Classification	Diesel: CF-4 and earlier HDDEO specifications
API Service Classification	SG
China FAW	SINOTRUCK
Xiamen KingLong Motor	Dongfeng Motor
Hangzhou Engine	Dalian Diesel Engine
Shanghai Diesel Engine	Weifang Diesel Engine
Foton Motor	China North Vehicle Neoplan Bus

\* API approval for the product is registered as 'Sinopec Golden Dragon'.

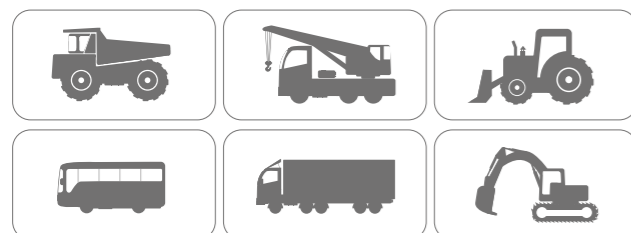


# TULUX CF Premium 30

Diesel Engine Oil

API CF

JASO DH-1



## Product description

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



## Applications

**Sinopec Tulux CF Premium 30 Diesel Engine Oil is suitable for use in:**

- 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.



## 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 antiwear 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	97.7
cSt @ 100°C	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

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

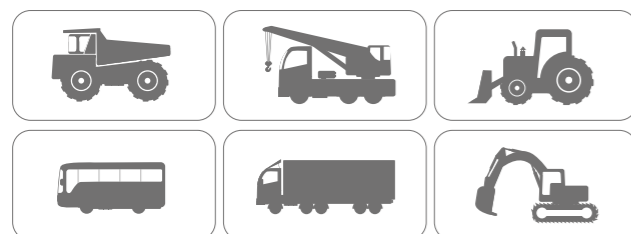
## Industry and OEM specifications

API Service Classification	Diesel: CF and CD
JASO	DH-1

# TULUX CF/SF

Diesel Engine Oil

API CF/SF



## Product description

Sinopec CF/SF Diesel Engine Oil is formulated with high-quality base oil and advanced multifunctional additive system. Designed to meet the needs of off-highway, indirect-injected diesel engines and other diesel engines that use a broad range of fuel types.



## Applications

**Sinopec CF/SF Diesel Engine Oil is suitable for use in:**

- 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.

## 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.
- Provides better anti-wear protection than CD grade diesel engine oil, further decreases wear of engine, effectively prolonging service life of engine.
- 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 antiwear properties protect against engine wear and extend engine life.
- Effectively formulated with high-quality base oils to reduce oil consumption.

## Typical data

SAE grade	30	40	50
Kinematic viscosity, ASTM D 445			
cSt @ 40°C	98.5	160	204
cSt @ 100°C	11.6	15.5	18.4
Viscosity index, ASTM D 2270	106	100	100
Total base number, mg KOH/g, ASTM D 2896	5.0	5.0	5.0
Pour point, °C, ASTM D 97	-25	-20	-18
Flash point (COC), °C, ASTM D 92	240	240	244
Density @ 20°C, kg/l, ASTM D 4052	0.886	0.887	0.891

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

## Industry and OEM specifications

API Service Classification	Diesel: CF and CD
GB <sup>1</sup>	11122-2006 (CF)

Note: 'GB' standards are the National Standards of the People's Republic of China.



# TULUX CD/SF

Diesel Engine Oil

API CD/SF



## Product description

Sinopec Tulux CD/SF Diesel Engine Oil is formulated with selected base oil and multifunctional additives. This product is suitable for lubrication of diesel engines requiring CD engine oils.

## Applications

**Sinopec Tulux CD/SF Diesel Engine Oil is suitable for use in:**

- Sinopec Tulux CD/SF Diesel Engine Oil is suitable for use in light/medium duty diesel engines requiring oils of CD and CC.



## Features and benefits

- Excellent detergency and lubricity at high temperature, effectively controlling formation of high temperature deposit, keeping engines clean.
- Provides better anti-wear protection than CD grade diesel engine oil, further decreases wear of engine, effectively prolonging service life of engine.
- Good properties of anti-oxidation, anti-corrosion and anti-wear, preventing wear, rustiness of parts and corrosion of bearing bush, and prolonging service life of engine.
- Effectively formulated with high-quality base oils to reduce oil consumption.

## Typical data

SAE grade	40	50
Kinematic viscosity, ASTM D 445		
cSt @ 40°C	160	202
cSt @ 100°C	15.5	18.3
Viscosity index, ASTM D 2270	99	99
Total base number, mg KOH/g, ASTM D 2896	5.0	5.0
Pour point, °C, ASTM D 97	-20	-18
Flash point (COC), °C, ASTM D 92	239	242
Density @ 20°C, kg/l, ASTM D 4052	0.886	0.890

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

## Industry and OEM specifications

API Service Classification	Diesel: CD
GB <sup>1</sup>	11122-2006 (CD)

Note: 'GB' standards are the National Standards of the People's Republic of China.



# Application Cases

## Tulux T600 application cases

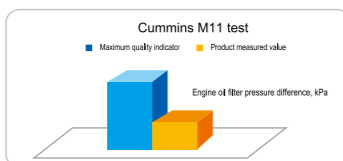
### 60 sets of heavy trucks

60 sets of heavy trucks were tested in North America. A total of 60 sets of heavy trucks were tested in North America, with the mileage totaling 12.7 million miles. The engines used involve Caterpillar C-15 and C15 ACERT, Cummins ISX EGR, Mercedes Benz 4000 EGR, Mack AC 460 EGR and Detroit Diesel series 60 EGR. Tested on diesel fuel with a sulfur content of 340 ppm. Compared with Tulux T500 Plus diesel, a local brand in North America, Tulux T600 diesel engine oil offers better wear resistant performance and thus extends the service life of engines.



### Excellent cleaning dispersing capability

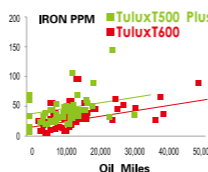
Beijing Public Transport Holdings, Ltd. is a super-large state-owned enterprise focusing on ground public passenger transport. As of the end of 2006, it owns 25,409 vehicles of various types and 800 transport routes, with the annual driving mileage totaling 1.57 billion km. The company has extensive scope of operation and faces tough transport conditions. Due to serious traffic congestions in urban areas and long transport routes in suburban areas, most buses are used frequently and run under excessive load and for long periods. At present, some of the vehicles in the public system have satisfied Euro IV emission requirements and the upgrading from Euro III to Euro IV emission standards has been gradually completed.



- The excellent cleaning dispersing capability reduces carbon deposition.
- It effectively controls generation of carbon deposition, with the carbon deposits in piston rings 50% fewer than the specified requirement.
- It helps avoid unsmooth oil circuits caused by the big pressure difference in the engine oil filter.

### Two heavy trucks

Two heavy trucks were tested in Shanghai, China, with the mileage totaling over 400,000 km. The engine adopted was Weichai WD615.50, and the test fuel was the diesel sold in the market with a sulfur content of 800 ppm. The oil drain interval is 15,000 or 20,000 km. Various indicators of the test oil are fully normal, and all the parts after dismantling of vehicles show no abnormal conditions, which demonstrates the test oil has excellent performance and a super-long oil drain cycle.



## Tulux T500 application cases

### Beijing Public Transport Holdings, Ltd.

#### Background

Beijing Public Transport Holdings, Ltd. is a super-large state-owned enterprise focusing on ground public passenger transport. As of the end of 2006, it owns 25,409 vehicles of various types and 800 transport routes, with the annual driving mileage totaling 1.57 billion km. The company has extensive scope of operation and faces tough transport conditions. Due to serious traffic congestions in urban areas and long transport routes in suburban areas, most buses are used frequently and run under excessive load and for long periods. At present, some of the vehicles in the public system have satisfied Euro IV emission requirements and the upgrading from Euro III to Euro IV emission standards has been gradually completed.

#### Using effects

Since 2004, Beijing Public Transport Holdings, Ltd. has used Tulux T500 15W-40 lubricants in its operating vehicles equipped with EGR systems, and monitored the use of engine oils in long-route vehicles that run in congested urban streets. In 2007, it monitored the use of oils in vehicles with extended oil drain intervals, and the results showed the product features excellent anti-oxidation performance, high-temperature cleaning performance and wear resistant performance.

- It fully satisfies the Euro IV environmental friendly emission standard under tough working conditions, and has undergone the severe emission test of Beijing Olympics.
- With extraordinary smoke dust treatment capability, it helps avoid engine cylinder liner polishing and valve wear caused by smoke dust and keep pistons clean and carbon free. It is thus particularly suitable for engines powered by diesel with high sulfur contents.
- It effectively saves fuel consumption and lowers vehicle operation cost.
- It ensures sound operation and utilization of vehicles, effectively reduces maintenance intervals and secures smooth transportation.



- Product selected: Tulux T500 15W-40
- To forge the image of "green public transport", Beijing Public Transport Holdings, Ltd. raises the bar for lubrication to adapt to the complicated traffic conditions in Beijing. Therefore, it conducted 20,000 km driving tests for vehicles filled with Tulux T500 15W-40, which showed excellent performance.

### Jiangling

#### --For high-level engines

- Product selected: Tulux T500 15W-40
- Jiangling motors are equipped with high-level diesel engines as well as high pressure common rail and inter-cooling EGR technologies. Therefore, Tulux T500 is needed to offer better protection to meet tougher emission standards. At present, it is used as factory fill and after-sales supporting oil for Jiangling motors.



## Tulux T400 application cases

### Hangzhou Public Transport Co., Ltd.

#### --Excellent cleanliness according to the 30,000 km real test

- Product selected: Tulux T400
- The 30,000 km real driving test showed the product has excellent cleaning dispersing capability that wins praise from insiders.



### Zhuhai Gongbei Bus Transport Co., Ltd.

#### --36,000 km real test, the designated supporting engine oil

- Product selected: Tulux T400
- The engine oil is applied to Benz, Nissan, Toyota and other luxury passenger vehicles and passed the 36,000 km driving test, showing extraordinary performances. Zhuhai Gongbei Bus Transport Co., Ltd. has signed the Letter of Confirmation for Use of SINOPEC Passenger Vehicle Supporting Oil and established long-term cooperation with SINOPEC.



## Tulux T300 CF-4/SG application cases

### A logistical transport fleet in Beijing

#### Background

The vehicle engines of a logistical transport fleet in Beijing are dominated by imported Cummins, Chinese manufactured Cummins and Germany Deutz. Due to high-speed and long-time running as well as tough and complicated road conditions, engine oils shall have good performance in anti-oxidation, viscosity temperature keeping and pollution resistance. Conditions of main test vehicles are as follows.

Vehicle No.	Vehicle A	Vehicle B	Vehicle C	Vehicle D
Vehicle type	Dongfeng	Dongfeng	Jiefang	Mitsubishi
Engine type	Home-made Cummins 6TB118	Home-made Cummins 6TB118	Germany Deutz V6	Imported Cummins 68T
Cylinder diameter x mileage mm x mm	102x120	102x120		
Working volume(L)	5.88	5.88		
Maximum power/rotational speed kw/r min	17.5:1	17.5:1		
Compression ratio	118/2,600	118/2,600		
Maximum torquerotational speed N m/r/min	583/1,450	583/1,450		

#### Using effects

Tests of using Tulux T300 (CF-4 15W-40) lubricants show that the alkali value declines slowly during the 20,000 km driving process, with the maximum drop being 19%, which is much lower than the specified requirement of 50%. Meanwhile, the wear copper content is 24ppm at the most and about 10 ppm on average, which is far below the required value, and indicator fluctuations vary little with mileage changes. These fully reflect the excellent performance of Tulux CF-4.

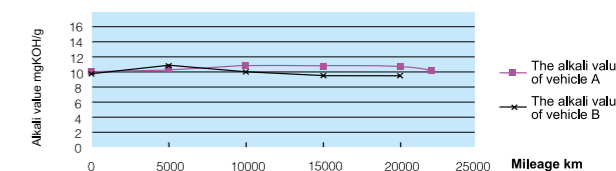


Figure-1 Comparison of alkali values that change with mileage

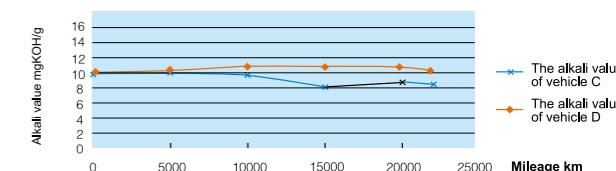


Figure-2 Comparison of alkali values that change with mileage

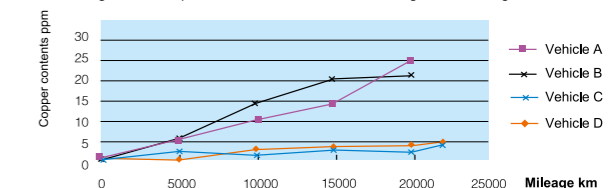


Figure-4 Comparison of copper contents that change with mileage

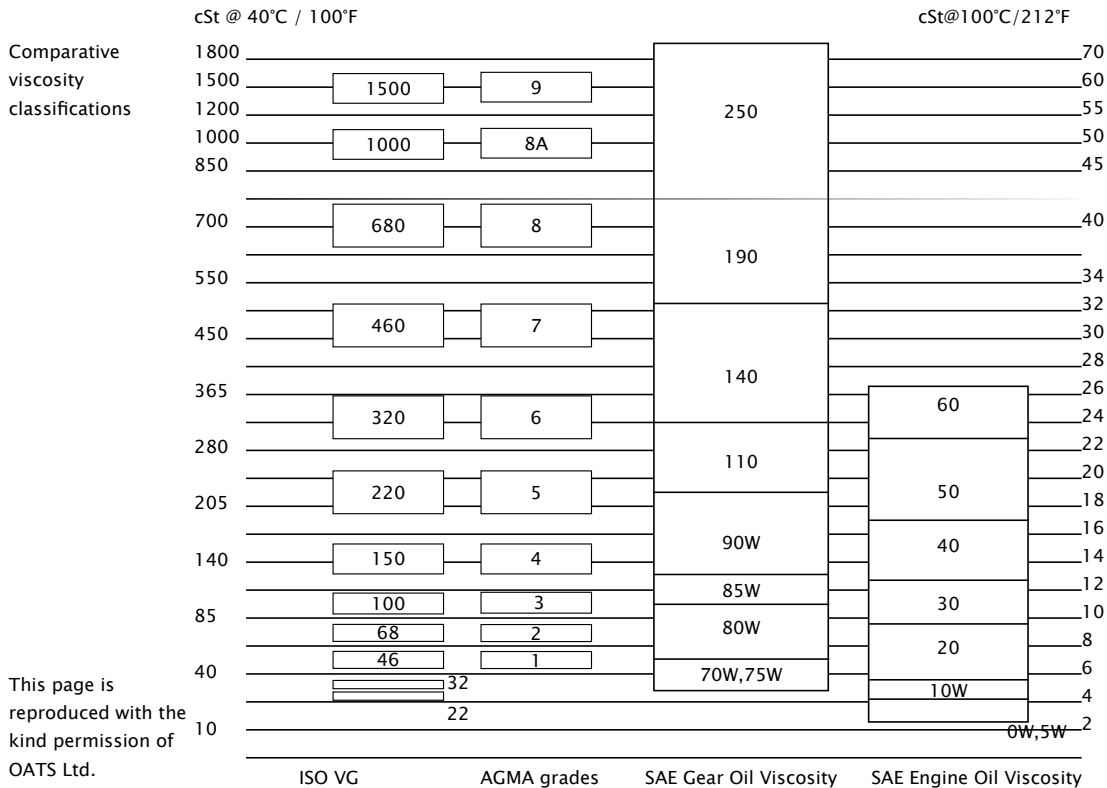
- Slowing down the aging and deterioration of lubricants ensures a longer oil drain interval under the same driving mileage and lowers maintenance cost. (NOTE: Actual oil drain intervals must be determined by fuel quality, operation status, driving conditions and habits, etc., and take relevant provisions in vehicle maintenance manuals for reference.)

# Viscosity classification

SAE viscosity grades for engine oils SAE J300 revised 2009	SAE viscosity grade	Low-temperature (°C) cranking viscosity cP max	Low-temperature (°C) pumping viscosity cP max with no yield stress	Low-shear-rate kinematic viscosity (cSt) at 100°C	High-shear-rate viscosity (cP) at 150°C min
				min      max	
	0W	6200 at -35	60000 at -40	3.8	
	5W	6600 at -30	60000 at -35	3.8	
	10W	7000 at -25	60000 at -30	4.1	
	15W	7000 at -20	60000 at -25	5.6	
	20W	9500 at -15	60000 at -20	5.6	
	25W	13000 at -10	60000 at -15	9.3	
	20			5.6	<9.3      2.6
	30			9.3	<12.5      2.9
	40			12.5	<16.3      3.5*
	40			12.5	<16.3      3.7**
	50			16.3	<21.9      3.7
	60			21.9	<26.1      3.7

\* 0W-40, 5W-40 and 10W-40  
\*\* 15W-40, 20W-40, 25W-40 and 40

Automotive gear lubricant viscosity classification	SAE viscosity grade	Maximum temperature for viscosity of	Kinematic viscosity at 100°C, cSt	
SAE J306 revised October 2005		150 000 cP, °C	min	max
	70W	-55	4.1	
	75W	-40	4.1	
	80W	-26	7.0	
	85W	-12	11.0	
	80		7.0	<11.0
	85		11.0	<13.5
	90		13.5	<18.5
	110		18.5	<24.0
	140		24.0	<32.5
	190		32.5	<41.0
	250		41.0	



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