

# Product Line



Director's Message	1
Who is APSCO	2
Gasoline Engine Oils	4
Diesel Engine Oils	14
Gear Oils	24
Automatic Transmission Fluids	30
Brake Fluids	34
Industrial Oils	38
Marine Oils	50
Greases	58
Technical Information	62
Contacts	







Since its establishment, APSCO management clearly defined its vision to be the leading company in the area of high quality of Lubricants and fuel supply through applying the best industry standards, community development, and maintaining superior performance of its work team, in addition to providing a safe and stimulating work environment.

We believe that our success depends on maintaining our good reputation, which we have gained as a result of our strong commitment to provide high quality services and products. In addition to our keen efforts to maintain customer satisfaction. We are well aware that this requires constant investment to modernize and develop our assets to be able to work according to the highest technical standards .

# MESSAGE



**MOHAMMED ALI IBRAHIM ALIREZA**  
Managing Director

In addition, APSCO believes in its responsibility towards the Saudi society within which it operates . Therefore, we care to contribute in several activities that serve in improving the different social aspects. We are a permanent partner to the public security and safety programs. In addition and stemming from our great faith in the value of the next generation, we support many of the social activities that provide care to our children. Meanwhile, we considerably invest in sports activities to support the Saudi youth community. Accordingly, we became a strategic partner to four Saudi sport clubs, namely Al-Etihad, Al-Ahli, Alnaser and Alshabab.

On top of all, APSCO believes in the valuable contribution of its human resources in its success. Our staff is subject to ongoing upgrading process through advanced human resources training programs to ensure professional performance and high quality services.



# WHO IS



## About APSCO Saudi Arabia

The Arabian petroleum supply company (APSCO) is a strategic alliance of ExxonMobil in the Kingdom of Saudi Arabia. APSCO activities include Manufacturing & Marketing of Lubricants, Petroleum products, Aviation fuels and Marine Bunkering.

APSCO was established as a Joint Venture between Haji Abdullah Alireza (HAACO) group and Socony Vacuum Mobil Oil Inc. in the year 1960 to distribute Mobil branded lubricants in Kingdom of Saudi Arabia and to refuel airplanes at Saudi airports.

Currently APSCO is strategic alliance of ExxonMobil having state of the art blending Plant in Jeddah industrial Area phase 5. The plant has a total area of 41,000 meter square and has a capacity to produce various high quality Lubricants up to 150,000 MT per shift per year. The products cover the demand of different segments like Automotive, Construction & Fleet, Industrial, Oil & Gas, Cement & Paper, Petrochemicals, Iron & Steel, Power & Mining, Marine & Aviation and other General manufacturing companies.

APSCO has its branches in Riyadh & Dammam with large warehouses and delivery fleet.

APSCO International Sales division was established in 1998 in order to meet the demand of emerging markets around the world.

APSCO is currently supplying Mobil branded lubricants to Yemen & Lebanon under agreement & license with ExxonMobil.

### APSCO Branded Lubricants:

APSCO launched its in house brand lubricants which are on par with international brands in terms of quality and performance.

All APSCO branded products are made from Virgin Base oils and Additives approved by API and major OEMs.

APSCO brand has been introduced for the international markets in 2008 targeting Middle East, GCC, Asia and African markets. Armed with Technical Expertise and High quality products APSCO brand has been successfully penetrated in 15 countries and established a reputed name in the Lube industry.

# APSCO





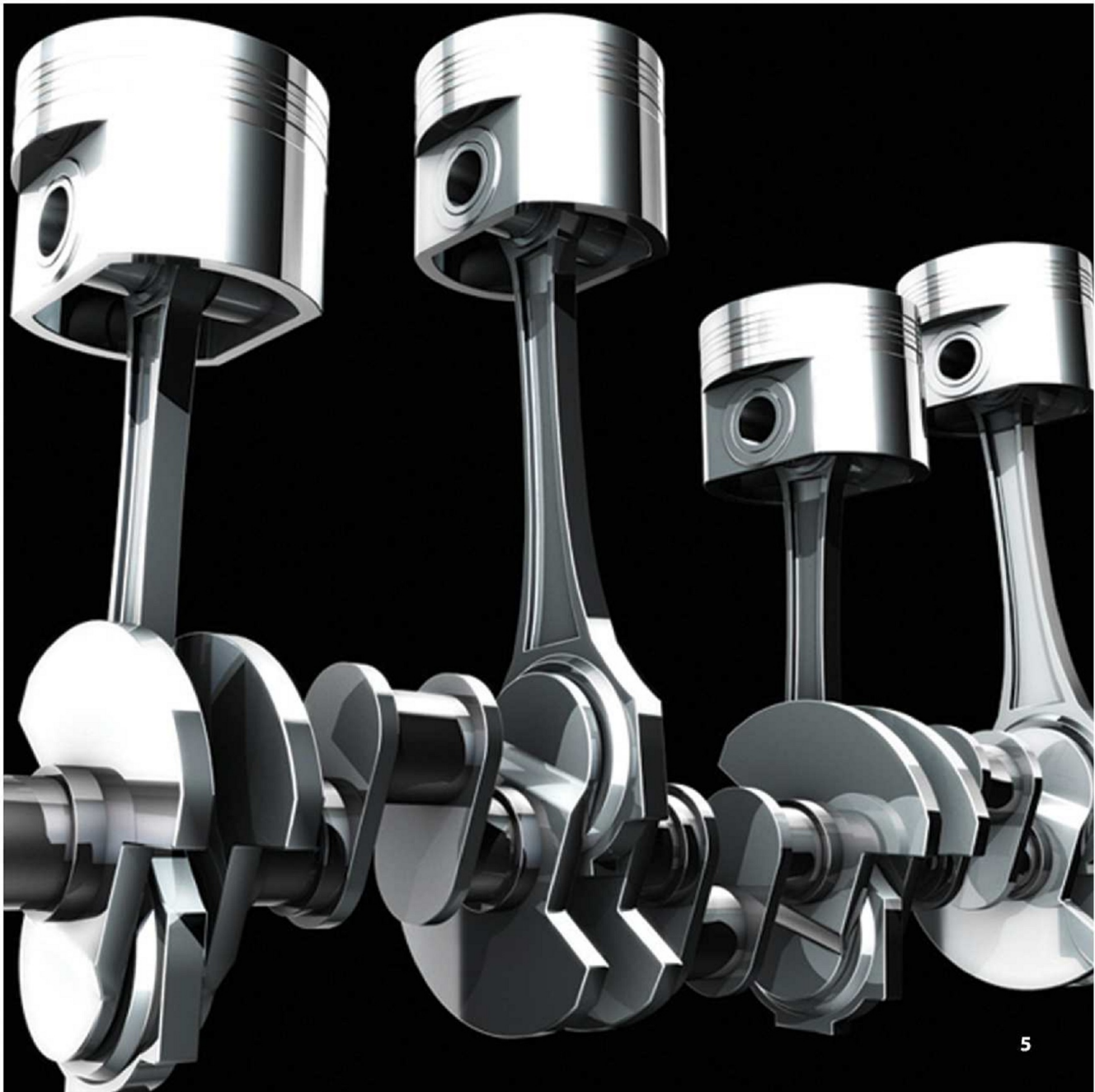


# AUTOMOTIVE OILS

## GASOLINE ENGINE OILS

APSCO SUPER POWER HD 40 SJ/CF	6
APSCO SUPER POWER HD 50 SJ/CF	7
APSCO SUPER POWER 20W-50 SL	8
APSCO SUPER POWER 10W-30 SL	9
APSCO SUPER POWER SEMI-SYN 10W-40 SN/SM	10
APSCO SUPER POWER SEMI-SYN 5W-30 SN/SM SN ILSAC GF-5	11
APSCO SUPER POWER FULLY SYNTHETIC 5W-30 SN ILSAC GF-5	12
APSCO SUPER POWER FULLY SYNTHETIC 5W-40	13
APSCO SUPER SYN 0W-20 , 0W-30 , 0W-40	14









# AUTOMOTIVE OILS

## GASOLINE ENGINE OILS

### APSCO SUPER POWER HD 40 API-SJ/CF

APSCO SUPER POWER HD 40 SAE grade is heavy-duty engine oil specifically made for use in gasoline automotive engines of passenger cars, commercial vehicles and farm equipment. It may also be used in diesel engines of commercial vehicles and contractor equipment. It is formulated from high quality mineral base oils and an advanced additive system to provide the excellent performance required for modern combustion engines. It contains an effective balance of detergents and dispersants to minimize the formation of sludge and deposits retain alkalinity (TBN) and reduce wear.

#### Applications

APSCO SUPER POWER HD 40 is recommended for the lubrication of gasoline engines for passenger cars, commercial vehicles and farm equipment as well as diesel engines for commercial vehicles and contractor equipment. It can also be used in gear and hydraulic applications when the builder approves the use of engine oils.

#### Typical Product Properties

Test Parameters	Test Method	Unit	Typical Value
Density@ 15 °C	ASTM D 4052	kg/liter	0.8960
Kinematic Viscosity , 40° C	ASTMD 445	c.St	146
Kinematic Viscosity , 100° C	ASTMD 445	c.St	14.5
Viscosity Index	ASTM D 2270	-	96
Foaming II Seq Tend/Stability	ASTM D 892	ml/ml	25/0
Pour Point	ASTM D 6749	°C	-15
Base Number	ASTM D 2896	mgKOH/g	7.0
Sulfated Ash	ASTMD 874	Wt%	0.90

### APSCO SUPER POWER HD 50 API-SJ/CF

APSCO SUPER POWER HD 50 SAE grades is heavy-duty engine oil specifically made for use in gasoline automotive engines of passenger cars, commercial vehicles and farm equipment. It may also be used in diesel engines of commercial vehicles and contractor equipment. It is formulated from high quality mineral base oils and an advanced additive system to provide the excellent performance required for modern combustion engines. It contains an effective balance of detergents and dispersants to minimize the formation of sludge and deposits retain alkalinity (TBN) and reduce wear.

#### Applications

APSCO SUPER POWER HD 50 is recommended for the lubrication of gasoline engines for passenger cars, commercial vehicles and farm equipment as well as diesel engines for commercial vehicles and contractor equipment. It can also be used in gear and hydraulic applications when the builder approves the use of engine oils.

#### Typical Product Properties

Test Parameters	Test Method	Unit	Typical Value
Density	ASTM D 4052	kg/liter	0.9050
Kinematic Viscosity , 40°C	ASTM D 445	c.St	240
Kinematic Viscosity , 100°C	ASTM D 445	c.St	20
Viscosity Index	ASTM D 2270	-	96
Foaming II Seq Tend/Stability	ASTM D 892	ml/ml	25/0
Pour Point	ASTM D 6749	°C	-9
Base Number	ASTM D 2896	mgKOH/g	7.0
Sulfated Ash	ASTM D 874	Wt%	0.90



# AUTOMOTIVE OILS

## GASOLINE ENGINE OILS

### APSCO Super Power 20W-50 SL

A trusted name in automotive oils based on revolutionary concepts meeting the performance levels required by today's gasoline engines. Super Power 20W-50 provides good cold starting, high resistance to sludge, low volatility characteristics and low oil consumption.

APSCO Super Power 20W-50 motor oil is high viscosity oil that provides a cushioning and protection against metal contact and more effective sealant that extend engine life.

### Applications

APSCO Super Power 20W-50 is recommended for gasoline vehicles of every type, turbo charged or naturally aspirated, which require API SL quality oil.

It exceeds the performance requirements of most car manufacturers.

### Specifications & Approvals

API SL

### Typical Product Properties

Test Parameters	Test Method	Unit	Typical Value
Density@ 15 °C	ASTM D 4052	g/ml	0.8932
Kinematic Viscosity , 40° C	ASTM D 445	c.St	172.3
Kinematic Viscosity , 100°C	ASTM D 445	c.St	19.0
Viscosity Index	ASTM D 2270	-	125
CCS Viscosity @ -15° C	ASTM D 5293	cP	8800
Pour Point	ASTM D 6749	°C	-27
Flash Point	ASTM D 92	°C	238
Base Number	ASTM D 2896	mgKOH/g	6.5
Sulfated Ash	ASTM D 874	Wt%	0.95

### APSCO Super Power 10W-30 API – SL

A new generation of automotive oils based on revolutionary concepts meeting the performance levels required by today's gasoline engines. Super Power 10W-30 is blended with the most advanced additive package, which enables it to give exceptional performance under most severe operating conditions. It provides effective protection against oxidation, wear and corrosion under high temperature operations and remains a stable multi-grade.

#### Applications

APSCO Super Power 10W-30 is recommended for gasoline engine passenger and commercial vehicles of every type, turbo charged or naturally aspirated, which require API SL quality oil. It can also be used for engines where API Service Category SJ and earlier categories are recommended.

#### Specifications & Approvals

API SL

#### Typical Product Properties

Test Parameters	Test Method	Unit	Typical Value
Density@ 15 °C	ASTM D 4052	g/ml	0.882
Kinematic Viscosity , 40°C	ASTM D 445	c.St	71.4
Kinematic Viscosity , 100°C	ASTM D 445	c.St	10.9
Viscosity Index	ASTM D 2270	-	141
CCS Viscosity @ -25°C	ASTM D 5293	cP	6700
Pour Point	ASTM D 6749	°C	-27
Flash Point	ASTM D 92	°C	220
Base Number	ASTM D 2896	mgKOH/g	6.5
Sulfated Ash	ASTM D 874	Wt%	0.95



# AUTOMOTIVE OILS

## GASOLINE ENGINE OILS

### APSCO Super Power 10W-40 Semi Synthetic API SN

Apsco Super Power 10W-40 is formulated from high quality base oils combined with modern performance additives to help provide long engine life and protect critical engine parts from lubricant related failures for your vehicle's OEM recommended oil change interval in mileage or in the time of use whichever is longer.

### Applications

Apsco Super Power 10W-40 is recommended for gasoline fueled automobiles and light duty trucks where a higher viscosity API SN, SM, SL or SJ oil is

### Typical Product Properties

Test Parameters	Unit	Method	Specifications		Typical Value
			Min	Max	
Appearance	-	Visual	Clear & Bright	-	C&B
Color, ASTM	-	D-1500	-	-	L2.0
Density, 15 °C	g/ml	D-4052	-	-	0.8725
Kinematic Viscosity , 100°C	cSt	D-445	13.5	14.5	14.2
Kinematic Viscosity , 40°C	cSt	D-445	-	-	97.7
Viscosity Index	-	D-2270	145	-	148
CCS Viscosity @ -25°C	cP	D-5293	-	7000	6900
Foam Seq II T/S	ml	D-892	-	50/0	0/0
Pour Point	°C	D-6749	-	-33	-42
Flash Point COC	°C	D-92	200	-	220+
Base Number	mgKOH/g	D-2896	6.5	-	6.6



### APSCO Super Power 5W-30      Semi Synthetic API SN ILSAC GF-5

Apsco Super Power 5W-30 is formulated from high quality base oils combined with modern performance additives to help provide long engine life and protect critical engine parts from lubricant related failures for your vehicle's OEM recommended oil change interval in mileage or in the time of use whichever is longer.

#### Applications

Apsco Super Power 5W-30 is recommended for gasoline fueled automobiles and light duty trucks requiring an API SN, SM, SL or SJ.

Before using APSCO Super Power motor oils, consult the owner's manual of the vehicle for the manufacturer's recommended viscosity grade and API Service Classification.

#### Typical Product Properties

Test Parameters	Unit	Method	Specifications		Typical Value
			Min	Max	
Appearance	-	Visual	Clear & Bright	-	C&B
Color, ASTM	-	D-1500	+/- 0.5	-	L2.0
Density, 35 °C	g/ml	D-4052	-	-	0.86
Kinematic Viscosity , 100°C	cSt	D-445	10	11	10.5
Kinematic Viscosity , 40°C	cSt	D-445	-	-	61.9
Viscosity Index	-	D-2270	-	-	160
CCS Viscosity @ -30°C	cP	D-5293	-	7000	5850
Foam Seq II T/S	ml	D-892	-	50/0	10/0
Pour Point	°C	D-6749	-	-27	-39
Flash Point COC	°C	D-92	200	-	218
Base Number	mgKOH/g	D-2896	6	-	8.2
MRV, @ -35°C	cP	D-4684	-	60000	29800



# AUTOMOTIVE OILS

## GASOLINE ENGINE OILS

### APSCO Super Power 5W-40 Full Synthetic API SN/CF ACEA A3/B3 A3/B4

Apsco Super Power Fully Synthetic 5W-40 is the most advanced performance synthetic engine oil designed to provide ultimate cleaning power, wear protection and overall performance. It exceeds the requirements of the leading industry and car manufacturers' standards required for newer modern gasoline and diesel powered automobile engines.

#### Applications

Apsco Super Power Fully Synthetic 5W-40 is recommended for all types of modern vehicles, especially high-performance turbo-charged, supercharged gasoline and diesel multi-valve fuel injected engines found in passenger cars, SUVs, light vans and trucks

#### Typical Product Properties

Test Parameters	Test Method	Typical Value
Viscosity, @ 40°C (mm <sup>2</sup> /s)	ASTM D445	85.0
Viscosity, @ 100°C (mm <sup>2</sup> /s)	ASTM D445	14.2
CCS Viscosity, @ -30°C (cp)	ASTM D5293	6000
MRV @ -35°C (cp)	ASTM D4684	36917
Flash Point C°	ASTM D92	228
Foaming Seq.II (ml/ml)	ASTM D892	0/0
Viscosity Index	ASTM D4951	170
Density 15°C	ASTM D4951	0.8550
Color	ASTM D4951	L3.0
Base Number	ASTM D4951	10.1

### APSCO Super Power 5W-30 Advanced Fully Synthetic API SN/CF ILSAC GF-5

Apsco Super Power 5W-30 Advanced Fully Synthetic is an advanced performance synthetic engine oil designed to help provide exceptional cleaning power, wear protection and overall performance. Apsco Super Power 5W-30 has been expertly engineered to help prolong the life and maintain the efficiency of emission systems in both diesel and gasoline powered automobiles. Apsco Super Power 5W-30 meets or exceeds the requirements of many leading industry and car manufacturers' standards required for newer modern diesel and gasoline powered passenger car engines.

#### API SN/CF

**APSCO Super Power 5W-30 Advanced Fully Synthetic meets the requirement of API, SN, SM.**

**It also meets the latest ILSAC GF-5 ( Starburst Certification Symbol ) specification.**

#### Typical Product Properties

Test Parameters	Test Method	Unit	Specifications		Typical Value
			Min	Max	
Appearance	Visual	-	Clear & Bright	-	C&B
Color	ASTM D-1500	-	+/- 0.5	-	L2.5
Density, 35 °C	ASTM D-4052	g/ml	-	-	0.8521
Kinematic Viscosity , 100°C	ASTM D-445	cSt	10	11	10.5
Kinematic Viscosity , 40°C	ASTM D-445	cSt	-	-	61.0
Viscosity Index	ASTM D-2270	-	-	-	162
CCS Viscosity @ -30°C	ASTM D-5293	cP	-	7000	5000
Foam Seq II T/S	ASTM D-892	ml	-	50/0	10/0
Pour Point	ASTM D-6749	°C	-	-27	-36
Flash Point COC	ASTM D-92	°C	200	-	218
Base Number	ASTM D-2896	mgKOH/g	6	-	8.2
MRV, @ -35°C	ASTM D-4684	cP	-	60000	19800



# AUTOMOTIVE OILS

## GASOLINE ENGINE OILS

### APSCO SuperSyn 0W-20,0W-30,0W-40 API SN

New generation Gasoline Engine Oils.

#### Product Description :

These are ultra high quality engine oils that are prepared from unique synthetic base oils. These are of the special viscosity products that very well quench the lubrication needs of moving surfaces of the engine from the very start to protect from the wearing at low temperatures, and at the same owning to high film strength maintain the cushion effects on high accelerating speeds with maximum fuel economy. Combination with the superior quality additives give dynamic performance that sustains the life of oil for longer times than conventional products & thus keeping precious engine leaning on & on all the time in all weathers.

#### Products meet the following claims:

0W-20	API SN
0W-30	API SN/SN-RC ILSAC GF-5
0W-40	API SN/CF ACEA A3/B3 A3/B4
MB	229.3 / 229.5
VW	501/ 01/502 00/505
BMW	Longlife-01
Renault	RN 0700/RN0710
Porsche	A40

#### Specifications:

Test Parameters	Test Method	Unit	0W- 20	0W- 30	0W- 40
Appearance	Visual	None	Clear Bright Fluid	Clear Bright Fluid	Clear Bright Fluid
Color	ASTMD1500	Rating	L 2.5	2.5	L3.0
Kinematic Viscosity@40°C	ASTMD 445	mm <sup>2</sup> /sec (cSt)	49.1	59.3	78.6
Kinematic Viscosity @ 100°C	ASTMD 445	mm <sup>2</sup> /sec (cSt)	9.29	11.0	14.3
Density, 15°C	ASTMD 4052	g/ml 15°C	0.8454	0.846	0.8441
Cold Cranking Viscosity, -35°C	ASTMD 5293	cp,	5375	5890	6080
Apparent -40°C	ASTMD 5293	mPa.sec	26800	39500	44300
Yield Strength		Pa	<35	<35	<35
Pour Point,	ASTMD 6749	°C	-48	-45	-45
Flash Point, <sub>COC</sub>	ASTMD 92	°C	>220	>220	>230
Base Number	ASTMD 2896	mg-KOH/g	7.0	7.0	7.0

APSCO

LUBRICANTS

AUTOMOTIVE OILS

DIESEL ENGINE OILS

APSCO MAXPOWER Diesel 70 API - CF/SF	16
APSCO MAXPOWER Diesel 50 API - CF/SF	17
APSCO MAXPOWER Diesel 40 API - CF/SF	18
APSCO MAXPOWER Diesel 15W40 - CF-4	19
APSCO MAXPOWER Diesel 15W40 - CH-4	20
APSCO MAXPOWER Diesel 20W-50- CH-4	21
APSCO MAXPOWER Diesel 15W-40- CI-4	22
APSCO MAXPOWER Diesel XHP 10W-40	23
APSCO MAXPOWER Diesel EHP 10W-40 CJ-4	24







# AUTOMOTIVE OILS

## DIESEL ENGINE OILS

### APSCO MAX POWER Diesel 70 API - CF/SF

APSCO MAX POWER Diesel engine oil 70 is used for automotive and industrial applications. It is formulated from high quality virgin base stocks, and contain a balanced additive system comprising of dispersants, detergents, rust inhibitors, anti-oxidant and anti-wear agents. Maintains excellent control of oil consumption under high load and temperature conditions.

#### Applications

APSCO MAX POWER DIESEL 70 engine oil is recommended for automotive diesel engine in truck, vans, pick-ups and buses as well as in stationary engine where API Service Category CF is required. This product is recommended to be used with Automotive Gasoline Engines requiring API SF Service level.

#### Typical Product Properties

Test Parameters	Test Method	Unit	Typical Value
Density@ 15 °C	ASTM D 4052	g/ml	0.905
Kinematic Viscosity , 40 °C	ASTM D 445	c.St	258
Kinematic Viscosity , 100 °C	ASTM D 445	c.St	21.0
Viscosity Index	ASTMD 2270	-	96
Foaming II Seq Tend/Stability	ASTMD 892	ml/ml	0/0
Flash Point COC	ASTM D 92	°C	258
Pour Point	ASTMD 6749	°C	-12
Base Number	ASTM D 2896	mgKOH/g	10.0
Sulfated Ash	ASTM D 874	Wt%	1.5

### APSCO MAX POWER Diesel 50 API - CF/SF

APSCO MAX POWER Diesel engine oil 50 is used for automotive and industrial applications. It is formulated from high quality virgin base stocks, and contain a balanced additive system comprising of dispersants, detergents, rust inhibitors, anti-oxidant and anti-wear agents. Maintains excellent control of oil consumption under high load and temperature conditions.

#### Applications

APSCO MAX POWER DIESEL 50 engine oil is recommended for automotive diesel engine in truck, vans, pick-ups and buses as well as in stationary engine where API Service Category CF is required. This product is recommended to be used with Automotive Gasoline Engines requiring API SF Service level.

#### Typical Product Properties

Test Parameters	Test Method	Unit	Typical Value
Density@ 15°C	ASTM D 4052	g/ml	0.905
Kinematic Viscosity , 40° C	ASTM D 445	c.St	258
Kinematic Viscosity , 100° C	ASTM D 445	c.St	20.4
Viscosity Index	ASTM D 2270	-	96
Foaming II Seq Tend/Stability	ASTM D 892	ml/ml	0/0
Flash Point COC	ASTM D 92	°C	258
Pour Point	ASTM D 6749	°C	-12
Base Number	ASTM D 2896	mgKOH/g	10.0
Sulfated Ash	ASTM D 874	Wt%	1.5



# AUTOMOTIVE OILS

## DIESEL ENGINE OILS

### APSCO MAX POWER DIESEL 15W-40 API CI-4/SL

APSCO MAX POWER Diesel 15W-40 is Ultra High Performance oil designed to meet the most severe performance requirements of the latest high output, low emission European diesel engines including those equipped with Exhaust Gas Recirculation (EGR) after treatment system. Extends engine life by controlling deposits & protecting against wear and protects from rust and corrosion.

#### Applications

- Naturally aspirated and turbocharged high speed, four-stroke diesel engines.
- All automotive diesel engines and High speed diesel engines equipped with EGR.
- Commercial road transport in light, medium and heavy-duty service, and Off-highway vehicles.
- All construction and earth-moving equipment.

Approvals: MB228.3, VOLVO-VDS3, CAT-ECF2

#### Typical Product Properties

Test Parameters	Test Method	Unit	Typical Value
Density@ 15°C	ASTM D 4052	g/ml	0.889
Kinematic Viscosity , 40°C	ASTM D 445	c.St	106
Kinematic Viscosity , 100°C	ASTM D 445	c.St	14.6
Viscosity Index	ASTM D 2270	-	140
CCS Viscosity @ -20°C	ASTM D 5293	cP	6300
Flash Point COC	ASTM D 92	°C	220
Pour Point	ASTM D 6749	°C	-30
Base Number	ASTM D 2896	mgKOH/g	10.0
Sulfated Ash	ASTM D 874	Wt%	1.2



# AUTOMOTIVE OILS

## DIESEL ENGINE OILS

### APSCO MAX POWER Diesel 40 API - CF/SF

APSCO MAX POWER Diesel engine oil 40 is used for automotive and industrial applications. APSCO MAX POWER Diesel 40 is formulated from high quality virgin base stocks, and contain a balanced additive system comprising of dispersants, detergents, rust inhibitors, anti-oxidant and anti-wear agents. Maintains excellent control of oil consumption under high load and temperature conditions.

#### Applications

APSCO MAX POWER DIESEL 40 is recommended for automotive diesel engine in truck, vans, pick-ups and buses as well as in stationary engine where API Service Category CF is required. This product is recommended to be used in Automotive engines requiring API SF service level.

#### Typical Product Properties

Test Parameters	Test Method	Unit	Typical Value
Density@ 15°C	ASTM D 4052	g/ml	0.900
Kinematic Viscosity , 40° C	ASTM D 445	c.St	151
Kinematic Viscosity , 100° C	ASTM D 445	c.St	14.8
Viscosity Index	ASTM D 2270	-	98
Foaming II Seq Tend/Stability	ASTM D 892	ml/ml	0/0
Flash Point COC	ASTM D 92	°C	252
Pour Point	ASTM D 6749	°C	-15
Base Number	ASTM D 2896	mgKOH/g	10.0
Sulfated Ash	ASTM D 874	Wt%	1.5

### APSCO MAX POWER DIESEL 15W40 API CF-4

APSCO MAX POWER Diesel 15W40 CF-4 is a premium quality multi grade automotive engine oil meeting obsolete, current and future engine oil performance levels, particularly European and American standards. It is an ideal mixed fleet engine oil meeting API CF-4. The additive chemistry used in manufacturing APSCO Diesel CF-4 has proven its performance in the field. It also covers MB 228.0 & ACEA E2-96 (2007)

### Applications

APSCO MAX POWER Diesel 15W40 CF-4 is specially designed for heavy-duty diesel vehicles and passenger cars. It has long drain capability and it is recommended for both on-highway and off-highway vehicles fitted with new engines for low emissions and old engines of conventional design fuelled by low and high sulfur diesel fuels.

### Typical Product Properties

Test Parameters	Test Method	Unit	Typical Value
Density@ 15°C	ASTM D 4052	g/ml	0.890
Kinematic Viscosity , 40°C	ASTMD 445	c.St	112
Kinematic Viscosity , 100°C	ASTMD 445	c.St	14,5
Viscosity Index	ASTM D 2270	-	130
CCS Viscosity @ -20°C	ASTM D 5293	cP	6700
Flash Point COC	ASTMD 92	°C	220
Pour Point	ASTMD 6749	°C	-30
Base Number	ASTMD 2896	mgKOH/g	10
Sulfated Ash	ASTMD 874	Wt%	1.32



## APSCO Maxpower XHP Diesel 10W-40 MB 228.5

### Product Description

APSCO Diesel 10W-40 is a synthetic blend, extra high performance diesel engine oil engineered to provide outstanding lubrication to modern, high performance diesel engines used in severe on and off-highway applications. This diesel engine oil is designed using the highest performance base oils which provide excellent low temperature fluidity, high temperature viscosity retention, volatility control, and fuel economy improvement. These base oils are enhanced with an advanced additive system, which provides a high level of protection to all parts of the engine.

### Features & Benefits

High output, low emission engines significantly increased demands on engine lubricants. Tighter engine designs reduce oil consumption, resulting in less fresh oil makeup to replenish depleted additives. Thermal stresses on the lubricant are increased with the use of inter-coolers and turbochargers. Higher fuel injection pressure and retarded timing improve burn efficiency, but also increase engine temperatures, volatility, and soot loading of the oil. Exceptional performance in both modern diesel engines as well as older models.

### Typical Product Properties

Test Parameters	Test Method	Unit	Typical Value
Density	ASTM D 4052		0.867
Kinematic Viscosity , 40° C	ASTM D 445	c.St	89.0
Kinematic Viscosity , 100° C	ASTM D 445	c.St	13.5
Viscosity Index	ASTM D 2270	-	149
Pour Point	ASTM D 97	°C	-42
Flash Point COC	ASTM D 92	°C	226
Base Number	ASTM D 2896	mgKOH/g	15.9
Sulfated Ash	ASTM D 874	Wt%	1.9



# AUTOMOTIVE OILS

## DIESEL ENGINE OILS

### APSCO MAX POWER DIESEL 15W40 API CH-4/SJ

APSCO MAX POWER Diesel 15W40 CH4, is a premium quality multi grade automotive engine oil meeting obsolete, current and future engine oil performance levels, particularly European and American standards. It is an ideal mixed fleet engine oil meeting API CH4/SJ. The additive chemistry used in manufacturing APSCO Diesel CH4 has proven its performance in the field. APSCO MAX POWER Diesel 15W40 CH4 can equally be used in gasoline vehicles and passenger cars requiring SJ.

#### Applications

APSCO MAX POWER Diesel 15W40 CH4 is specially designed for heavy-duty diesel vehicles and passenger cars. It has long drain capability and it is recommended for both on-highway and off-highway vehicles fitted with new engines for low emissions and old engines of conventional design fuelled by low and high sulfur diesel fuels.

Approvals: MB228.3, VOLVO-VDS2, CAT-ECF1

#### Typical Product Properties

Test Parameters	Test Method	Unit	Typical Value
Density@ 15°C	ASTM D 4052	g/ml	0.890
Kinematic Viscosity , 40°C	ASTM D 445	c.St	111
Kinematic Viscosity , 100°C	ASTM D 445	c.St	14.5
Viscosity Index	ASTM D 2270	-	136
CCS Viscosity @ -20°C	ASTM D 5293	cP	6700
Flash Point COC	ASTM D 92	°C	220
Pour Point	ASTM D 6749	°C	-30
Base Number	ASTM D 2896	mgKOH/g	10
Sulfated Ash	ASTM D 874	Wt%	1.27

### APSCO MAX POWER DIESEL 20W-50 API CH-4

APSCO MaxPower 20W-50 CH-4 is a high performance, heavy duty engine oil that provides proven protection to diesel engines operating in severe on and off-highway service applications. APSCO MaxPower 20W-50 CH-4 is recommended for use in a wide range of heavy duty applications and operating environments found in the trucking, construction, and agricultural industries.

#### Features

- Thermal and oxidation stability
- Excellent detergency/dispersancy
- Stay-in-grade shear stability

#### Advantages and Potential Benefits

- Controls sludge build-up and deposits
- Cleaner engines and longer engine life
- Helps reduce oil consumption and wear

#### Applications

- Naturally aspirated and turbocharged high speed, four-stroke diesel engines.
- All automotive diesel engines and High speed diesel engines equipped with EGR.
- Commercial road transport in light, medium and heavy-duty service, and Off-highway vehicles.
- Construction and earth-moving equipment. • Diesel Engine Power Generators.

#### Typical Product Properties

Test Parameters	Test Method	Unit	Typical Value
Appearance	Visual	-	C+B
Color	ASTM D-1500	-	L 2.5
Odour	Oil factory	-	Marketable
K/Visc.@ 100 C, °cSt	ASTM D-445	c.St	20.2
Zinc, wt %	ASTM D-5185	% wt	0.130
Ca, wt %	ASTM D-5185	% wt	0.100
Pour Point	ASTM D-6749	° C	-27
Flash Point COC	ASTM D-92	° C	215
Foam Seq II, ml/ml	ASTM D-892 alt	ml	0/0
CCS @-15 C °	ASTM D-5293	-	8596



# AUTOMOTIVE OILS

## APSCO MAXPOWER EHP 10W-40 API CJ-4

Synthetic Diesel Engine Oil

Emission Protection Diesel Engine Oil

APSCO MAXPOWER EHP 10W-40 is a synthetic extra high performance diesel engine oil engineered to provide lubrication to modern, high performance, low emissions engines used in severe applications. This engine oil is designed using high performance base oils which provide excellent low temperature fluidity, high temperature viscosity retention and volatility control. The new advanced additive system has been expertly engineered to help towards long engine life and maintain the efficiency of emission reduction systems including the Diesel Particulate Filter (DPF). Its specifications and approvals allow APSCO Maxpower EHP 10W-40 to target mixed fleet applications.

### Specifications and Approvals

APSCO Maxpower EHP meets or exceeds the requirements of :

ACEA E9/E7/E6/E4, API CJ-4/ CI-4 Plus/ CI-4, JASO DH-2

DAF Extended Drain, Cummins CES 20081, CAT ECF-3

MB-Approval 228.51/235.28

### Typical Product Properties

Test Parameters		Unit	Typical Value
SAE Grade		10W-40	
Viscosity,	ASTM D 445		
cSt @ 40°C			90.6
cSt @ 100°C			13.6
Viscosity Index,	ASTM D 2270		152
Sulfated Ash, wt%,	ASTM D 874		1.0
Total Base	ASTM D 2896	mg-KOH/g	12.0
Pour Point, °C,	ASTM D 97	°C	-36
Flash Point, °C,	ASTM D 92		236
Density @ 15°C kg/l,	ASTM D 4052		0.866



# AUTOMOTIVE OILS

## GEAR OILS

APSCO Gear Oils	GL-4	SAE 90 , SAE 140	26
APSCO Gear Oil API	GL-4	SAE 80W90	27
APSCO Gear Oils API	GL-5,	SAE 80W90 , 85W-140	28







# AUTOMOTIVE OILS

## GEAR OILS

### APSCO Gear Oils GL4 SAE 90 , SAE 140

APSCO Gear Oil GL4 is a high-quality lubricant blended from solvent-refined mineral base oils and selected chemical additives. Due to its high shear stability, it provides excellent protection for gears and can be used over a wide range of temperatures, it also provides protection against foaming of oil, wear and rusting of gears.

#### Applications

Recommended for the type of service characteristics of gears, particularly hypoid, in passenger cars and other automotive-type equipment operated under the high-speed/low torque and low-speed/high torque conditions.

#### Typical Product Properties

Test Parameters	Test Method	Unit	Typical Value	
			90	140
Appearance	Visual	-	C&B	C&B
Density@ 15 °C	ASTM D 4052	g/ml	0.9000	0.9048
Kinematic Viscosity , 40° C	ASTM D 445	c.St	209	393
Kinematic Viscosity , 100°C	ASTM D 445	c.St	18.40	27.00
Viscosity Index	ASTM D 2270	-	96	96
Foaming II Seq Tend/Stability	ASTM D 892	ml/ml	0/0	0/0
Pour Point	ASTM D 6749	°C	-9	-9
Flash Point COC	ASTM D 92	°C	226	256

### APSCO Gear Oil API GL-4 SAE 80W90

APSCO Gear Oil 80W90 API GL-4 is high quality lubricant blended from solvent refined mineral base oils & an advanced additive system. A prime quality formula for carrying higher loads & speeds.

This oil provides maximum output against wear with excellent thermal stability, corrosion & rust protection. SAE 80W90 provides good low temperature operations & protection.

#### Applications

Recommended for the service of hypoid gear units of passenger cars, on highway light & heavy duty trucks & commercial vehicles for manual transmission, axle and final drives requiring API GL-4 performance.

Off highway, includes construction, mining, quarrying & agriculture. Heavy duty industrial applications including hypoid gears operating under moderate conditions.

#### Typical Product Properties

Test Parameters	Test Method	Unit	Typical Value
Density@ 15 °C	ASTM D 4052	kg/Liter	0.8950
Kinematic Viscosity , 40 °C	ASTM D 445	c.St	143.2
Kinematic Viscosity , 100 °C	ASTM D 445	c.St	14.80
Viscosity Index	ASTM D 2270	-	100
Foaming II Seq Tend/Stability	ASTM D 892	ml/ml	10/0
Pour Point	ASTM D 6749	°C	-27
Flash Point COC	ASTM D 92	°C	224
Copper Corrosion, 3h, 120C	ASTM D 130	Scale	2a



# AUTOMOTIVE OILS

## GEAR OILS

### APSCO Gear Oils API GL-5, SAE 80W90 , 85W-140

APSCO Gear Oil API GL-5 series is heavy-duty extreme-pressure multi grade gear oil, developed to meet the most severe service requirements of manual transmissions in automotive vehicles.

#### Applications

Recommended for use in hypoid gear units of passenger cars and other automotive gear units operated under high-speed/shock load, high-speed/low torque and low-speed/high torque conditions. Also provides low temperature viscosity characteristics at lower operating temperature conditions.

#### Typical Product Properties

Test Parameters	Test Method	Unit	Typical Value	
			80W90	85W-140
Appearance	Visual	-	C&B	C&B
Density@ 15 °C	ASTM D 4052	g/ml	0.8980	0.9075
Kinematic Viscosity , 40° C	ASTM D 445	c.St	143.2	375
Kinematic Viscosity , 100°C	ASTM D 445	c.St	14.80	28
Viscosity Index	ASTM D 2270	-	100	99
Foaming II Seq Tend/Stability	ASTM D 892	ml/ml	0/0	0/0
Pour Point	ASTM D 6749	°C	-27	-27
Flash Point COC	ASTM D 92	°C	226	236



29



# AUTOMOTIVE OILS

## AUTOMATIC TRANSMISSION FLUIDS

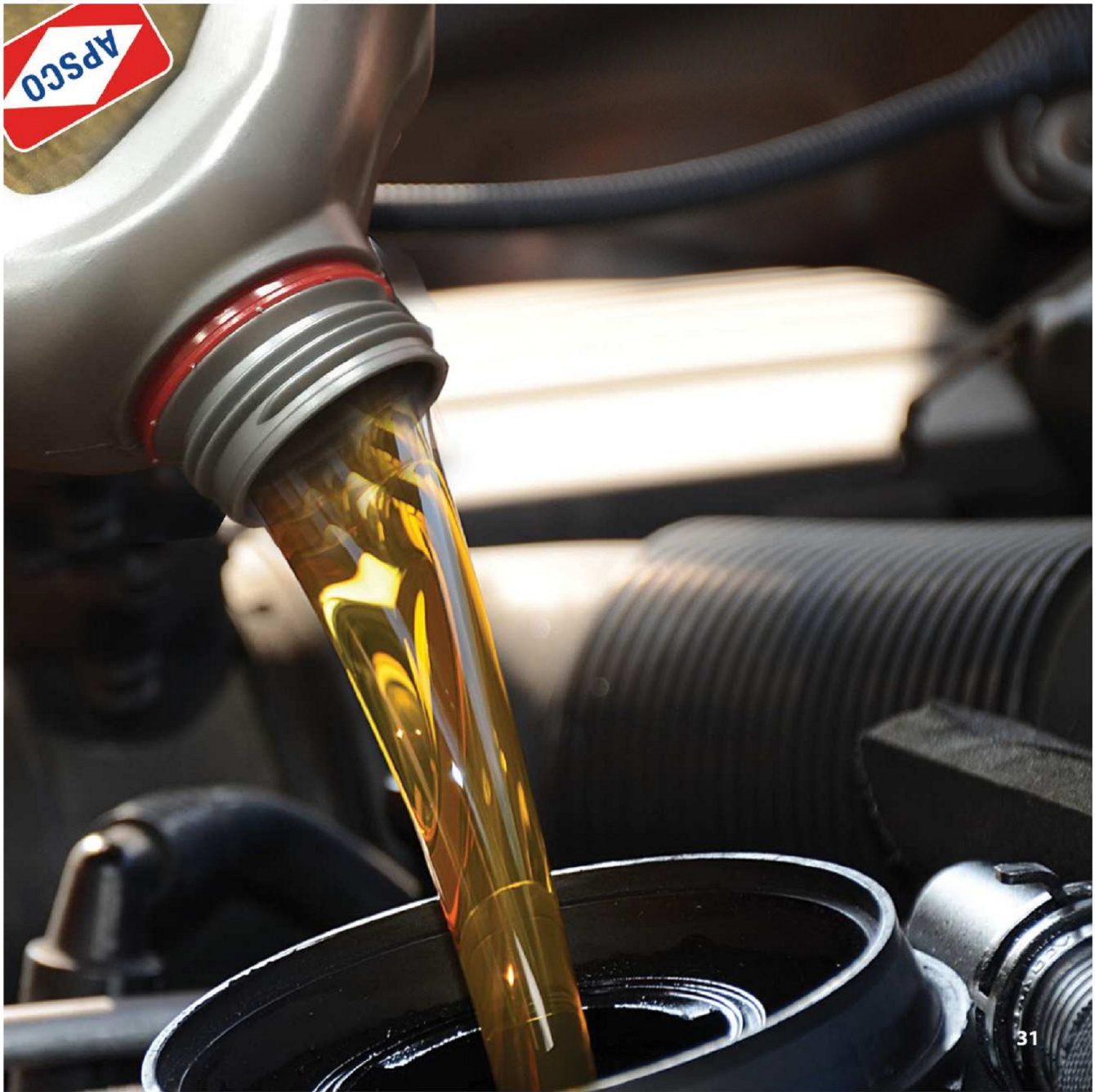
APSCO ATF Dexron II  
APSCO ATF Dexron III

32  
33



30







# AUTOMOTIVE OILS

## AUTOMATIC TRANSMISSION FLUIDS

### APSCO ATF Dexron II

APSCO Transmission Fluid ATF Dexron II is high performance, multifunctional fluid designed to meet the requirements of Dexron II, & Allison C4 specifications. It provides good oxidation stability & friction resistance ensuring consistent & smooth power shifting.

### Applications

APSCO ATF Dexron II is formulated to meet the automatic transmission fluid requirements of modern vehicles which require Dexron II D type fluid. Also meets the hydraulic fluid requirements of certain industrial and mobile equipment.

### Typical Product Properties

Test Parameters	Test Method	Unit	Typical Value
Color	Visual	-	Red
Density	ASTM D 4052	g/ml	0.8721
Kinematic Viscosity , 40°C	ASTM D 445	C.ST	36.4
Kinematic Viscosity , 100°C	ASTM D 445	C.ST	7.10
Viscosity Index	ASTM D 2270	-	165
Brookfield Viscosity , -40°C	ASTM D 2983	cP	<50000
Pour Point	ASTM D 5950	°C	-40°C max
Flash Point COC	ASTM D 92	°C	180
Foam Seq II Tendency	ASTM D 892	ml	20
Foam Seq II Stability	ASTM D 892	ml	0

### APSCO ATF Dexron III

APSCO Transmission Fluid ATF Dexron III is high performance, multifunctional fluid designed to meet the requirements of Dexron III, & Allison C4 specifications. It provides good oxidation stability & friction resistance ensuring consistent & smooth power shifting.

#### Applications

APSCO ATF Dexron-III is formulated to meet the automatic transmission fluid requirements of modern vehicles. Also meets the hydraulic fluid requirements of certain industrial and mobile equipment.

#### Typical Product Properties

Test Parameters	Test Method	Unit	Typical Value
Color	Visual	-	Red
Density	ASTM D4052	g/ml	0.8644
Kinematic Viscosity , 40°C	ASTMD 445	C.ST	31.0
Kinematic Viscosity , 100°C	ASTMD 445	C.ST	7.20
Viscosity Index	ASTMD 2270	-	180
Brookfield Viscosity , -40°C	ASTMD 2983	cP	19500
Pour Point	ASTMD 5950	°C	-42°C max
Flash Point COC	ASTMD 92	°C	180
Foam Seq II Tendency	ASTMD 892	ml	20
Foam Seq II Stability	ASTMD 892	ml	0



LUBRICANTS

# AUTOMOTIVE OILS

## BRAKE FLUIDS

APSCO Brake Fluid	DOT 3	36
APSCO Brake Fluid	DOT 4	37

34







35





## BRAKE FLUIDS

### **APSCO Brake Fluid DOT 3**

APSCO Brake Fluid DOT 3, series is formulated as non-petroleum chemical fluids for use in the hydraulic brake and clutch systems of automotive vehicles. They offer protection against corrosion and rusting of metal parts, even in the presence of moisture. They possess high boiling and low pour points. They do not affect natural or synthetic rubber washers.

#### **Application :**

APSCO Brake Fluid DOT 3, series is suitable for all hydraulic brake and clutch, disc and drum systems where such type of fluid is specified. They do not affect natural or synthetic rubber seal materials generally used.

#### **Specification :**

APSCO Brake Fluid DOT 3, meets and exceeds the following industry specifications:

- FMVSS 116 DOT 3
- SAE J1703



## **APSCO Brake Fluid DOT 4**

APSCO Brake Fluid DOT 4, series is formulated as non-petroleum chemical fluids for use in the hydraulic brake and clutch systems of automotive vehicles. They offer protection against corrosion and rusting of metal parts, even in the presence of moisture. They possess high boiling and low pour points. They do not affect natural or synthetic rubber washers.

### **Application :**

APSCO Brake Fluid DOT 4, series is suitable for all hydraulic brake and clutch, disc and drum systems where such type of fluid is specified. They do not affect natural or synthetic rubber seal materials generally used.

### **Specification :**

APSCO Brake Fluid DOT 4, meets and exceeds the following industry specifications:

- FMVSS 116 DOT 4
- SAE J1703



# INDUSTRIAL OILS

APSCO GEAR LUBRICANTS ISO VG 68/100/150/220/320/460	40
APSCO HYDRAULIC ISO 32/37/46/68/100/150	42
Hydraulic Oil 10W	43
APSCO Circulating Oil 150/220/320/460	44
APSCO Compressor Oil 32/46/68/100	45
APSCO Turbine oil 32/46/68/100	46
APSCO Transformer Oil	48
APSCO Therm Oil/Heat Transfer Oil	49





# INDUSTRIAL OILS

## APSCO HYDRAULIC ISO 32/37/46/68/100/150

APSCO Hydraulic AW Oil Series are blended from high quality, chemically stable solvent refined base oils and incorporated with balanced additive system which includes anti wear, oxidation rust and corrosion inhibitors. Utilization of Hydraulic Oils AW will provide excellent wear protection in hydraulic and circulation systems and good air release properties.

### Applications

Recommended for most types of hydraulic systems, moderately loaded gears, bearing lubricated by circulation, bath and ring oiling. They are not recommended to be used with yellow/white metals components. They are available in wide range of viscosities to meet a variety of design & operating requirements.

### Typical Product Properties

Test Parameters	Test Method	Unit	Typical Value					
ISO Grade	-	-	32	37	46	68	100	150
Density @ 15°C	ASTM D 4052	Kg/Ltr	0.874	0.882	0.879	0.885	0.890	0.895
Kinematic Viscosity , 40 °C	ASTM D 445	c.St	32.0	37.0	47.0	69.0	99.0	150
Kinematic Viscosity , 100°C	ASTM D 445	c.St	5.45	5.9	6.9	8.9	11.2	14.7
Viscosity Index	ASTM D 2270	-	100	102	102	103	99	98
Flash Point	ASTM D 92	°C	200	200	200	222	232	232
Pour Point	ASTM D 5950	°C	-12	-9	-9	-9	-6	-6
Neutralization No.	ASTM D 974	m KOH/g	0.45	0.45	0.45	0.45	0.45	0.45







# INDUSTRIAL OILS

## APSCO GEAR LUBRICANTS ISO VG 68/100/150/220/320/460

APSCO Industrial Gear Oil is a high-quality lubricant blended from solvent refined mineral base oils and selected chemical additives. Due to its high shear stability, It provides excellent protection for Industrial gears and can be used over a wide range of temperatures. It also provides protection against foaming, wear and rusting of gears.

### Applications

Recommended for all type of service characteristics of gears, particularly hypoid, in industrial vehicles and other type equipment operated under the high speed/low torque and low speed/high torque conditions.

### Typical Product Properties

Test Parameters	Test Method	Unit	Typical Value					
ISO Grade	-	-	68	100	150	220	320	460
Appearance	Visual	-	C&B	C&B	C&B	C&B	C&B	C&B
Density @ 15°C	ASTM D 4052	Kg/Ltr	0.888	0.893	0.896	0.900	0.905	0.909
Kinematic Viscosity , 40°C	ASTM D 445	c.St	68	100	151	220	320	440
Kinematic Viscosity , 100°C	ASTM D 445	c.St	8.6	11.4	14.8	18.9	24.8	29.7
Viscosity Index	ASTM D 2270	-	95	95	95	95	95	95
Flash Point	ASTM D 92	°C	234	234	236	248	250	258
Pour Point	ASTM D 97	°C	-9	-9	-9	-9	-9	-9
Foam Seq II Tendency	ASTM D 892	ml	0/0	0/0	0/0	0/0	0/0	0/0

## Hydraulic Oil 10W

APSCO Hydraulic 10W Oil is a high performance hydraulic oil formulated from advanced base oils and a balanced additive system designed to satisfy a wide range of heavy-duty hydraulic equipment requirements. This product meeting API CC/SC with high anti-wear & oxidation contents is an effective balance of ashless dispersants and metallic detergents combined with inhibitors to control oxidation, wear, corrosion and rust. APSCO Hydraulic 10W is used in a wide range of on and off-highway hydraulic applications.

### Applications

Hydraulic systems and components used in conjunction with equipment from leading manufacturers. Hydraulic systems where wide ambient temperatures are encountered.

Hydraulic systems containing gears and bearings where good anti-wear properties are required.

On and Off-highway industries including: trucking, construction, mining, quarrying, and agriculture.

### Typical Product Properties

Test Parameters	Test Method	Unit	Typical Value
Density, 150°C	ASTM D 4052	Kg/Liter	0.882
Kinematic Viscosity , 40 °C	ASTM D 445	c.St	41
Kinematic Viscosity , 100°C	ASTM D 445	c.St	6.5
Viscosity Index	ASTM D 2270	-	112
CCS Viscosity, -25°C	ASTM D 5293	cP	6600
Pour Point °C	ASTM D 5950	°C	-18
Flash Point °C	ASTM D 92	°C	208
Base Number	ASTM D 2896	mg/KOH/g	4.0
Zinc	ASTM D 5185	wt%	0.12
Foam Seq II T/S	ASTM D 892	ml	10/0





# INDUSTRIAL OILS

## APSCO Circulating Oil 150/220/320/460

APSCO Bearing Oil is a high quality bearing lubrication oil blended with solvent treated base oils.

### Applications

APSCO Bearing Oil is recommended for all Journal Bearing lubrication (Hydro-dynamic) mainly in rail road equipment.

### Typical Product Properties

Test Parameters	Test Method	Unit	Typical Value			
ISO Grade	ISO VG	-	150	220	320	460
Appearance	Visual	-	C&B	C&B	C&B	C&B
Density @ 15 °C	ASTM D 4052	Kg/Ltr	0.894	0.900	0.905	0.9090
Kinematic Viscosity , 40 °C	ASTM D 445	c.St	149	220	320	450
Kinematic Viscosity , 100 °C	ASTM D 445	c.St	14.9	24.80	24.80	29.70
Viscosity Index	ASTM D 2270	-	97	95	95	95
Foam Seq I T/S	ASTM D 892	ml	0/0	0/0	0/0	0/0
Flash Point COC	ASTM D 92	°C	250	250	250	264
Pour Point	ASTM D 5950	°C	-6	-6	-6	-6
Emulsion, time to 40/37/3, @ 82°C	ASTM D1401	Minutes	30	30	30	30

### APSCO Compressor Oil 32/46/68/100

APSCO Compressor Oil series has been developed to meet the latest changes in air compressors, resulting in increased capacity and efficiency. They are formulated from a high-grade base stock with a narrow distillation range, containing specially selected additives, with enhanced lubricity, anti-wear properties, and they protect compressor parts against rust. They are designed to lubricate both cylinders and crankcases. They minimize carbon and sludge deposits.

### Applications

APSCO Compressor Oil series are specially suited for single-stage reciprocating compressors up to 125 PSI, Two-stage reciprocating compressors up to 300 PSI and multi-stage reciprocating compressors after break-in with air discharge temperature up to 200°C equipment.

### Typical Product Properties

Test Parameters	Test Method	Unit	Typical Value			
SAE Grade	ISO VG	-	32	46	68	100
Density @ 15 °C	ASTM D4052	kg/Ltr	0.878	0.879	0.884	0.888
Kinematic Viscosity , 40 °C	ASTM D445	mm <sup>2</sup> /s	31.0	45.0	68.0	100
Kinematic Viscosity , 100 °C	ASTM D445	mm <sup>2</sup> /s	5.6	6.5	8.6	11.0
Viscosity Index	ASTM D2270	-	100	98	97	95
Flash Point COC	ASTM D92	°C	210	242	248	255
Pour Point	ASTM D97	°C	-12	-9	-9	-12
Rust test.	ASTM 665	-	Pass	Pass	Pass	Pass
CRC % mass of 20% Dist.	ASTM D51356	ppm	0.3	0.3	0.3	0.3





# INDUSTRIAL OILS

## APSCO Turbine oil 32/46/68/100

APSCO Turbine Oil series are high-quality inhibited oils, it is formulated from premium quality, chemically stable, high viscosity index base stocks, which are further enhanced by the addition of oxidation inhibitors. These inhibitors provide resistance to thermal degradation over long periods of time in the presence of entrained air and catalyzing metals. APSCO Turbine Oil exhibit good demulsibility, permitting water and contaminants to readily separate from the oil in the system reservoir.

### Applications

APSCO Turbine Oil series is suitable for use in water and steam turbines bearing lubrication and cooling which require mineral turbine oils. In addition, APSCO Turbine Oil promotes outstanding performance in all hydraulic systems, gear cases, bearing and other industrial units.

### Typical Product Properties

Test Parameters	Test Method	Unit	Typical Value			
SAE Grade	ISO VG	-	32	46	68	100
Density @ 15 °C	ASTM D 4052	kg/Ltr	0.874	0.879	0.884	0.889
Kinematic Viscosity , 40 °C	ASTM D 445	mm <sup>2</sup> /s	31.0	45.0	68.0	100
Kinematic Viscosity , 100°C	ASTM D 445	mm <sup>2</sup> /s	5.4	6.7	8.9	11.3
Viscosity Index	ASTM D 2270	-	100	100	100	99
Flash Point COC	ASTM D 92	°C	210	232	232	254
Pour Point	ASTM D 97	°C	-12	-9	-9	-6
Neutralization No.	ASTM D 974	Mg KOH/g	0.20	0.20	0.20	0.20
Zinc	ASTM D 5185	ppm	<10.0	<10.0	<10.0	<10.0

## APSCO TURBINE OIL D8 Series

Superior Performance Turbine Oils

### Product Description

APSCO 8-32 and 8-46 are superior performance turbine oils designed for use in steam turbines, gas turbines and combined cycle gas turbine (CCGT) applications under the most severe operating conditions. These progressive products are based on high quality base stocks for exceptional thermal / oxidation resistance along with specially selected additives formulated to provide the deposit control and "keep-clean" performance required by severe duty gas turbines as well as excellent water separability needed for steam turbine operation. The formulations also include a non-zinc antiwear system to meet the load carrying requirements of geared turbines.

In addition to meeting the separate requirements of modern steam and gas turbine designs, APSCO D-32 & D8-46 are excellent choices for combined cycle applications that require a single oil for a gas turbine and a steam turbine run in tandem.

Simultaneously meeting both deposit control and water separation requirements is the key performance highlight of this advanced lubricant technology.

The excellent thermal/oxidative resistance of these oils ensures that they can be operated in the most severe turbine environments.

The performance features of APSCO D8-32 & D8-46 oils translate into excellent equipment protection, reliable operation, with reduced down-time and extended oil change life. These products also provide the ultimate flexibility to the operator because they can be used in all turbine types: steam, gas and geared-turbines.

### Typical Properties

Test Parameters	Test Method	Unit	Typical Value	
APSCO D8			D8-32	D8-46
ISO Viscosity Grade			32	46
Viscosity ,	ASTM D 445			
cSt		@40 °C	29.6	42.4
cSt		@100 °C	5.4	6.2
Viscosity Index ,	ASTM D 2270		110	106
Pour Point,	ASTM D 97	°C	-30	-30
Flash Point COC	ASTM D 92	°C	224	244
Specific Gravity	ASTM D 4052	15.6 °C / 15.6 °C	0.86	0.87
Water Seperability	ASTM D 1401	Min. 10 ml emulsion @ 54 °C	15	15
Copper Strip Corrosion	ASTM D 130	3 hrs @ 100 °C	1A	1A
Foam Test, Tendency / Stability,	ASTM D 892	Seq I, II & III ml / ml	20/0	20/0
Air Release, mins			2	2



# INDUSTRIAL OILS

## APSCO Transformer Oil

APSCO Transformer Oil is uninhibited highly-refined naphthalenic oil specifically manufactured for use in electric transformers and switch-gears as an insulating and heat transfer medium.

### Applications

APSCO Transformer Oil conform to B.S 148/1984 and IEC specification 296 (82) and is also used as an insulating and cooling medium where oil high thermal and oxidation stability is required. It is also suitable where good gas absorbing properties are necessary like Transformer Oil immersed switch-gear, circuit breakers etc. Transformer Oil meets class I and class II of BS 148 and IEC 296 specification.

### Typical Product Properties

Test Parameters	Test Method	Unit	Typical Value
Class	-	-	B(148)
Appearance	Visual	-	B&C
	ASTM D 4052	-	0.886
Kinematic Viscosity , 40°C	ASTM D 445	mm <sup>2</sup> /s	9.0
Flash Point COC	ASTM D 93		130
Pour Point	ASTM D 97	°C	-45
Dielectric dissipation Factor	IEC 247	At 90°C	<0.001
Interfacial Tension	ISO 6295	mN/m	49
Dielectric Strength	IEC 156	Before Treatment KV	40-60
(Break Down Voltage)	IEC 296	After Treatment KV	<70
Oxidation Stability @ 100°C	IEC 1125 A		
Neutralization value	ASTM D 974	Mg KOH/g	0.15
Sludge		wt%	0.02
Oxidation Stability @ 120°C	IEC 1125 A		
Neutralization value	ASTM D 974	Mg KOH/g	0.26
Sludge		wt%	0.08
Water Content	ASTM D1533	ppm	<20
Hydrogen	IEC 628 (A)	Mm3/min	<+5

### Marine Oil 50 SAE 40

APSCO Marine Oil 50 is highly alkaline Trunk Piston Oil for crankcase and cylinder lubrication requirements of medium-speed high BMEP marine engines burning high sulphur residual fuels (3.0%-5.0%). It is developed for 'flame ring liner' operating on high sulphur residual fuel in these engines. APSCO Marine Oil 50 shall take care of TBN depletion problems since in some engines it will be severe due to low consumption.

### Applications

APSCO Marine Oil 50 is recommended as crankcase engine oil for medium speed high BMEP engines, operating on high sulphur fuels. APSCO Marine Oil 50 can also be used as 'top up' oil increase TBN level in medium speed trunk piston engines.

### Typical Product Properties

Test Parameters	Test Method	Unit	Typical Value
SAE Grade	SAE	-	40
Density @ 150 °C	ASTM D 4052	Kg/Ltr	0.920
Kinematic Viscosity , 40 °C	ASTM D 445	mm <sup>2</sup> /s	135.0
Kinematic Viscosity , 100 °C	ASTM D 445	mm <sup>2</sup> /s	14.0
Viscosity Index	ASTM D 2270	-	95
Flash Point COC	ASTM D 92	°C	240
Pour Point	ASTM D 97	°C	-6
Base Number	ASTM D 2896	mg/KOH/g	50
Sulfated Ash	ASTM D 874	wt%	6.68

### APSCO Therm Oil/Heat Transfer Oil

APSCO Therm Oil is heat transfer oil formulated from selected and highly refined petroleum base stock. They are intended for use in oil-sealed, closed, open & indirect heat transfer and cooling systems. They have high specific heat and good thermal conductivity providing more rapid heating & greater system flexibility. Flash point is stable and does not decrease significantly during services due to their thermal resistance.

#### Applications

APSCO Therm Oil heat transfer oil can be used in open and closed system in line with the respective bulk oil temperature. Not recommended to be mixed with other oils, as it may weaken the thermal resistance and oxidation stability which may cause in other properties, effecting the oil's useful life.

### Typical Product Properties

Test Parameters	Test Method	Unit	Typical Value		
ISO Grade	ISO VG	-	22	32	46
Density @ 15°C	ASTM D 4052	kg/Ltr	0.865	0.874	0.907
Kinematic Viscosity , 40°C	ASTM D 445	c.St	21.0	32.0	46.0
Kinematic Viscosity , 100°C	ASTM D 445	c.St	4.3	5.5	6.7
Viscosity Index	ASTM D 2270	-	100	99	98
Pour Point	ASTM D 97	°C	-15	-12	-9
Flash Point COC	ASTM D 92	°C	199	225	235
Neutralization No.	ASTM D 974	Mg KOH/g	<0.05	<0.05	<0.05





# MARINE OILS

Marine System Oil 30	52
Marine Oil 50	53
Marine Diesel Engine Oils	54
Marine Oil 30 TBN Series	55
Marine Oil 40 TBN Series	56
Marine Cylinder Oils	57



50



# MARINE OILS

## Marine Diesel Engine Oils

APSCO Marine Diesel Engine Oil Series is high performance Trunk Piston Engine Oils for medium speed marine and industrial types are trunk piston engines operating on low Sulphur distillate fuels (sulphur up to 1.0%). These are blended using solvent-refined high viscosity index paraffin mineral base oils with chemical additive which provide effective alkalinity, wear resistance, detergent/dispersant and water separating properties.

## Applications

APSCO Marine Diesel Engine Oils Series are recommended for crankcase lubrication in medium speed marine type diesel engines. They can also be used to separate bearing lubrication and piston cooling of large crosshead type engines under severe service conditions at appropriate viscosity grades.

## Typical Product Properties

Test Parameters	Test Method	Unit	Typical Value		
SAE Grade	-	-	30	40	50
Density @ 150°C	ASTM D 4052	Kg/Ltr	0.900	0.903	0.908
Kinematic Viscosity , 40°C	ASTM D 445	c.St	108.0	148.0	240
Kinematic Viscosity , 100°C	ASTM D 445	c.St	11.9	14.5	19.5
Viscosity Index	ASTM D 2270	-	95	95	95
Flash Point COC	ASTM D 92	°C	240	262	265
Pour Point	ASTM D 97	°C	-9	-9	-9
Base Number	ASTM D 2896	mg/KOH/g	15.0	15.0	15.0
Sulfated Ash	ASTM D 874	wt%	1.82	1.82	1.82





# MARINE OILS

## Marine System Oil 30

APSCO Marine Oil 30 is high quality marine system oil. Formulated from solvent refined paraffin base oil having high thermal stability and resistance to oxidation. These inherent base oil characteristics are augmented by a balanced additive package containing oxidation inhibitors, Alkaline detergents, dispersants and anti-foam agents. They provide adequate lubrication for bearings and other moving parts including cams and gears, plus effective cooling of pistons in cross-head engines even in the presence of saline water.

### Applications

APSCO Marine Oil 30 is recommended primarily for use in high-output head diesel engines in marine services, particularly that requiring system oil for piston cooling. In these applications, they will prevent or reduce the incidence of piston crown cracking. Also it is recommended as crankcase oil in auxiliary engines.

### Typical Product Properties

Test Parameters	Test Method	Unit	Typical Value
SAE Grade	SAE	-	30
Density @ 150°C	ASTM D 4052	Kg/Ltr	0.896
Kinematic Viscosity , 40°C	ASTM D 445	mm <sup>2</sup> /s	108.0
Kinematic Viscosity , 100°C	ASTM D 445	mm <sup>2</sup> /s	11.8
Viscosity Index	ASTM D 2270	-	98
Flash Point COC	ASTM D 92	°C	266
Pour Point	ASTM D 97	°C	-6
Base Number	ASTM D 2896	mg/KOH/g	5.2
Sulfated Ash	ASTM D 874	wt%	0.73

### Marine Oil 30 TBN Series

APSCO Marine Oil 30 TBN Series are used for crankcase lubrication requirements of high output medium speed engines and other similar marine type application. They are formulated solvent refined paraffin thermally stable base oils, combined with a very effective additive package providing enhanced load carrying ability, efficient oxidation stability, discrepancy and detergency. They are capable to handle heavy residual fuels with high asphalt content.

### Applications

APSCO Marine Oil 30 TBN Series are recommended for use in high output trunk piston marine diesel engines operating on heavy residual fuels (Sulphur up to 3.0%). They are suitable for four stroke high BMEP medium speed diesel engines.

### Typical Product Properties

Test Parameters	Test Method	Unit	Typical Value	
SAE Grade	-	-	30	40
Density @ 150°C	ASTM D 4052	Kg/Ltr	0.905	0.910
Kinematic Viscosity , 40°C	ASTM D 445	mm <sup>2</sup> /s	100.0	146.0
Kinematic Viscosity , 100°C	ASTM D 445	mm <sup>2</sup> /s	11.8	14.5
Viscosity Index	ASTM D 2270	-	95	95
Flash Point COC	ASTM D 92	°C	244	260
Pour Point	ASTM D 97	°C	-6	-6
Base Number	ASTM D 2896	mg/KOH/g	30.0	30.0
Sulfated Ash	ASTM D 874	wt%	3,6	3,6





# MARINE OILS

## Marine Oil 40 TBN Series

APSCO Marine Oil Series 40 TBN are highly alkaline Trunk Piston Engine Oils for crankcase and cylinder lubrication requirement of cross-head type marine engines burning high sulphur residual fuels (suitable up to 3.0% sulphur). They are combination of high quality base stocks and additives designed to impart acid, handle heavy residual fuels with high asphalt content.

## Applications

APSCO Marine Oil Series are recommended for use in high output trunk piston marine diesel engines operating on heavy residual fuels (Sulphur up to 3.0%). They are suitable for four stroke high BMEP medium speed diesel engines.

## Typical Product Properties

Test Parameters	Test Method	Unit	Typical Value		
SAE Grade	-	-	30	40	50
Density @ 150 °C	ASTM D 4052	Kg/Ltr	0.913	0.916	0.919
Kinematic Viscosity , 40 °C	ASTM D 445	c.St	104.0	149.0	214.0
Kinematic Viscosity , 100°C	ASTM D 445	c.St	11.8	14.5	19.5
Viscosity Index	ASTM D 2270	-	95	95	95
Flash Point COC	ASTM D 92	°C	242	255	265
Pour Point	ASTM D 97	°C	-9	-9	-6
Base No.	ASTM D 2896	mg/KOH/g	40.0	40.0	40.0
Sulfated Ash	ASTM D 874	wt%	4.6	4.6	4.6

## Marine Cylinder Oils

APSCO Marine Cylinder Oils are superior, high alkaline, developed for lubrication of modern, high output cross head type engines using high sulphur fuels exceeding 4% by weight. These are formulated from high quality base stock with selected additives to provide optimum oxidation resistance at high temperatures. They also provide high levels of detergency to meet the performance requirements of modern cross head type slow speed two stroke marine diesel engines.

### Applications

APSCO Marine Cylinder Oils is recommended as a cylinder lubricant for all types of slow speed cross head two stroke diesel engines using high sulphur fuels particularly the long stroke, BMEP type.

### Typical Product Properties

Test Parameters	Test Method	Unit	Typical Value
	-	-	70
SAE Grade	-	-	50
Density @ 150 °C	ASTM D 4052	Kg/Ltr	0.937
Kinematic Viscosity , 40 °C	ASTM D 445	c.St	208.0
Kinematic Viscosity , 100 °C	ASTM D 445	c.St	20.2
Viscosity Index	ASTM D 2270	-	95
Flash Point COC	ASTM D 92	°C	252
Pour Point	ASTM D 97	°C	-6
Base Number	ASTM D 2896	mg/KOH/g	70.0
Sulfated Ash	ASTM D 874	wt%	7.75



# GREASES

Apsco MP series  
Apsco EP series

60  
61



58





# Greases

## APSCO grease MP Lithium Automotive Grease

### Product Description

APSCO grease MP is a high quality, multipurpose, NLGI 2 grade, lithium hydroxystearate grease based on an ISO VG 150 mineral oil. It is formulated to provide added protection against rusting and water washout in general purpose automotive applications at moderate temperatures and loads.

### Features & Benefits

APSCO grease MP has a long history of proven performance in general purpose automotive applications and provides the following benefits:

- Wide operating temperature range.
- Good resistance to water washout
- Extra protection against rust and corrosion.
- Excellent structural stability
- Good pumpability in centralized system.
- Load, chlorine and nitrite free

### Applications

APSCO grease MP is recommended for the lubrication automotive chassis components wheel bearings, clutch bearings, universal joints and ball joints of steering and suspension systems of passenger cars, trucks, farm tractors and most other types of APSCO equipment operating under moderate conditions. The recommended operating temperature range of APSCO grease MP is -20°C to 120°C.

In applications where heavy or shock loading is a factor, extreme pressure greases are preferred.

### Typical Properties

Test Parameters	Test Method	Unit	Typical Value
CMCS Code			970422
NLGI Grade	ASTM D 217		2
Soap Type			Lithium
Color	Visual		Medium Brown
Structure	Visual		Smooth
Penetration, Worked	ASTM D 217		280
Dropping Point	ASTM D 2265	°C	180 (min)
Viscosity of Oil @ 40°C	ASTM D 445	cSt	150
Washout Test	IP 220 Mod		0-0



**APSCO EP 0,1,2,3**

-Apsco EP 0, 1, 2, and 3 are products are a high performance family of five general-purpose industrial greases and two special-duty semi-fluid greases. These lithium hydroxystearate greases are formulated to provide extra protection against wear, rusting and water washout. They are available in NLGI grades ranging from 00 to 3, with base oil viscosities ISO VG 150 and 320.

-Apsco EP 0, 1, 2 and 3 greases are recommended for most types of industrial applications including heavy-duty applications where high unit pressures or shock loads are present. These greases provide excellent protection against rust and corrosion and resist water wash-out which makes them particularly suitable for equipment where moist or wet conditions are common. Apsco EP 0 and 1 are suitable for centralised systems. Apsco EP 2 and 3 are general-purpose greases. The recommended operating temperature range is from -20°C to 130°C but they may be used at higher temperatures if the lubrication frequency is increased accordingly.

-Apsco EP 004 and Apsco EP 023 are particularly suitable for the lubrication of enclosed gears and bearings in poorly sealed gear cases they can also be used in many other industrial applications where conventional gear oils cannot be retained in gear cases, chain cases, etc. because of leakage due to worn or missing seals. The recommended operating temperature range is -25 to 120°C for Apsco EP 004 and -15 to 120°C for Apsco EP 023.

**Typical Product Properties**

Test Parameters	EP 0	EP 1	EP 2	EP 3
NLGI Grade	0	1	2	3
Thickener Type	Lithium	Lithium	Lithium	Lithium
Color, Visual	Brown	Brown	Brown	Brown
Penetration, Worked, 25°C, ASTM D217	370	325	280	235
Viscosity of Oil, ASTM D445 cSt @ 40°C	160	160	160	160
Timken OK load, ASTM D2509, lb	40	40	40	40
4-Ball Wear, ASTM D2266 Scar, mm	0,4	0,4	0,4	0,4
4-Ball Weld load, ASTM D2596, kg	250	250	250	250
Dropping Point, D 2265, °C	190	190	190	190
Rust Protection, ASTM D 6138, Distilled Water	0-0	0-0	0-0	0-0



# TECHNICAL INFORMATION

## API 'S'- Service (Gasoline) Engine Oil Specifications

Classification	Date	Characteristics	Application
SA	Pre 1930	Primitive	Obsolete (Straight mineral oil)
SB	1930'5	Anti-scuff, oxidation, corrosion	Mild conditions/old engines
SC	1964	High/Low temperature. Deposits, wear, rust, corrosion	Passenger cars/some trucks
SD	1968	As SC but improved	Passenger cars/some trucks
SE	1972	High-Temperature deposits, oxidation, rust, corrosion	Passenger cars/some trucks
SF	1980	Increased oxidation stability, improved anti-wear, deposits, rust, corrosion	Passenger cars/some trucks
SG	1989	As SF but improved	Passenger cars/ some trucks
SH	1992	As SG but stricter test protocol	Passenger cars/some trucks
SJ	1996	As SH with additional bench tests for oxidation and gelation	Passenger cars/some trucks
SL	2001	As AP SJ with improved fuel economy, better higher temperature deposit control, higher antioxidant and lower volatility	Passenger cars/some trucks
SM	2004	Improved oxidation resistance improved deposit & wear protection.	Passenger cars/some trucks
SN	2010	Improved high temperature deposit protection for pistons, more stringent sludge control & seal compatibility.	Passenger cars/some trucks

**API 'C' - Commercial (Diesel)  
Engine Oil Specifications**

Classification	Date	Characteristics	Application
CA	1940/50's	Deposit Protection, bearing corrosion, wear	Mild/moderate duty, naturally aspirated with high-quality fuel.
CB	1949	As CA, but better deposit protection.	Mild/moderate duty, naturally aspirated with low quality, high sulphur fuel.
CC	1961*	High-temperature deposits, bearing corrosion.	Moderate/severe duty naturally aspirated, supercharged /some heavy-duty gasoline*.
CD	1955	High-effective deposit and wear control, bearing corrosion.	Naturally aspirated, turbo, supercharged over wide fuel quality range including high sulphur.
CD II	Pre 1985	High temperature deposit control, bearing weight loss, piston varnish.	Severe duty two stroke requiring engines highly effective control over wear and deposits (CD applicable).
CE	1984	(Improved CO). Oil consumption control, oil thickening, piston deposits, wear.	Direct injection high performance turbo/super- charged engine, low-speed/high-load, high-speed low-load conditions.
CF-4	1990	As CE but improved oil consumption, piston deposit control.	High speed, four stroke engines (On-highway heavy duty trucks) (CC/CD applicable).



# TECHNICAL INFORMATION

Classification	Date	Characteristics	Application
CF	1994	Piston deposits, wear, copper containing bearing corrosion.	Indirect injection, non-emissions control atmospheric/turbo/ supercharged engines using a wide quality fuel range (CD applicable).
CF-2	1994	Cylinder/ring face scuffing and deposits	Two-stroke engines requiring effective control over scuffing and deposits (CD II applicable)
CG-4	1994	High-temperature piston deposits, wear, corrosion foaming, oxidation stability, soot accumulation. applicable).	High-speed four-stroke, heavy- duty on/off highway (0.05/0.5% wt sulphur respectively) (CD,CE,CF-4
CH-4	1998	Tightened emission, requirements and wear, soot handling.	As CG-4 + extended oil drain intervals.
CI-4	2002	Sustained engine durability where EGR may be used.	As CH-4 + extended oil drains intervals
		Provide better control of corrosive tendencies	
		Low and Highs temperature stability	
		Suit handling properties piston deposit. Control valve train wear.	
		Viscosity loss due to shear, than that by API CH4 offered	

### API Gear Oil Service Designations

API Classification	Type	Application
GL-1	Straight mineral oil	Truck manual transmissions.
GL-2	Usually contains fatty material	Worm gear drives, industrial gear oils.
GL-3	Contains mild EP additives	Manual transmissions and spiral bevel final drives.
GL-4	Equivalent to obsolete MIL-L-2105 specification; usually satisfied with 50% GL-5 additive level	Manual transmissions, and spiral bevel and hypoid gears in moderate service.
GL-5	Virtually equivalent to present MIL-L-21050; primary field service recommendation of most passenger car and truck builders worldwide .	Moderate and severe service in hypoid and other type of gears. May also be used in manual transmissions.
GL-6	Obsolete	Severe service involving high-offset hypoid gears.
MT-1	Contains thermal stability and EP additives	Nonsynchronized manual transmissions in heavy-duty service.





# TECHNICAL INFORMATION

## Lubricant Additives

Very little unadditized mineral oil is sold as a lubricant. Almost all commercial lubricants contain additives to enhance their performance in amounts ranging from less than 1% to 25% or more. By far the largest market for such additives is in the transportation field, including additives for engines and drivetrains in cars, trucks, buses, locomotives and ships. The function of additives can be summarized as:

- Protect metal surfaces (rings, bearings, gears, etc.)
- Extend the range of lubricant applicability
- Extend lubricant life

The same general range of additive types find application in other fields; for example, industrial lubricants, along with materials designed to impart specific properties such as:

- Emulsifiers
- Demulsifiers
- Tackiness agents
- Bactericides
- Gelling agents (for greases)

To be acceptable to blenders and end users alike, additives must be capable of being handled in conventional blending equipment, stable in storage, free of offensive odor, and nontoxic by normal industrial standards. Because many are highly viscous materials or actual solids, they are generally sold as concentrated solutions in diluent oil (HVI 100 Neutral or similar).

**Lubricant Additives****Protective Additives -Automotive Lubricants**

Additive Type	Purpose	Typical Compounds	Functions
Pour Point Depressant	Enable lubricant to flow at low temperatures	Alkylated naphthalene and phenolic polymers, polymethacrylates, maleate/fumerate copolymer esters	Modify wax crystal formation to reduce interlocking
Seal Swell	Swell elastomeric seals	Organic phosphates and aromatic hydrocarbons	Chemical reaction with elastomer to cause slight swell
Viscosity Modifier	Reduce the rate of viscosity change with temperature	Polymers and copolymers of olefins, methacrylates, dienes or alkylated styrenes	Polymers expand with increasing temperature to counteract oil thinning

**Protective Additives -Automotive Lubricants**

Additive Type	Purpose	Typical Compounds	Functions
Antifoamant	Prevent lubricant from forming a persistent foam	Silicone polymers, organic copolymers	Reduces surface tension to speed collapse of foam
Antioxidant	Retard oxidative decomposition	Zinc dithiophosphates, hindered phenols, aromatic amines, sulfurized phenols	Decompose peroxides and terminate free radical reactions
Metal Deactivator	Reduce catalytic effect of metals on oxidation rate	Organic complexes containing nitrogen or sulfur, amines, sulfides and phosphites	Form inactive film on metal surfaces by complexing with metallic ions



# TECHNICAL INFORMATION

## Surface Protective Additives -Automotive Lubricants

Additive Type Antiwear and EP Agent	Purpose Reduce friction and wear and prevent a scoring and seizure	Typical Compounds Zinc dithiophosphates, organic phosphates, acid phosphates, organic sulfur and chlorine compounds, sulfurized fats, sulfides and disulfides.	Functions Chemical reaction with metal surface to form film with lower shear strength than the metal, thereby preventing metal-to-metal contact
Corrosion and Rust Inhibitor	Prevent corrosion and rusting of metal parts in contact with the lubricant	Zinc dithiophosphates, metal phenolates, basic metal sulfonates, fatty acids and amines.	Preferential absorption of polar constituent on metal surface to provide protective film, or neutralize corrosive acids.
Detergent	Keep surfaces free of with deposits	Metallo-organic compounds of sodium, calcium and magnesium phenolates, phosphonates and sulfonates.	Chemical reaction sludge and varnish precursors to neutralize them and keep them soluble.
Dispersant	Keep insoluble contaminants dispersed in the lubricants	Alkylsuccinimides, alkylsuccinic esters, and mannich reaction products.	Contaminants are bonded by polar attraction to dispersant molecules, prevented from agglomerating and kept in suspension due to solubility of dispersant. ...
Friction Modifier	Alter coefficient of friction	Organic fatty acids and amides, lard oil, high molecular weight organic and phosphoric acid esters.	Preferential absorption of surface-active materials. phosphorus

**SAE VISCOSITY GRADES FOR ENGINES OILS**

SAE Viscosity Grade	Low Temperature Viscosities		High Temperature Viscosities		
	Cranking,cP	Pumping,cP	Kinematic (cST) at 100 C	High Shear (cP) at 150 C and 10°s -1	
	Max	Max with No Yield Stress	Min	Max	Min
0w	6200 at -35	60,000 at -40	3.8	-	-
5W	6600 at -30	60,000 at -35	3.8	-	-
15W	7000 at -25	60,000 at -30	4.1	-	-
20W	7000 at -20	60,000 at -25	5.6	-	-
25W	9500 at -15	60,000 at -20	5.6	-	-
25W	13000 at -10	60,000 at -15	9.3	-	-
20	-	-	5.6	<9.3	2.6
30	-	-	9.3	< 12.5	2.9
40	-	-	12.5	< 16.3	2.9 (1)
40	-	-	12.5	< 16.3	3.7(2)
50	-	-	16.3	< 21.9	3.7
60	-	-	21.9	<26.1	3.7

Note:1cP = 1mPa·s:1cSt= 1mm<sup>2</sup>/s

(1) SAE OW-40, 5W-40,and 10W-40

(2) SAE 15W-40,20W-40,25W-40,and 40



# TECHNICAL INFORMATION

## Selection Chart of Greases

(Automotive Applications)

Grease Thickener	Drop Point	Low oper.	High oper.	Behavior with water	Corrosion prevention	Suitable for bearings	Compatibility generally	Product cost
	(C)	(C)	(C)					
Ca	100	-30	+60	Excellent	Good	Fair	Fair	Low
Ca- Complex	240	-20	+160	Good	Good	Good	Problem	Low
Li	190	-25	+140	Fair	Good	Excellent	Fair	Medium
Li- Complex	250	-20	+160	Good	Good	Excellent	Fair	High
Bentonite	no	-20	+140	Fair	Fair	Good	Problem	High

Note: The specifications of the products are subject to change without notice due to continous upgrade and development.





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