

# ROYAL PURPLE<sup>®</sup>

SYNTHETIC OIL



**CONSUMER PRODUCT GUIDE**

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**THE BIRTH OF A NEW LUBRICANT TECHNOLOGY**

Royal Purple was founded as an industrial lubricants company by John Williams, a pioneer in developing synthetic lubricants as far back as the 1950's. He continued pursuing his passion for lubrication by serving as a consultant to numerous companies after his retirement in the 1980's.

In 1986, an oil production company asked Williams to solve chronic bearing failures in their large compressors. He found that there was not a lubricant available that could handle the extreme demands of the equipment. He put his extensive lubrication background to work in developing a new lubrication technology.

Williams developed a new additive technology that fortified lubricants with unusually high film strength capable of protecting bearings under extreme loads. This unique technology also had exceptional oxidation stability for long oil life. The new lubricant provided outstanding protection against rust and corrosion in wet and high temperature applications, cleaned equipment and prevented varnishing and sludge build-up.

The new lubricant easily solved the company's equipment problems. The plant manager said it was so superior to anything he had tried before that it should not look like other lubricants. Williams elected to make the lubricant purple. The new lubricant became the cornerstone of Royal Purple's product line. Williams decided to name the company Royal Purple since historically the color purple was so expensive to produce that only royalty used the color.

**THE COMPANY EVOLVES**

Industrial customers initially tried Royal Purple on the most demanding and problem equipment. Customers could easily explain the rationale for switching lubricants because no other products performed as well. Over time, industrial customers were able to document the energy and maintenance cost savings to justify upgrading their entire plants to Royal Purple industrial lubricants.

Along the way, Royal Purple began formulating racing lubricants at the request of many industrial customers who were also part-time racers. Racers noticed that Royal Purple not only dramatically reduced wear, but also maximized horsepower and torque. Demand for Royal Purple racing oils rapidly spread throughout all forms of racing.

The formulation of racing oils laid the foundation for the development of super-premium motor oils for consumer use. Royal Purple consumer motor oils and other automotive products were introduced through national automotive parts retailers beginning in 2003. There are now nearly 25,000 retailer locations in the US selling Royal Purple consumer products.

Today, Royal Purple is widely recognized as both a super-premium line of consumer automotive products and as a leading primary lubricants supplier to industrial end markets competing head-to-head with the largest oil companies. Royal Purple continues to grow in the US and internationally. Royal Purple was acquired in 2012 by Calumet (CLMT), a leading refiner and processor of specialty hydrocarbon products headquartered in Indianapolis, IN.

**ADVANCED TECHNOLOGY CREATES ADVANCED PRODUCTS**

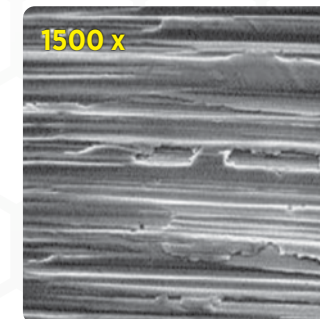
Synerlec® additive technology is Royal Purple's most versatile additive technology and the cornerstone of our product line. Synerlec enables our products to significantly outperform ordinary synthetic and conventional lubricants. This proprietary additive technology improves our products on a molecular level, creating high-strength ionic bonds with metallic surfaces that allow our lubricants to react to sustained heat and pressure with increased film strength and lubricity.

**HIGH FILM STRENGTH IMPROVES PERFORMANCE**

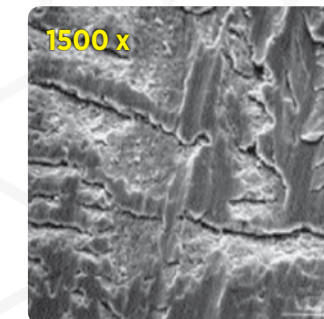
The film strength of a lubricant is its inherent ability to maintain a protective oil film, resisting the effects of load, speed and temperature. When the oil film is breached, metal to metal contact occurs, which results in greater friction and heat generation and accelerated wear. Royal Purple's Synerlec-enhanced lubricants provide dramatically increased oil film strength that is 3 to 4 times as strong as oil film provided by any other comparable lubricant. This dramatically improved film strength results in less metal-to-metal contact, less short and long-term wear, lower operating temperatures and increased piston ring seal in engines. Royal Purple's Synerlec-enhanced lubricants respond to increased pressure with increased oil film strength, where other lubricants have been displaced. Take a look at the following photos:



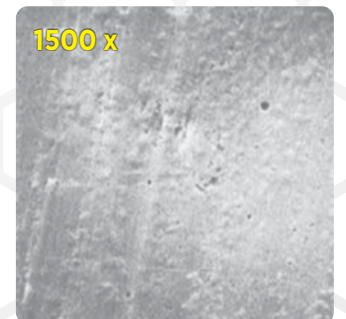
**BEARING COMPARISON**



A new bearing surface appears smooth until magnified 1500X.



The bearing is scuffed after using a leading synthetic motor oil.



The bearing is visibly smoother after using Royal Purple HPS.





Royal Purple's premium synthetic motor oils provide superior performance and protection for a variety of vehicle applications. Our motor oil line covers gasoline and diesel vehicles, high performance and out of warranty vehicles, high mileage vehicles over 75,000 miles, powersports equipment and race cars.





# PREMIUM SYNTHETIC HIGH PERFORMANCE MOTOR OIL



## AVAILABLE PACKAGE SIZES



## MULTI-GRADE OILS

0W-20, 5W-20, 5W-30 & 10W-30

Royal Purple® combines premium synthetic base oils with proprietary additive technologies to exceed protection and performance requirements of new modern engines. These often include smaller displacements, turbo chargers, gasoline direct injection (GDI), and start/stop systems.

- + Optimized fuel economy
- + Enhanced engine performance
- + Long-term protection

Royal Purple High Performance engine oils carry the current API and ILSAC engine oil licenses, as well as the GM dexos™\* gasoline engine oil approval

### BETTER WEAR PROTECTION

Enhanced additive technology prevents metal-to-metal contact beyond both GM dexos™\* and ILSAC GF-6A specs

### INCREASED FUEL EFFICIENCY

A low coefficient of friction results in optimized fuel efficiency (our 5W-30 meets the fuel economy requirements of a 0W-20 oil and our 0W-20 meets fuel economy requirements of a 0W-16)

### BETTER PROTECTION FOR VEHICLE EXHAUST EMISSIONS EQUIPMENT

Patented anti-wear additive chemistry minimizes the harmful effects exhaust gases pose to the catalyst

### IMPROVED COMPATIBILITY WITH FUELS CONTAINING ETHANOL

Patented additive technology prevents the white sludge and lubrication starvation that can occur with higher concentration gasoline-ethanol blends

### SUPERIOR CORROSION PROTECTION

No rust observed in standard industry testing

\*dexos™1 is a registered trademark of the General Motors LLC.

## 50% IMPROVED DEPOSIT CONTROL\*\*

Removes power robbing deposits for like new performance.

## 14% ENHANCED SLUDGE PROTECTION\*\*

Cleaner engines operate more efficiently, lowering operating temperatures.

\*\* Comparisons based on dexos™1 Gen3, API SP and SN+, and/or ILSAC GF-6A requirements.  
 † Up to 100% protection.

## 300% BETTER OXIDATION RESISTANCE\*\*

Maximum protection from oil breakdown.

## 100% LOW SPEED PRE-IGNITION PROTECTION\*\*†

Prohibits major damage to cylinder walls, pistons, piston rings, connection rods and spark plugs, maximizing engine life.

## HIGH PERFORMANCE MULTI-GRADE OILS — TYPICAL PROPERTIES\*

ASTM TESTS		SAE GRADE / API SERVICE			
		0W-20 <sup>1,5</sup>	5W-20 <sup>1,4</sup>	5W-30 <sup>1,2</sup>	10W-30 <sup>1,3</sup>
		SP	SP	SP	SP
D445	Viscosity				
	cSt @ 40 °C	45.75	46.19	62.40	61.59
	cSt @ 100 °C	8.59	9.55	10.54	10.05
D2270	Viscosity Index	168	153	159	150
D4683	HTHS	2.7	2.6	3.1	3.2
D4684	Pumping Viscosities				
	cP @ -40 °C	29,100	—	—	—
	cP @ -35 °C	—	15,800	25,300	—
	cP @ -30 °C	—	—	—	12,200
	cP @ -25 °C	—	—	—	—
	cP @ -20 °C	—	—	—	—
D92	Flash Point °C (°F)	232 (450)	227 (440)	238 (460)	243 (470)

\*Properties are typical and may vary.  
 1 API SP Resource Conserving and ILSAC GF-6A.  
 2 5W-30 meets Chrysler FCA US MS-6395, Ford WSS-M2C961-A1, GM 6094M specifications and GM dexos™1\* Gen 3 warranty requirements for gasoline engines.  
 3 10W-30 meets Chrysler FCA US MS-6395 and GM6094M specification for gasoline engines.  
 4 5W-20 meets Chrysler FCA US MS-6395, Ford WSS-M2C960-A1, GM6094M specifications and warranty requirements for gasoline engines.  
 5 0W-20 meets Chrysler FCA US MS-6395, Ford WSS-M2C962-A1 specification and GM dexos™1\* Gen 3 warranty requirements for gasoline engines.  
 API designations are subject to change. Call our technical department at 888-382-6300 for additional information. For a complete list of OEM approved applications, download a product sheet at www.royalpurple.com.

# PREMIUM SYNTHETIC HIGH PERFORMANCE MOTOR OIL

## HIGH PERFORMANCE MULTI-GRADE PART NUMBERS

VISCOSITY	PACKAGE SIZE	ITEM NO.	MATERIAL NO.	
0W-20	55-Gal. Drum	55020	300967175008	
	6-Gal. BIB	60020	300967175033	
	5-Gal. Pail	05020	300967175017	
	3 x 5-Qt. Case	53020	300967175189	
	5-Qt. Bottle	51020		
	6 x 1-Qt. Case	06020	300967175115	
1-Qt. Bottle	01020			
5W-20	55-Gal. Drum	55520	301907175008	
	6-Gal. BIB	60520	301907175033	
	5-Gal. Pail	05520	301907175017	
	3 x 5-Qt. Case	53520	301907175189	
	5-Qt. Bottle	51520		
	6 x 1-Qt. Case	06520	301907175115	
1-Qt. Bottle	01520			
5W-30	55-Gal. Drum	55530	301909175008	
	6-Gal. BIB	60530	301909175033	
	5-Gal. Pail	05530	301909175017	
	3 x 5-Qt. Case	53530	301909175189	
	5-Qt. Bottle	51530		
	6 x 1-Qt. Case	06530	301909175115	
1-Qt. Bottle	01530			
10W-30	5-Gal. Pail	05130	301071175017	
	3 x 5-Qt. Case	53130	301071175189	
	5-Qt. Bottle	51130		
	6 x 1-Qt. Case	06130	301071175115	
	1-Qt. Bottle	01130		

## HIGH PERFORMANCE STRAIGHT-GRADE PART NUMBERS

VISCOSITY	PACKAGE SIZE	ITEM NO.	MATERIAL NO.
SAE 30	6 x 1-Qt. Case	06030	301149175115
	1-Qt. Bottle	01030	
SAE 40	6 x 1-Qt. Case	06040	301905175115
	1-Qt. Bottle	01040	
SAE 50	5-Gal. Pail	05050	301444175017
	6 x 1-Qt. Case	06050	301444175115
	1-Qt. Bottle	01050	

## HIGH PERFORMANCE STRAIGHT-GRADE OILS — TYPICAL PROPERTIES\*

ASTM TESTS		SAE GRADE / API SERVICE		
		30 / SJ	40 / SJ	50 / SJ
D445	Viscosity			
	cSt @ 40 °C	79.0	121	182
	cSt @ 100 °C	10.6	14.2	18.6
D2270	Viscosity Index	119	113	113
D92	Flash Point °C (°F)	229 (445)	235 (455)	224 (435)

\*Properties are typical and may vary.

Actual before and after test results.



Valve deck



Piston

Scan here for additional product info.



High Performance Ultra-Low Viscosity motor oil on page 8

High Performance European Formulation motor oil on page 9

Duralec® diesel motor oils on pages 18 - 19



# HIGH PERFORMANCE ULTRA-LOW VISCOSITY MOTOR OIL



## AVAILABLE PACKAGE SIZES



## MULTI-GRADE OIL 0W-16

New engine technologies are designed to increase fuel economy while providing excellent power and responsiveness. Gasoline Direct Injection (GDI), turbocharging and engine stop/start functions are now common in late model cars, and present unique lubricant challenges concerning protection while optimizing efficiency.

Royal Purple® High Performance Ultra-Low Viscosity SAE 0W-16 motor oil combines premium synthetic base oils with proprietary additive technologies to exceed protection requirements, provide unsurpassed performance and maximize fuel economy.

- + Optimized fuel economy
- + Enhanced engine performance
- + Long-term protection

### INCREASED FUEL EFFICIENCY

A low coefficient of friction and specialized formulation exceeds the 0W-16 fuel economy standards without compromising engine protection and performance

### BETTER WEAR PROTECTION

Enhanced additive technology prevents metal-to-metal contact beyond GF-6B specifications

### INCREASED PROTECTION AGAINST LSPI

Up to 100%<sup>1</sup> protection; Prohibits major damage to cylinder walls, pistons, piston rings, connecting rods and spark plugs, maximizing engine life

### CLEANER ENGINE

Cleaner engines operate more efficiently

- + 9%<sup>2</sup> IMPROVED DEPOSIT CONTROL – Removes power robbing deposits for like new performance
- + 11%<sup>3</sup> ENHANCED SLUDGE PROTECTION – Lowers operating temperatures & improved compatibility with ethanol containing fuels
- + 7%<sup>3</sup> ENHANCED VARNISH PROTECTION – Lowers operating temperatures through effective detergency

### MAXIMIZED OIL LIFE

700%<sup>2</sup> better oxidation resistance provides protection from oil breakdown

<sup>1</sup> based on API SP, and/or ILSAC GF-6B

<sup>2</sup> based on Sequence IIIH testing

<sup>3</sup> based on Sequence VH testing

## ULTRA-LOW VISCOSITY PART NUMBERS

VISCOSITY	PACKAGE SIZE	ITEM NO.	MATERIAL NO.
0W-16	55-Gal. Drum	55016	303004175008
	6-Gal. BIB	60016	303004175033
	3 x 5-Qt. Case	53016	303004175189
	5-Qt. Bottle	51016	
	6 x 1-Qt. Case	06016	303004175115
	1-Qt. Bottle	01016	

## ULTRA-LOW VISCOSITY – TYPICAL PROPERTIES\*

ASTM TESTS		SAE GRADE
		0W-16
D445	Viscosity	
	cSt @ 40 °C	37.1
	cSt @ 100 °C	7.3
D2270	Viscosity Index	164
D5293	Cold Crank Simulator	
	cP @ -35 °C	3,055
D5481	HTHS, cP @ 150 °C	2.4
D92	Flash Point °C (°F)	220 (428)
D97	Pour Point °C (°F)	-47 (-53)
D2896	TBN, mg KOH/g	8.2

\*Properties are typical and may vary.

# HIGH PERFORMANCE MOTOR OIL EUROPEAN FORMULA



## AVAILABLE PACKAGE SIZES



## MULTI-GRADE OIL 0W-40 & 5W-40

Royal Purple® High Performance Motor Oil European Formulation SAE 0W-40 and SAE 5W-40 are formulated exclusively with premium synthetic base stocks and advanced additive technology to deliver trusted engine protection and peak vehicle performance. Royal Purple European Formulation motor oils provide excellent resistance to sludge and varnish deposits during stop-and-go driving and other severe operating conditions. Recommended for use in European passenger car gasoline/petrol engines, and light duty diesel engines including turbocharged and direct injection diesel engines with a diesel particulate filter (DPF) and selective catalysts. Premium synthetic formulation delivers excellent oxidation stability and low volatility properties, resulting in reduced oil consumption between services.

### BETTER WEAR PROTECTION

Protects engine components from wear beyond the requirements of API SP and ACEA A3/B4

### INCREASED FUEL EFFICIENCY

A low coefficient of friction results in optimized fuel efficiency

### SUPERIOR LOW-TEMPERATURE PERFORMANCE

Low-temperature flow ensures lubrication and protection for cold starts

### SUPERIOR CORROSION PROTECTION

No rust observed in standard industry testing

### EXCELLENT OXIDATION STABILITY

Long lubricant life; meets or exceeds the oil change intervals for most Euro passenger cars

## EURO FORMULATION – TYPICAL PROPERTIES\*

ASTM TESTS		SAE GRADE	
		0W-40	5W-40
	API Service	SP	SP
	ACEA Service	A3/B4-21	A3/B4-21
D445	Viscosity		
	cSt @ 40 °C	79.0	80.3
	cSt @ 100 °C	14.0	13.4
D2270	Viscosity Index	183	170
D92	Flash Point °C (°F)	232 (450)	234 (453)
D97	Pour Point °C (°F)	-48 (-54)	-45 (-49)
D5293	Cold Crank Simulator		
	cP @ -35 °C	5,997	—
	cP @ -30 °C	—	5,887
D2896	TBN, mg KOH/g	12.3	12.3
D5481	HTHS, cP @ 150 °C	3.6	3.6

\*Properties are typical and may vary.

## EURO FORMULATION PART NUMBERS

0W-40	55-Gal. Drum	55484	301897175008
	6-Gal. BIB	60040	301897175033
	6 x 1-Qt. Case	06484	301897175115
	1-Qt. Bottle	11484	
5W-40	55-Gal. Drum	55540	300968175008
	6-Gal. BIB	60540	300968175033
	5-Gal. Pail	05540	300968175017
	6 x 1-Qt. Case	06540	300968175115
	1-Qt. Bottle	01540	



Scan here for additional product info.

To learn more about LSPI, scan here.



Scan here for additional product info.





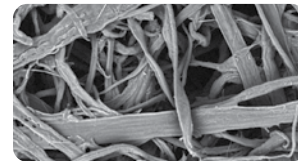


Royal Purple® premium oil filters provide superior filtration and flow, outstanding particulate capacity and heavy duty construction for cleaner oil and longer filter life.

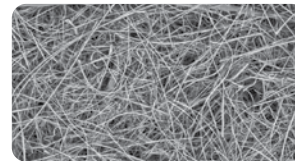
### EACH FILTER FEATURES

- + 100% synthetic micro-glass media that catches 99% of particles 25 microns and larger, and 80% of particles 10 microns and larger
- + High-performance silicone anti-drain back valve that prevents dry starts
- + Extra heavy-duty rubber base gasket that ensures a leak-free seal
- + A thick walled steel filter housing for spin-on filters endures higher burst strength than conventional filters

### FILTER MEDIA COMPARISON



Magnification of 250x, photo shows conventional cellulose filtration fibers. The spaces allow larger particles to pass through to your engine.



Royal Purple's state-of-the-art synthetic filtration media provides greater filtration efficiency and particulate capacity while minimizing flow restriction.

Average beta rating based on ISO 4548-12 multi-pass test methods:

$\beta_{25} = 100$  (at 25 or greater micron, media is 99% efficient.)

$\beta_{20} = 75$  (at 20 or greater micron, media is 98.7% efficient. Also considered absolute rating.)

$\beta_{10} = 5$  (at 10 micron or greater, media is 80% efficient.)



### PERFORMANCE ADVANTAGES

- 1. SHELL**  
A thick, heavy exterior shell provides extra security against puncture from road debris.
- 2. FILTER ELEMENT**  
100% synthetic filtration media with steel screen backing provides superior filtration, low restriction to flow and high particulate capacity.
- 3. STEEL BACKPLATE**  
Heavy gauge steel provides up to twice the burst strength of ordinary filters.
- 4. METAL END-CAPS**  
Provides rigid support for filtration media enhancing internal sealing.
- 5. METAL CENTER TUBE**  
Metal construction prevents filter element collapse.
- 6. BYPASS VALVE**  
Ensures oil flow in situations of excessive filter element flow restriction.
- 7. SILICONE ANTI-DRAINBACK VALVE**  
Prevents dry starts by limiting oil drain back after shutdown. Silicone outperforms and outlasts standard nitrile rubber in both extreme cold and hot oil temperatures.
- 8. GASKET**  
Premium nitrile rubber and special lubricity compounds reduce torque during installation and removal.

To find more information about Royal Purple premium oil filters, including what filter fits my car and where to buy the filters, please visit: [filters.royalpurple.com](http://filters.royalpurple.com)

Royal Purple® HMX® is specifically formulated with robust zinc / phosphorus anti-wear additives and Royal Purple's proprietary additive technology Synerlec® to minimize wear and restore lost engine performance.

HMX is chemically enhanced to revitalize hardened seals reducing oil consumption common in higher mileage engines. Stout detergents remove engine deposits and maintain cleanliness promoting engine longevity.

Royal Purple's advanced Synerlec technology provides an exceptional film strength by reducing friction for peak engine performance. Synerlec also provides outstanding oxidation resistance to safely extend oil drains, and an ionic attraction to metal components maintaining a film of oil on parts minimizing start-up wear.

### PERFORMANCE ADVANTAGES

- + Minimizes wear and restores lost engine performance
- + Increased protection against LSPI
- + Fortified with Zinc/Phosphorus anti-wear additive
- + Extended drain intervals
- + Exceptional oxidation stability
- + Reduces engine deposits
- + Superior corrosion protection

PLEASE NOTE: Royal Purple HMX meets API Service SP performance requirements for gasoline engines. Royal Purple recommends this product for any four-cycle gasoline engine with 75,000 miles (120,000 km) or more.

### 200% BETTER OXIDATION RESISTANCE\*\*

Maximum protection from oil breakdown.

### 100% LOW SPEED PRE-IGNITION PROTECTION\*\*

Prohibits major damage to cylinder walls, pistons, piston rings, connection rods and spark plugs, maximizing engine life.

### 11% IMPROVED DEPOSIT CONTROL\*\*

Removes power robbing deposits for like new performance.

### 6% ENHANCED SLUDGE PROTECTION\*\*

Cleaner engines operate more efficiently, lowering operating temperatures.

\*\* Comparisons based on dexos™1 Gen3, API SP and SN+, and/or ILSAC GF-6A requirements.  
 † Up to 100% protection.

### HMX — TYPICAL PROPERTIES\*

ASTM TESTS		SAE GRADE		
		5W-20	5W-30	10W-30
D445	Viscosity			
	cSt @ 40 °C	46.54	62.80	71.78
	cSt @ 100 °C	8.39	10.88	11.70
D2270	Viscosity Index	158	166	158
D5293	Cold Crank Simulator			
	cP @ -30 °C	4,142	4,977	—
	cP @ -25 °C	—	—	3,739
D2896	TBN, mg KOH/g	9.1	9.1	9.1
D97	Pour Point °C (°F)	-45 (-49)	-45 (-49)	-45 (-49)
D92	Flash Point °C (°F)	221 (430)	230 (446)	224 (436)

\*Properties are typical and may vary.



### AVAILABLE PACKAGE SIZES



### MULTI-GRADE OILS

0W-20, 5W-20, 5W-30 & 10W-30

### HMX PART NUMBERS

VISCOSITY	PACKAGE SIZE	ITEM NO.	MATERIAL NO.
0W-20	6-Gal. BIB	11902	303046175033
	3 x 5-Qt. Case	11904	303046175189
	5-Qt. Bottle	11903	
	6 x 1-Qt. Case	11901	303046175115
	1-Qt. Bottle	11900	
5W-20	3 x 5-Qt. Case	37518	301906175189
	5-Qt. Bottle	17518	
	6 x 1-Qt. Case	67511	301906175115
	1-Qt. Bottle	17511	
5W-30	3 x 5-Qt. Case	11749	301445175189
	5-Qt. Bottle	11748	
	6 x 1-Qt. Case	11745	301445175115
	1-Qt. Bottle	11744	
10W-30	3 x 5-Qt. Case	11751	301147175189
	5-Qt. Bottle	11750	
	6 x 1-Qt. Case	11747	301147175115
	1-Qt. Bottle	11746	

Scan here for additional product info.





### AVAILABLE PACKAGE SIZES



### MULTI-GRADE OILS

5W-20, 5W-30, 10W-30, 10W-40 & 20W-50

All HPS viscosities are formulated for gasoline and diesel engine use.

Royal Purple® HPS® Series motor oil is specifically formulated to maximize performance and meet the demands of high performance and modified engines. HPS is recommended for vehicles no longer under manufacturer warranty and for those seeking a higher level of performance and protection.

Royal Purple HPS oils are fortified with a high level of zinc / phosphorus anti-wear additive and a generous dose of Royal Purple's proprietary Synerlec® additive technology. These unique formulations enable HPS oils to outperform leading synthetic and conventional lubricants in both gasoline and diesel engines. HPS meets ACEA E9-16.

### PERFORMANCE ADVANTAGES

- + Exceptionally high film strength for dramatic reductions in engine wear and reduced engine heat to extend the life of your engine
- + Advanced additive chemistry helps reduce Low Speed Pre-Ignition in today's turbocharged Gasoline Direct Injection engines
- + Improved sealing between the piston ring and cylinder wall maximizes horsepower and torque and optimizes fuel economy
- + Exceptional oxidation stability extends oil life and allows for more miles driven between oil changes saving you time and money
- + Advanced synthetic solvency reduces engine deposits and keeps engines clean
- + Outstanding wear protection for valve train components, including performance roller lifter and high lift flat tappet camshafts and lifters
- + Superior corrosion protection

Scan here for additional product info.



### HPS — TYPICAL PROPERTIES\*

ASTM TESTS	SAE GRADE					
	5W-20	5W-30	10W-30	10W-40	20W-50	
D445 Viscosity	cSt @ 40 °C	43.51	56.25	57.66	71.25	127.70
	cSt @ 100 °C	8.39	11.03	10.97	13.08	18.52
D2270 Viscosity Index	173	193	186	188	163	
D5293 Cold Crank Simulator	cP @ -30 °C	3,758	5,127	—	—	—
	cP @ -25 °C	—	—	3,782	5,272	—
	cP @ -15 °C	—	—	—	—	5,067
D2896 TBN, mg KOH/g	10.3	10.1	10.8	9.9	10.1	
D97 Pour Point °C (°F)	-51 (-60)	-51 (-60)	-48 (-54)	-48 (-54)	-45 (-49)	
D92 Flash Point °C (°F)	232 (450)	216 (420)	232 (450)	229 (445)	229 (445)	
D6278 Shear Stability % Loss @ 100 °C	1.89	1.98	3.61	3.21	2.77	

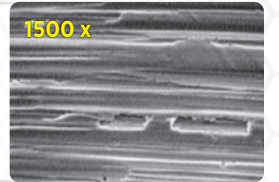
\*Properties are typical and may vary.

### HPS PART NUMBERS

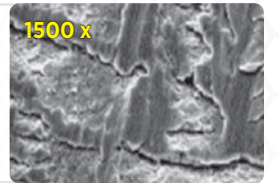
VISCOSITY	PACKAGE SIZE	ITEM NO.	MATERIAL NO.
5W-20	55-Gal. Drum	37520	301072175008
	6 x 1-Qt. Case	36520	301072175115
	1-Qt. Bottle	31520	
5W-30	55-Gal. Drum	37530	301150175008
	5-Gal. Pail	35530	301150175017
	6 x 1-Qt. Case	36530	301150175115
10W-30	5-Gal. Pail	35130	301899175017
	6 x 1-Qt. Case	36130	301899175115
	1-Qt. Bottle	31130	
10W-40	55-Gal. Drum	37140	301901175008
	5-Gal. Pail	35140	301901175017
	6 x 1-Qt. Case	36140	301901175115
20W-50	55-Gal. Drum	37250	301443175008
	6 x 1-Qt. Case	36250	301443175115
	1-Qt. Bottle	31250	

### BEARING COMPARISON

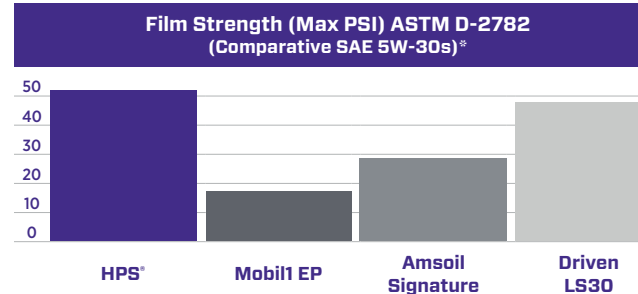
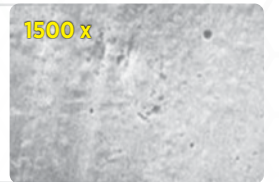
A new bearing surface appears smooth until magnified 1500X.



The bearing is scuffed after using a leading synthetic motor oil.

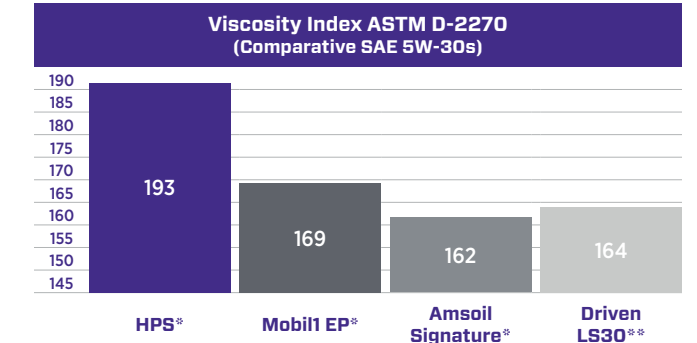


The bearing is visibly smoother after using Royal Purple HPS.



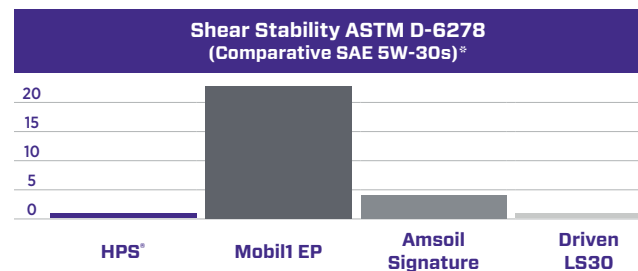
Film strength is the oil's ability to withstand a load without being displaced by pressure. Film strength is very important in areas designed to have full hydrodynamic lubrication (HDL) such as the crankshaft and rod/ main bearings. A lack of film strength leads to greater metal-to-metal contact and wear throughout the engine. High film strength is key in performance engines and/ or forced induction engines which see more severe operation and a higher rate of crank flex.

\*Testing performed 2016-2019 by Southwest Research Institute.



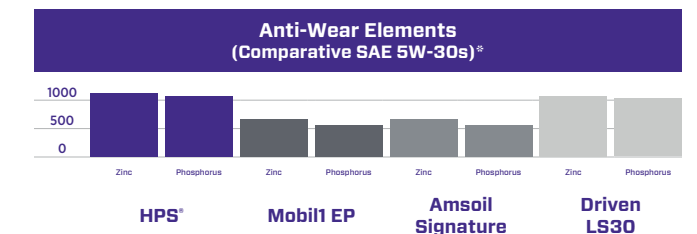
Viscosity Index (VI) indicates the oil's change in viscosity with changing temperature, and is calculated using viscosity measurements at 40C and 100C. Less change in viscosity results in a higher VI. An oil with a higher viscosity index provides better lubricity and greater protection across all operating temperatures, thickening less when cold and thinning less when hot.

\*Information gathered from manufacturers' websites. \*\*Testing performed 2016-2019 by Southwest Research Institute



Shear stability is the oil's ability to resist permanent viscosity loss. Low quality base oils and/ or low quality VI polymers result in oils that can shear very quickly. This viscosity loss increases mechanical wear rates due to a thinner and weaker lubricant film between mating surfaces. Also, as the viscosity decreases, oil operating temperatures can rise due to decreased lubricity and greater metal contact, resulting in an increased rate of oxidation and overall degradation of the oil. Further, as the oil shears the added friction robs horsepower and efficiency.

\*Testing performed 2016-2019 by Southwest Research Institute.



Anti-wear additives are used to prevent metal-to-metal contact in areas where achieving a full fluid film of oil is not possible either due to excessive load or engine design. The camshaft(s) and lifters as well as piston skirts are key examples of areas relying heavily upon anti-wear metals. Performance engines, particularly, need higher quality and increased amounts of anti-wear additives due to greater loads on the camshaft caused by higher ramp rate camshafts and higher springs pressures.

\*Testing performed 2016-2019 by Southwest Research Institute.





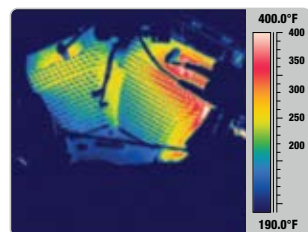
### AVAILABLE PACKAGE SIZE



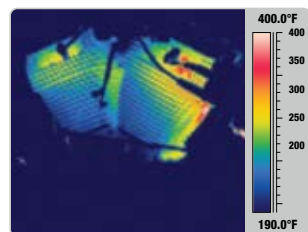
### MULTI-GRADE OILS 10W-40 & 20W-50

### REDUCES HEAT

Improved combustion and reduced friction help to prevent overheating and to extend the life of the oil and the engine. In an independent test conducted on an American-made V-Twin motorcycle, engine temperatures were reduced 25°F to 44°F just by switching to Royal Purple. See graphics below:



Thermal imaging results with factory synthetic oil



Thermal imaging results after switching to Max-Cycle

Royal Purple<sup>®</sup> Max-Cycle<sup>®</sup> is specifically formulated to exceed the demands of highly stressed engines and transmissions. It is recommended for use in both air-cooled and liquid-cooled 4-cycle engines and is compatible with wet-clutch transmissions.

Formulated with select synthetic base oils and Royal Purple's proprietary Synerlec<sup>®</sup> additive technology, Max-Cycle provides improved film strength when compared to the leading synthetic and mineral oil. Its shear stability and oxidation resistance promotes greater performance and protection.

Max-Cycle meets or exceeds API requirements and is rated JASO MA2, the highest wet clutch compatibility rating under the JASO T903:2011 Clutch Friction Test.

### PERFORMANCE ADVANTAGES

- + Greater wear protection
- + Cleaner, more efficient engines
- + Superior rust / corrosion protection
- + Cooler operation and less parasitic power loss

Scan here for additional product info.



### MAX-CYCLE PART NUMBERS

VISCOSITY	PACKAGE SIZE	ITEM NO.	MATERIAL NO.
10W-40	6 x 1-Qt. Case	06315	301069175115
	1-Qt. Bottle	01315	
20W-50	6 x 1-Qt. Case	06316	301890175115
	1-Qt. Bottle	01316	

### MAX-CYCLE — TYPICAL PROPERTIES\*

ASTM TESTS		SAE GRADE	
		10W-40	20W-50
D445	Viscosity		
	cSt @ 40 °C	92.0	165
	cSt @ 100 °C	14.0	20.0
D2270	Viscosity Index	155	141
	D5293	Cold Crank Simulator	
cP @ -25 °C		5,341	—
cP @ -15 °C		—	4,491
D2896	TBN, mg KOH/g	9.6	9.5
D92	Flash Point °C (°F)	204 (400)	213 (415)
D6892	Pour Point °C (°F)	-49 (-56)	-26 (-15)
D4683	HTHS		
	cP @ 150 °C	3.95	5.05

\*Properties are typical and may vary.

Engine builders have grown increasingly concerned that current engine oils that are API licensed for new cars and trucks do not provide adequate wear protection for freshly built performance engines, particularly those using flat tappet camshafts and lifters. Royal Purple has addressed this issue with Royal Purple<sup>®</sup> Break-In Oil.

Royal Purple Break-In Oil is formulated to provide the critical wear protection needed by the engine valve train and camshaft while allowing new piston rings to quickly seat to the engine cylinder walls. Break-In Oil combines highly refined mineral oil (preferred for engine break-in) with an advanced additive package containing elevated levels of zinc/phosphorus anti-wear additive to optimize wear protection during the sensitive engine break-in phase.

Royal Purple Break-In Oil is a fully formulated conventional 10W-30 engine oil and does not require the use of any other chemical additives. Royal Purple recommends switching to a high-performance synthetic Royal Purple engine oil after break-in for maximum engine performance and protection.

We recommend using our Engine Break-In Oil for a minimum of 500-1,000 miles in street driven gasoline engines to assure that the complete ring break-in has been completed before switching to one of our full synthetic engine oils. If need be, you can use for up to 3000 miles.



### AVAILABLE PACKAGE SIZE



### MULTI-GRADE OIL 10W-30

### BREAK-IN OIL PART NUMBERS

VISCOSITY	PACKAGE SIZE	ITEM NO.	MATERIAL NO.
10W-30	6 x 1-Qt. Case	06487	301439175115
	1-Qt. Bottle	11487	

### BREAK-IN OIL — TYPICAL PROPERTIES\*

ASTM TESTS		SAE GRADE
		10W-30
D445	Viscosity	
	cSt @ 40 °C	76.0
	cSt @ 100 °C	12.0
D2270	Viscosity Index	155
D4684	Pumping Viscosity	
	cP @ -30 °F	18,200
D92	Flash Point °C (°F)	204 (400)

\*Properties are typical and may vary.

Scan here for additional product info.





# SNOW 2-C™ SYNTHETIC 2-CYCLE SNOWMOBILE MOTOR OIL



## AVAILABLE PACKAGE SIZE



Royal Purple® Snow 2-C™ is a high performance 2-cycle engine oil that improves performance and reduces wear in both standard and high performance 2-cycle snowmobile gasoline engines. The synthetic solvency of Snow 2-C keeps spark plugs and exhaust ports clean for maximum engine efficiency. This engine cleanliness, combined with Snow 2-C's low coefficient of friction promotes increased horsepower and engine speed.

Snow 2-C is formulated with Royal Purple's proprietary, synthetic Synerlec® additive technology that protects rings, bearings and cylinder walls from metal-to-metal contact and guards against scuffing, galling and welding, which can occur in severe conditions. Snow 2-C is ideally suited for snowmobile applications due to its low temperature fluidity and pumpability for cold weather service. Suitable for oil-injected and pre-mix applications.

### PERFORMANCE ADVANTAGES

- + Greater wear protection
- + Superior corrosion protection
- + Saves fuel
- + Reduces exhaust emissions
- + Ashless
- + Increases performance
- + Keeps engines clean and burns clean

### SNOW 2-C PART NUMBERS

PACKAGE SIZE	ITEM NO.	MATERIAL NO.
3 x 1-Gal. Case	43511	301468175195
1-Gal. Bottle	04511	

### SNOW 2-C — TYPICAL PROPERTIES\*

ASTM TESTS		
D445	Viscosity	
	cSt @ 40 °C	46.0
	cSt @ 100 °C	8.40
D2270	Viscosity Index	162
D5293	Cold Crank Simulator	
	cP @ -3 °F	5,300
D92	Flash Point °C (°F)	132 (270)
D6892	Pour Point °C (°F)	-51 (-60)
D4502	Density	
	Specific Gravity @ 60 °F	0.863
	Pounds / Gallon	7.2

\*Properties are typical and may vary.



Scan here for additional product info.

# HP 2-C® SYNTHETIC 2-CYCLE MOTOR OIL



## AVAILABLE PACKAGE SIZES



Royal Purple® HP 2-C® is a high performance engine oil that improves performance and reduces wear in both standard and high performance 2-cycle gasoline engines.

Royal Purple HP 2-C is recommended for use in both pre-mixed and oil injected gasoline 2-cycle engines in outboard motors, motorcycles, jet skis, chain saws, etc. For cold weather oil injected applications, Royal Purple recommends its Snow 2-C.

The ashless formulation and synthetic solvency of HP 2-C keeps spark plugs and exhaust ports clean for maximum engine efficiency. HP 2-C is formulated with Royal Purple's proprietary, synthetic Synerlec® additive technology that protects rings, bearings and cylinder walls from metal-to-metal contact and guards against scuffing, galling and welding, which can occur in severe conditions. This engine cleanliness combined with the low coefficient of friction of Royal Purple HP 2-C promotes increased horsepower and engine speed. Engines operate with greater combustion efficiency and go longer between overhauls when lubricated with HP 2-C.

### PERFORMANCE ADVANTAGES

- + Greater wear protection
- + Increased horsepower
- + Superior rust / corrosion protection
- + Cooler operation and less parasitic power loss
- + Ashless to minimize exhaust deposits

### HP 2-C — TYPICAL PROPERTIES\*

ASTM TESTS		
D445	Viscosity	
	cSt @ 40 °C	46.0
	cSt @ 100 °C	7.50
D2270	Viscosity Index	129
D92	Flash Point °C (°F)	116 (240)
D6892	Pour Point °C (°F)	-45 (-49)
D130	Corrosion Test	
	3 hrs. @ 210 °F	1a
	24 hrs. @ 210 °F	1a
D665	Rust Test	
	Fresh Water	Pass
	Salt Water	Pass

\*Properties are typical and may vary.

### HP 2-C PART NUMBERS

PACKAGE SIZE	ITEM NO.	MATERIAL NO.
3 x 1-Gal. Case	43311	302011175195
1-Gal. Bottle	04311	
6 x 1-Qt. Case	06311	302011175115
1-Qt. Bottle	01311	

Scan here for additional product info.





Duralec® from Royal Purple® is a complete line of high performance lubricants specifically developed for all of your light duty truck and fleet vehicle needs. Duralec products offer synthetic technology and are the most advanced lubricants in the market today.

**DURALEC® SUPER™ DIESEL MOTOR OIL WITH SYNTHETIC TECHNOLOGY**

Duralec® Super™ motor oil is a high performance synthetic engine oil made for those diesel engines requiring the use of an emissions compliant oil for the 2007 and 2010 emissions equipment such as: DPF's, Catalytic Converters, EGR, and SCR injection with the ultra low sulfur diesel fuels found in North America and Europe.

Duralec Super motor oil is specifically formulated to maximize component life and improve fuel performance with excellent high temperature break down resistance and low temperature pumpability to minimize cold-induced startup wear.

**PERFORMANCE ADVANTAGES**

- + Greater wear protection
- + Superior corrosion protection
- + Reduces exhaust emissions
- + Keeps engines clean
- + API-licensed CK-4 diesel motor oils
- + Will not harm seals



Scan here for additional product info.

**DURALEC SUPER — TYPICAL PROPERTIES\***

ASTM TESTS	SAE GRADE / API SERVICE		
	5W-40 CK-4	10W-30 CK-4	15W-40 CK-4
D445 Viscosity			
cSt @ 40 °C	93.3	81.9	108
cSt @ 100 °C	15.2	12.1	15.2
D2270 Viscosity Index	172	144	146
D92 Flash Point °C (°F)	224 (435)	223 (434)	234 (454)
D97 Pour Point °C (°F)	-48 (-54)	-45 (-49)	-45 (-49)
D5293 Cold Crank Simulator, cP	6370 @ -30 °C	6087 @ -25 °C	4628 @ -20 °C
D2896 TBN, mg KOH	10.1	9.3	10
D874 Sulfated Ash, wt%	1	0.99	0.98

\*Properties are typical and may vary.



**AVAILABLE PACKAGE SIZES**



**MULTI-GRADE OILS**

5W-40, 10W-30 & 15W-40

**DURALEC SUPER PART NUMBERS**

VISCOSITY	PACKAGE SIZE	ITEM NO.	MATERIAL NO.
5W-40	55-Gal. Drum	87540	301204490008
	6-Gal. BIB	86540	301204490033
	3 x 1-Gal. Case	80540	301204490195
	1-Gal. Bottle	83540	
10W-30	275-Gal. Tote	68130	300993490316
	55-Gal. Drum	87130	300993490008
	5-Gal. Pail	85130	300993490017
	3 x 1-Gal. Case	80130	300993490195
	1-Gal. Bottle	83130	
15W-40	320-Gal. Tote	88154	300905490322
	275-Gal. Tote	68154	300905490316
	55-Gal. Drum	55154	300905490008
	6-Gal. BIB	60154	300905490033
	5-Gal. Pail	05154	300905490017
	3 x 1-Gal. Case	43154	300905490195
	1-Gal. Bottle	04154	
6 x 1-Qt. Case	06154	300905490115	
1-Qt. Bottle	01154		

# DURALEC®



**DURALEC® ULTRA™ DIESEL MOTOR OIL WITH SYNTHETIC TECHNOLOGY**

Duralec® Ultra™ combines premium base oils with Royal Purple's proprietary additive technology, Synerlec, to create a high-performance motor oil that optimizes engine performance and provides superior protection in rigorous on/off highway applications. Synerlec provides unsurpassed film strength and lubricity - up to 4X more than top competitors.

**PERFORMANCE ADVANTAGES**

- + Maximum wear protection- up to 33% better than CK-4 requirements
- + Improved cold flow operation and start-up protection
- + Extraordinary performance in older generation, high-output diesel engines
- + Extended oil life - up to 40% better than CK-4 requirements
- + Reduced oil consumption

In addition, advanced synthetic solvency reduces engine deposits and keeps engines clean. The net result is a better performing engine, with reduced downtime and lower cost of ownership.

**AVAILABLE PACKAGE SIZES**



**MULTI-GRADE OILS**

10W-30 & 15W-40

**DURALEC ULTRA PART NUMBERS**

VISCOSITY	PACKAGE SIZE	ITEM NO.	MATERIAL NO.
10W-30	55-Gal. Drum	87456	301440490008
	5-Gal. Pail	85456	301440490017
	3 x 1-Gal. Case	80456	301440490195
	1-Gal. Bottle	83456	
15W-40	55-Gal. Drum	87561	301902490008
	5-Gal. Pail	85561	301902490017
	3 x 1-Gal. Case	80561	301902490195
	1-Gal. Bottle	83561	

Scan here for additional product info.



**DURALEC ULTRA — TYPICAL PROPERTIES**

ASTM TESTS	SAE GRADE / API SERVICE	
	10W-30 CK-4*	15W-40 CK-4*
D445 Viscosity		
cSt @ 40 °C	71.63	101.13
cSt @ 100 °C	11.21	14.7
D2270 Viscosity Index	149	151
D92 Flash Point °C (°F)	216 (420)	232 (450)
D97 Pour Point °C (°F)	-48 (-54)	-45 (-49)
D5293 Cold Crank Simulator, cP	4726 @ -25 °C	3672 @ -20 °C
D2896 TBN, mg KOH	9.45	9.6
D874 Sulfated Ash, wt%	1.04	1.04
D5481 HTHS, @ 150 °C, cP	3.3	4.1

\*Claimed performance; Duralec Ultra is not API CK-4 licensed





At Royal Purple® we recognize that no matter what type of racing you do, you require the best protection and performance for your vehicle. From grass roots drifting, drag racing, autocross, go-karts, road racing, to you name it, Royal Purple racing oils turn your racing vehicle into a winner.





Royal Purple<sup>®</sup> XPR<sup>®</sup> (Extreme Performance Racing) oils are recommended for use in various racing applications, and are popular in a variety of motorsports including: NASCAR, NHRA, World of Outlaws and Bonneville Salt Flats. Contains Royal Purple's proprietary Synerlec<sup>®</sup> additive technology.

### PERFORMANCE ADVANTAGES

- + Greater wear protection on startup
- + Increased horsepower
- + Extends equipment life
- + High temperature service capability
- + Increased protection against LSPI
- + Non-foaming
- + Outstanding rust / corrosion protection
- + XPR resists displacement, dilution and emulsion caused by exotic fuels, such as alcohol and methanol
- + No flushing required when switching from other synthetic engine oils or conventional engine oils

Please consult Royal Purple's Technical Department at [rpautotech@royalpurple.com](mailto:rpautotech@royalpurple.com) for assistance in choosing the racing oil for your specific application.

### AVAILABLE PACKAGE SIZES



### MULTI-GRADE OILS

0W-8, 0W-20, 5W-20, 0W-30, 5W-30, 5W-40, 10W-40, 5W-50, 20W-50 & 10W-60

### RACING OILS

- + XPR 0W-8 is an ultra-light viscosity racing motor oil formulated for use in drag racing, motorcycle sprint racing, etc.
- + XPR 0W-20 & 5W-20 are light viscosity racing motor oils that are excellent for drag racing and kart racing.
- + XPR 0W-30 & 5W-30 are light viscosity racing motor oils that are excellent for drag racing and kart racing.
- + XPR 5W-40 & 10W-40 are designed for marine, oval track and endurance car racing. Capable of withstanding long intervals of extreme heat, these are extremely popular in sprint cars, late models and World of Outlaws racing.
- + XPR 5W-50 & 20W-50 are formulated for running extended periods under extreme pressure and heat. These are used in oval track, marine and drag racing and are very popular in sprint cars, late models, truck pullers and bracket racing.
- + XPR 10W-60 is specifically formulated to increase horsepower and torque in high performance modified and racing engines and is popular in endurance road racing and rallycross.



Scan here for additional product info.

### XPR PART NUMBERS

VISCOSITY	PACKAGE SIZE	ITEM NO.	MATERIAL NO.
0W-8	6 x 1-Qt. Case	06009	301448175115
	1-Qt. Bottle	01009	
0W-20	6 x 1-Qt. Case	06008	301073175115
	1-Qt. Bottle	01008	
5W-20	6 x 1-Qt. Case	06011	301450175115
	1-Qt. Bottle	01011	
0W-30	6 x 1-Qt. Case	06010	301913175115
	1-Qt. Bottle	01010	
5W-30	5-Gal. Pail	05021	300864175017
	6 x 1-Qt. Case	06021	300864175115
	1-Qt. Bottle	01021	
5W-40	6 x 1-Qt. Case	06042	302195175115
	1-Qt. Bottle	01042	
10W-40	55-Gal. Drum	55041	301914175007
	5-Gal. Pail	05041	301914175017
	6 x 1-Qt. Case	06041	301914175115
	1-Qt. Bottle	01041	
5W-50	6 x 1-Qt. Case	06052	302196175115
	1-Qt. Bottle	01052	
20W-50	5-Gal. Pail	05051	301915175017
	6 x 1-Qt. Case	06051	301915175115
	1-Qt. Bottle	01051	
10W-60	6 x 1-Qt. Case	06061	301152175115
	1-Qt. Bottle	01061	



### XPR — TYPICAL PROPERTIES\*

ASTM TESTS	SAE GRADE										
	0W-8	0W-20	5W-20	0W-30	5W-30	5W-40	10W-40	5W-50	20W-50	10W-60	
D445	Viscosity										
	cSt @ 40 °C	27.47	40.08	47.5	43.99	54.94	61.43	74.55	80.97	137.2	102.4
	cSt @ 100 °C	5.6	8.68	8.45	9.9	10.6	12.69	13.26	19.24	19.73	22.19
D2270	Viscosity Index										
		148	203	155	220	187	211	182	261	165	246
D5293	Cold Crank Simulator										
	cP @ -35 °C	2,519	4,200	—	4,564	—	—	—	—	—	—
	cP @ -30 °C	—	—	3,664	—	4,157	4,684	—	5,610	—	—
	cP @ -25 °C	—	—	—	—	—	—	3,978	—	—	5,526
	cP @ -15 °C	—	—	—	—	—	—	—	—	4,208	—
D2896	TBN, mg KOH/g										
		10.1	10.1	10.4	10.0	10.4	10.1	10.2	10.1	10.1	10.2
D97	Pour Point °C (°F)										
		-66 (-87)	-63 (-81)	-48 (-54)	-60(-76)	-54 (-65)	-45 (-49)	-45 (-49)	-48 (-54)	-45 (-49)	-42 (-44)
D92	Flash Point °C (°F)										
		199 (390)	216 (420)	227 (440)	221 (430)	213 (416)	224 (436)	210 (410)	207 (404)	213 (416)	204 (400)
D130	Copper Corrosion										
		1a	1a	1a	1a	1a	1a	1a	1a	1a	1a

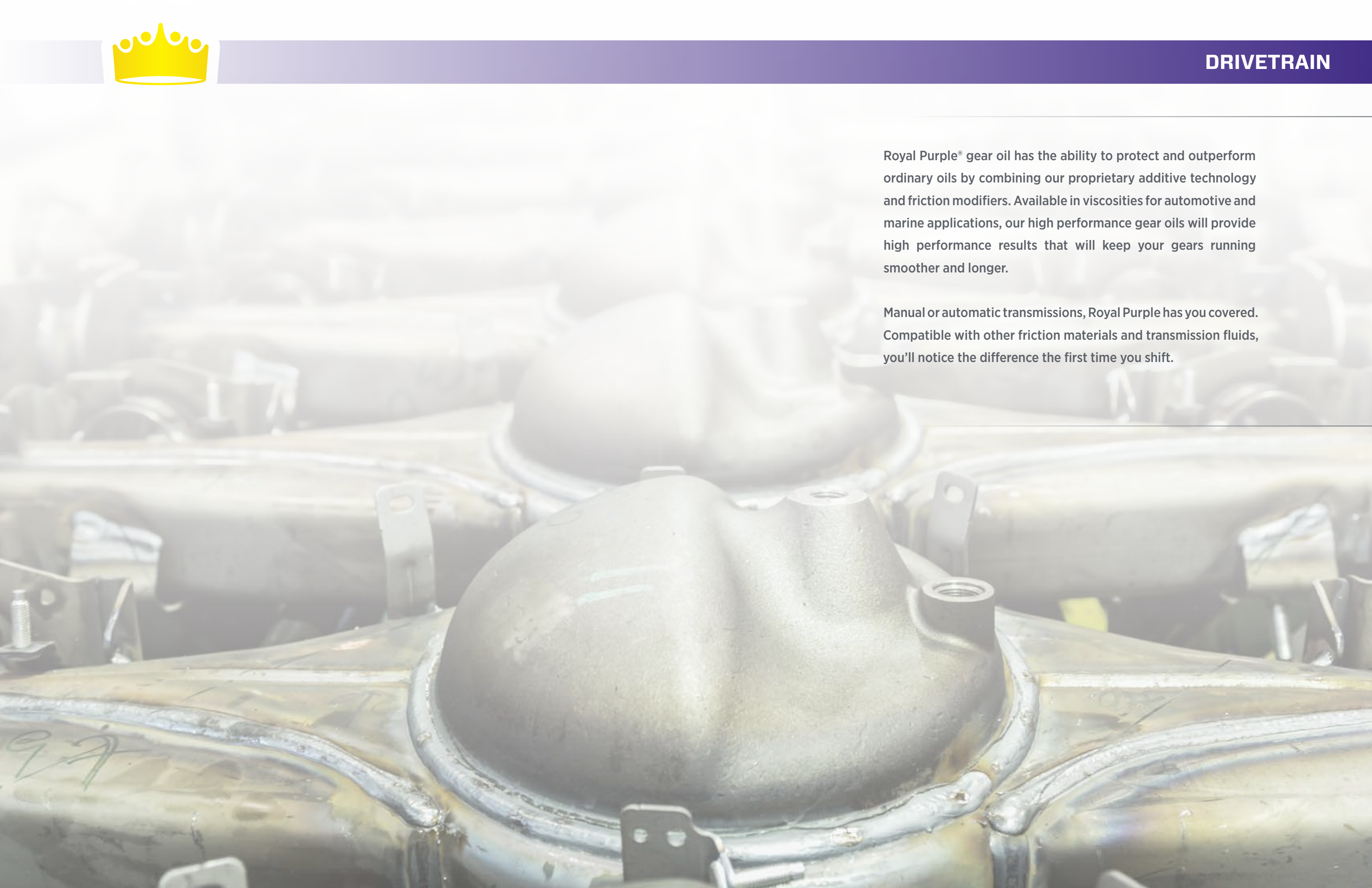
\*Properties are typical and may vary.





Royal Purple® gear oil has the ability to protect and outperform ordinary oils by combining our proprietary additive technology and friction modifiers. Available in viscosities for automotive and marine applications, our high performance gear oils will provide high performance results that will keep your gears running smoother and longer.

Manual or automatic transmissions, Royal Purple has you covered. Compatible with other friction materials and transmission fluids, you'll notice the difference the first time you shift.





# MAX ATF® AUTOMATIC TRANSMISSION FLUID



## AVAILABLE PACKAGE SIZES



## MAX ATF PART NUMBERS

PACKAGE SIZE	ITEM NO.	MATERIAL NO.
6-Gal. BIB	61320	301143175033
5-Gal. Pail	05320	301143175017
6 x 1-Qt. Case	06320	301143175115
1-Qt. Bottle	01320	

## MAX ATF – TYPICAL PROPERTIES\*

ASTM TESTS		
D445	Viscosity	
	cSt @ 40 °C	29.3
	cSt @ 100 °C	6.0
D2270	Viscosity Index	158
D92	Flash Point °C (°F)	227 (440)
D97	Pour Point °C (°F)	-48 (-54)
D2983	Brookfield Viscosity	
	cP @ -10 °C (14 °F)	550
	cP @ -40 °C (-40 °F)	8,400

\*Properties are typical and may vary.

Royal Purple® Max ATF is a synthetic, high performance, long life, multi-vehicle automatic transmission fluid. Its superior formulation has optimized viscosity, anti-foaming, and protection against wear and thermal breakdown for 6 to 10 speed transmissions commonly found in late model passenger cars and light trucks.

Max ATF provides excellent torque holding capacity to dramatically reduce slippage and heat generation. Automatic transmissions generate a great deal of heat and depend on the transmission fluid for cooling and protection. More than 90% of all automatic transmission failures are caused by overheating. A 20°F reduction in fluid temperature can double the life of the transmission (Source: Perma Industries Inc.). Max ATF significantly reduces heat to extend the life of your transmission.

Max ATF meets the viscosity and performance requirements of late model automatic transmission fluid specifications and is also hybrid vehicle compatible. For best performance and protection, a complete fluid change is recommended, but Max ATF is completely compatible with OEM transmission fluid specifications (listed below), so partial fluid changes and fluid level top-off are recommended as well.

Aisin ATF-OWS, AW-1, JWS 3324  
 Audi G052533, G055005A2, G055162A2/A6, G055540A2  
 BMW ATF 3+, ATF 6, L12108, M1375.4, M1375.6  
 Chrysler/FCA AW-1, SP-IV, 8&9 Speed ATF, 68218925AA/AB  
 GM AW-1, DEXRON® VI; DEXRON® HP  
 Esso LT 71141  
 Honda DW-1, ATF Type 3.0 & Type 3.1  
 Hyundai SP-IV, SP-IV-M1, SPH-IV, SP-IV-RR  
 JWS 3309, JWS 3314, JWS 3317  
 Kia SP-IV, SP-IV-M1, SPH-IV, SP-IV-RR  
 Isuzu SCS  
 Jaguar O2JDE 26444, Fluid 8432, SCS  
 JAMA JASO M315, Class-1A-LV  
 Land Rover LR022460:LV, LR023288/023289  
 Maserati Oil No. 231603  
 Mazda ATF-FZ  
 Mitsubishi Dia Queen ATF-MA1, Dia Queen ATF-PA, SP-IV  
 Nissan Matic-S, Matic-W  
 Porsche P/N 000 043 304 00  
 Saab P/N 93 165 147  
 Subaru ATF-WS  
 Suzuki 3324, ATF-WS  
 Toyota ATF-FZ, ATF WS, JWS 3324  
 Volvo P/N 31 256 774, P/N 31 256 775  
 VW G052533, G055005A2, G055162A2/A6, G055540A2  
 ZF LifeGuard Fluid 6, LifeGuard Fluid 8, LifeGuard Fluid 9

PLEASE NOTE: Max ATF is not suitable for use in CVTs, DCTs, or automatic transmissions that specify the use of Ford Type F ATF.

Dexron® is a registered trademark of General Motors Corporation.

# SYNCHROMAX® SYNTHETIC MANUAL TRANSMISSION FLUID



## AVAILABLE PACKAGE SIZE



Royal Purple® Synchronmax® is recommended for manual transmissions that specify an automatic transmission fluid or other light-viscosity oil. It is also ideal for transfer cases and 2-cycle motorcycle gear boxes that specify light-viscosity lubricants.

Synchronmax is formulated with Royal Purple's synthetic, proprietary Synerlec additive technology, offering improved shift quality over a wide temperature range and reduced gear noise.

Synchronmax is fully compatible with all types of friction materials and offers excellent corrosion and oxidation protection without affecting the soft metals commonly found in manual transmission synchronizers.

## PERFORMANCE ADVANTAGES

- + Greater wear protection
- + Smoother shifts
- + Excellent rust / corrosion protection
- + Reduces friction for more power
- + Lowers operating temperatures
- + Can be used as a replacement for Auto-Trak II, VersaTrak® and Synchronmesh

## SYNCHROMAX – TYPICAL PROPERTIES\*

ASTM TESTS		
D445	Viscosity	
	cSt @ 40 °C	39.0
	cSt @ 100 °C	7.50
D2270	Viscosity Index	162
D2983	Brookfield Viscosity	
	cP @ -10 °C (14 °F)	550
	cP @ -20 °C (-4 °F)	1,330
	cP @ -30 °C (-22 °F)	3,100
	cP @ -40 °C (-40 °F)	9,178
D92	Flash Point °C (°F)	207 (405)
D97	Pour Point °C (°F)	-51 (-60)

\*Properties are typical and may vary.

## SYNCHROMAX PART NUMBERS

PACKAGE SIZE	ITEM NO.	MATERIAL NO.
6 x 1-Qt. Case	06512	301889175115
1-Qt. Bottle	01512	



Scan here for additional product info.



# MAX GEAR® SYNTHETIC GEAR OIL

WITH SYNERLEC®



Royal Purple® Max Gear® is recommended for use in automotive front and rear differentials, manual transmissions and transfer cases that specify use of an API GL-5 or GL-4 fluid. It is noncorrosive to soft yellow metals (brass, bronze, copper), and is synchronizer safe. Max Gear also works great in marine gear applications. Not for use in gear boxes, transmissions and lower units with wet clutches.

Max Gear is an ultra-tough, high performance gear oil designed to provide maximum protection to heavily loaded gears while maximizing power throughout the drivetrain. Max Gear outperforms ordinary gear oils by combining the highest quality synthetic oils with Royal Purple's proprietary Synerlec® additive technology. Max Gear makes gears run smoother, quieter, cooler and longer without overhauls.

### PERFORMANCE ADVANTAGES

- + Maximizes horsepower
- + Extends gear and bearing life
- + Reduces operating temperature
- + Lower coefficient of friction
- + Superior corrosion protection
- + Separates rapidly from water
- + For use with open, limited-slip and locking differential
- + Contains limited-slip friction modifier

### AVAILABLE PACKAGE SIZES



### MAX GEAR — TYPICAL PROPERTIES\*

ASTM TESTS		SAE GRADE			
		75W-90	80W-90	75W-140	85W-140
D445	Viscosity				
	cSt @ 40 °C	100	160	187	313
	cSt @ 100 °C	16.5	17.4	27.5	28.5
D2983	Brookfield Viscosity				
	cP @ -12 °C	—	—	—	22,000
	cP @ -26 °C	—	57,000	—	—
	cP @ -40 °C	65,000	—	135,000	—
D92	Flash Point °C (°F)	163 (325)	177 (350)	191 (375)	177 (350)
D97	Pour Point °C (°F)	-51 (-60)	-39 (-38)	-54 (-65)	-39 (-38)

\*Properties are typical and may vary.

### MAX GEAR PART NUMBERS

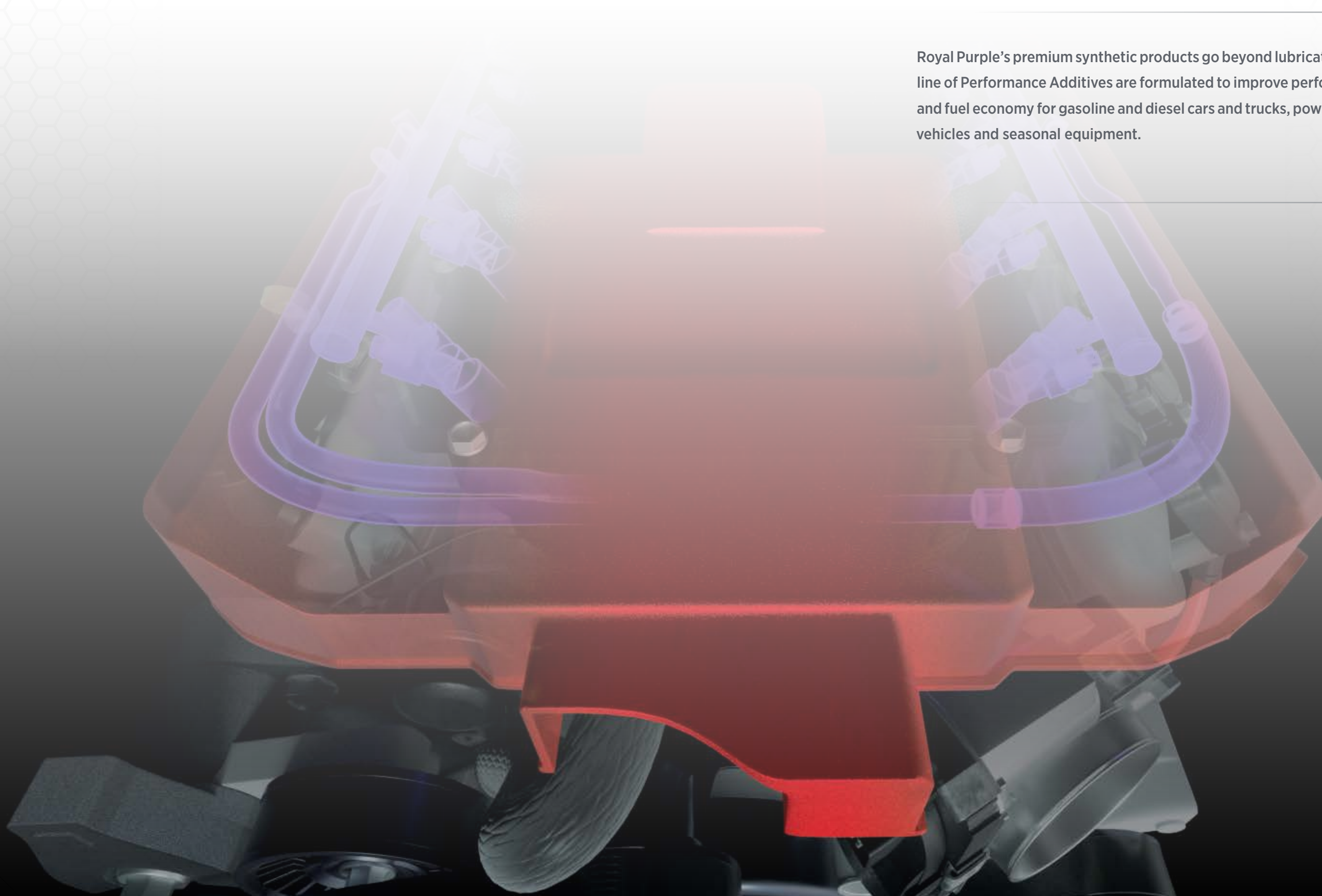
VISCOSITY	PACKAGE SIZE	ITEM NO.	MATERIAL NO.
75W-90	5-Gal. Pail	05300	301894175017
	6 x 1-Qt. Case	06300	301894175115
	1-Qt. Bottle	01300	
80W-90	5-Gal. Pail	05302	301437175017
	75W-140		
75W-140	55-Gal. Drum	55301	301070175008
	5-Gal. Pail	05301	301070175017
	6 x 1-Qt. Case	06301	301070175115
	1-Qt. Bottle	01301	
85W-140	6 x 1-Qt. Case	06303	301146175115
	1-Qt. Bottle	01303	







Royal Purple's premium synthetic products go beyond lubrication. Our line of Performance Additives are formulated to improve performance and fuel economy for gasoline and diesel cars and trucks, powersports vehicles and seasonal equipment.





# MAX-CLEAN® FUEL SYSTEM CLEANER & STABILIZER



Royal Purple® Max-Clean® is a state-of-the-art high performance fuel system cleaner that maximizes the performance of your fuel system. Max-Clean restores fuel economy by deeply penetrating deposits and cleaning injectors, carburetors, intake valves and combustion chambers.

Royal Purple Max-Clean is EPA / CARB Compliant. Recommended for use in gasoline and diesel engines and can be used with all ethanol blends or biofuel. Max-Clean can be used in both 4-cycle & 2-cycle engines and will not harm vehicle emissions equipment.

## PERFORMANCE ADVANTAGES

Multiple product fleet tests were conducted on various makes and models of vehicles. Royal Purple found that after as little as one treatment Max-Clean can:

- + Gas savings up to 6.1%
- + Lowers emissions up to 44%
- + Restores horsepower an average of 2.6%
- + Restore fuel economy an average of 5.5%
- + Prevents intake valve deposits at least 4X better vs. the nearest leading competitor to improve performance
- + Removes more than 68% of tough-to-remove combustion chamber deposits to improve performance and prevent damage to the engine
- + Reduce hydrocarbon, NOx and CO emissions (on average 12%, 13% and 18% respectively)
- + Prevent rough idle, hesitation and stalling
- + Prevent premature spark plug fouling
- + Reduce deposit-related engine knocking and pinging

Royal Purple Max-Clean also stabilizes fuel during low-use and storage periods, preventing varnishing of fuel.

## RECOMMENDED TREAT RATE

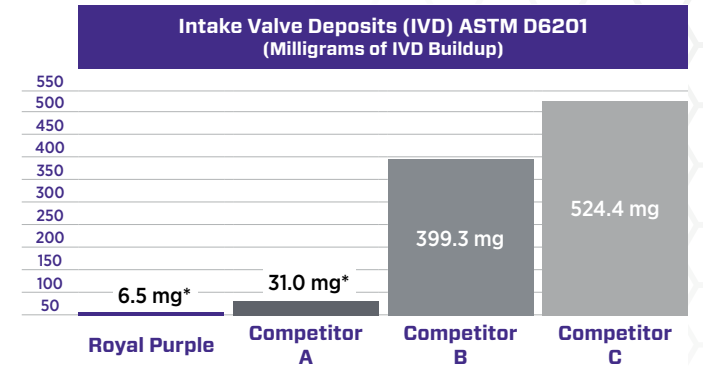
Pour entire contents of bottle into nearly empty tank immediately before refueling, then install fuel on top of additive. One (1) can treats up to 20 gallons. For tank sizes outside of this range, use one (1) ounce per gallon. In two-cycle engines, use one (1) ounce per gallon.

## RECOMMENDED USAGE

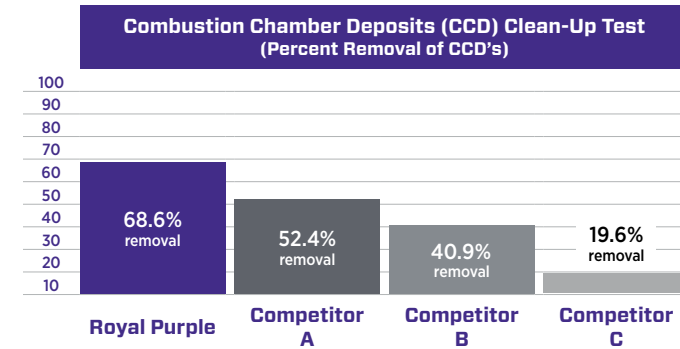
Max-Clean should be used every 10,000 miles or annually, whichever comes first.

Intake Valve Deposits (IVD's) are formed by oil slowly seeping past the intake valve guide seals and down the valve guides. When oil reaches the hot valve, it sticks and burns, forming black carbon deposits. They also result from unburned fuel vapors and oil vapors siphoning back into the intake manifold through the Positive Crankcase Ventilation (PCV) system. These stubborn deposits are very difficult to remove. As they accumulate, airflow into cylinders is restricted and causes loss of power and fuel economy. Max-Clean prevents IVD's and optimizes performance.

\*Testing performed 2020 by Southwest Research Institute.



\*Royal Purple/Competitor A pass TOP-TIER IVD spec (Must be <50 mg to pass TOP-TIER)



Combustion Chamber Deposits (CCD's) increase the compression ratio of an engine and the octane requirements of the fuel. If the fuel's octane rating is not high enough to compensate for CCD buildup, it results in detonation and build-up of heat/hot-spots that damage head gaskets, piston rings and rod bearings. Knock sensors in modern engines detect detonation and trigger the ECU to retard timing. But this reduces performance and fuel economy, and increases emissions. Max-Clean removes CCD's, relieves octane increase burden, and restores performance.

\*Testing performed 2020 by ATD GmbH.

## MAX-CLEAN PART NUMBERS

PACKAGE SIZE	ITEM NO.	MATERIAL NO.
6 x 20-Oz. Case	11723	300990175256
20-Oz. Bottle	11722	

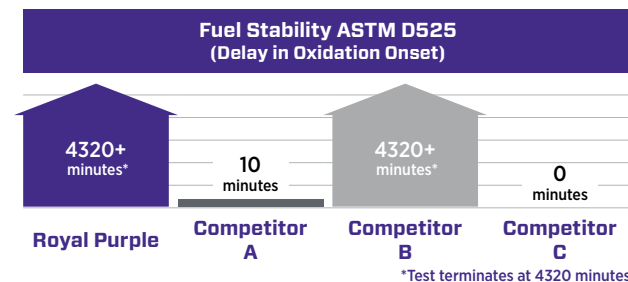
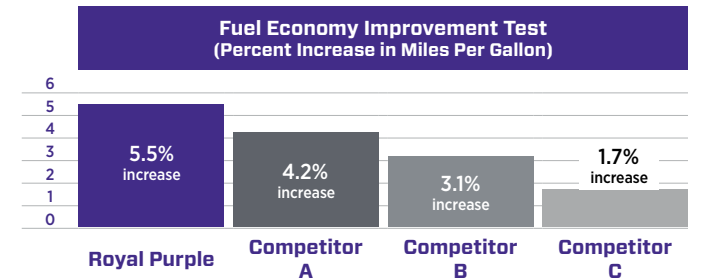
The illustration below shows the before and after effects of switching to Max-Clean.



Illustration of before and after effects.

Depending on the nature and severity of IVD's and CCD's, they can reduce fuel economy by an average of 2%-7%, depending on engine type, driving conditions, and type/octane of fuel used. Max-Clean provides a one tank clean-up and is only required once every 10,000 miles of driving. The dollar savings that results from decreased fuel consumption between Max-Clean applications more than offsets its cost – meaning it actually pays for itself.

\*Testing performed 2020 by ATD GmbH.



\*Test terminates at 4320 minutes

Oxidative stability of hydrocarbons in fuel impacts how quickly they chemically break down to form gums that stick to engine surfaces and coke (bake) into deposits. By delaying/preventing the onset of oxidation, less gums are formed, resulting in fewer deposits. This reduces the clean-up burden of fuel detergents. In this way, fuel stabilizers function synergistically with detergents to maintain total engine cleanliness. Max-Clean stabilizes fuel (especially before/after idle periods) to prevent deposit-forming gums.

\*Testing performed 2020 by Southwest Research Institute.



# MAX-ATOMIZER™ FUEL INJECTOR CLEANER



Royal Purple® Max-Atomizer™ is a highly concentrated, high performance fuel injector cleaner. It is specially formulated to solve problems with today's direct injection engines, but can be used with any type of fuel injection. Max-Atomizer contains highly concentrated polyether amine (PEA) detergents that quickly clean clogged and coked injectors to restore maximum injector flow. This optimizes injector spray patterns and better atomizes fuel as it enters the combustion chamber. The result is improved fuel economy, enhanced power and performance, reduced emissions, smoother idle, and quicker, easier starts. Max-Atomizer is the only fuel injector cleaner that also stabilizes ethanol, which chemically breaks down to cause harmful effects to an engine.

## PERFORMANCE ADVANTAGES

- + Restores fuel economy up to 4%
- + Removes more than 90% of fuel injector deposits which is as much as 10X the cleaning power of leading competitors
- + Improves injector flow by 94% to improve performance
- + Stabilizes ethanol
- + Maximizes horsepower
- + Improves responsiveness
- + For use in both gasoline and diesel engines
- + Recommended for all ethanol blends
- + Will not harm vehicle emissions equipment
- + EPA / CARB Compliant

## RECOMMENDED TREAT RATE

Pour entire contents of bottle into nearly empty tank immediately before refueling, then install fuel on top of additive. Minimum recommended dose is one (1) 6oz. bottle to 20 gallons of fuel. The maximum effective dose is one (1) 6oz. bottle to 10 gallons of fuel.

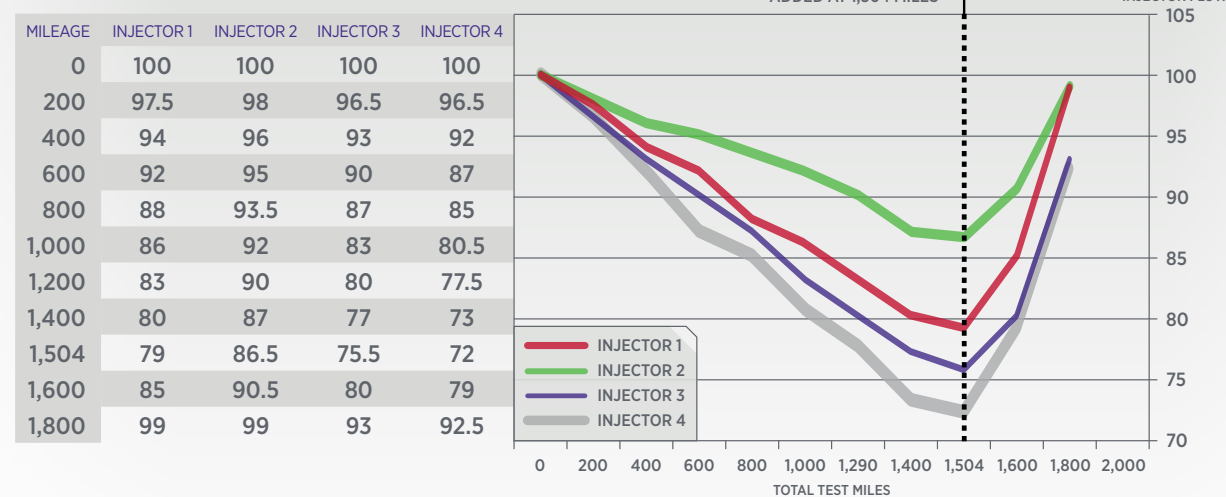
## RECOMMENDED USAGE

For best results, use at every fill-up. Minimum recommended usage is every 3,000 miles.

## MAX-ATOMIZER PART NUMBERS

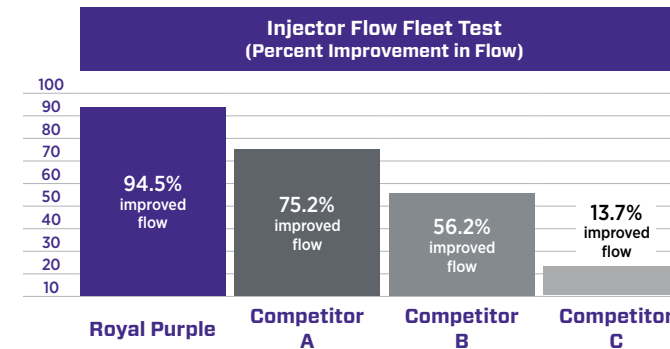
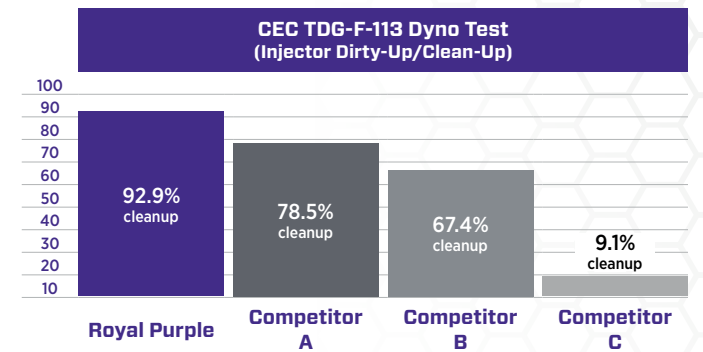
PACKAGE SIZE	ITEM NO.	MATERIAL NO.
12 x 6-Oz. Case	18000	301822175048
6-Oz. Bottle	18000	

## MAX-ATOMIZER RESTORES FUEL INJECTOR FLOW



Injector deposits form quickly in modern Gasoline Direct Injection (GDI) engines because injectors are located in the combustion chambers. This extreme high-temperature environment cokes (bakes) deposits onto injector nozzles, making them difficult to remove. Even a small amount of deposit on injector tips prevents optimal atomization of fuel, causing performance loss and reduced fuel economy. Max-Atomizer's high flash point allows it to reside in hot combustion chambers longer than other products, resulting in more effective deposit clean-up.

\*Testing performed 2020 by ISO 17025 CEC Research Lab.

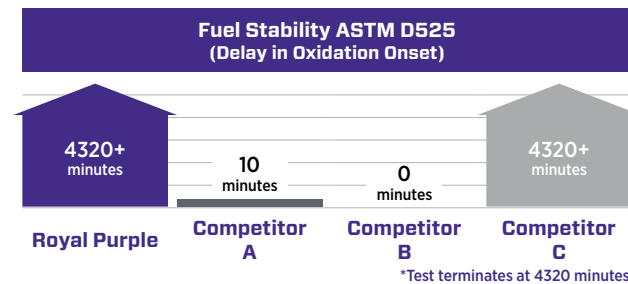
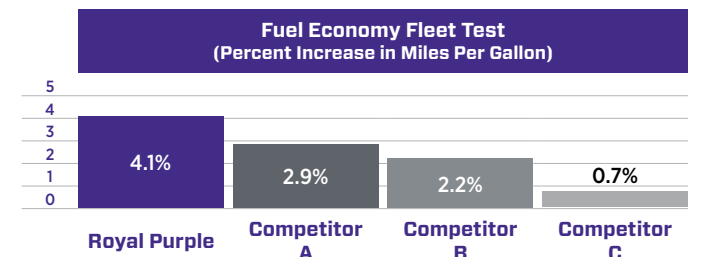


Injector flow rates are reduced when deposits form on the tips of injectors. Fuel Injector Cleaners (FIC's) face a tough task of cleaning/keeping-clean deposit-sensitive injectors. Volatile low-flash point detergents in most additives vaporize before reaching GDI injectors in extremely hot combustion chambers, especially in turbocharged engines. This results in incomplete clean-up, and reduced injector flow. Max-Atomizer improves injector flow rates when tested in BMW GDI turbo engines.

\*Testing performed 2020 by ATD GmbH.

Fuel economy is reduced when deposits are formed on injector nozzles. Modern engines have injector nozzles with a higher quantity of smaller holes. This reduces fuel droplet size and better atomizes fuel sprayed into combustion chambers. But smaller nozzle holes also clog easier, especially in GDI engines that are more deposit-prone. Reduced fuel atomization causes loss of power and fuel economy, and increases emissions. Max-Atomizer removes injector deposits and restores optimal injector atomization when tested in BMW GDI turbo engines.

\*Testing performed 2020 by ATD GmbH.



\*Test terminates at 4320 minutes

Oxidative stability of hydrocarbons in fuel impacts how quickly they chemically break down to form gums that stick to engine surfaces and coke (bake) into deposits. By delaying/preventing the onset of oxidation, less gums are formed, resulting in fewer deposits. This reduces the clean-up burden of fuel detergents. In this way, fuel stabilizers function synergistically with detergents to maintain total engine cleanliness. Max-Atomizer stabilizes fuel (especially before/after idle periods) to prevent deposit forming gums.

\*Testing performed 2020 by Southwest Research Institute.



# MAX-RESTORE HIGH MILEAGE FUEL SYSTEM TREATMENT



Royal Purple® Max-Restore High Mileage is a highly concentrated, high performance fuel treatment that is specially formulated to solve performance problems typically found in higher mileage vehicles.

Max-Restore contains a high dose of polyether amine (PEA) & proprietary detergents that quickly clean stubborn, long-term deposits, often found in high mileage engines, that clog injectors and provides a protective barrier to keep new deposits from forming.

This optimizes the injector spray pattern and better atomizes fuel as it enters the combustion chamber resulting in enhanced power and performance, reduced emissions, smoother idle, and quicker / easier starts.

It also utilizes friction modifier to reduce wear in the upper cylinder to help extend engine life and improve fuel economy.

## PERFORMANCE ADVANTAGES

- + Fuel economy - Restores fuel economy up to 5.9%
- + Emissions - Lowers emissions up to 14.8%
- + Wear - Reduces wear by lubricating key fuel system parts and extends engine life
- + Performance - Restores injector flow by up to 78.5%

## RECOMMENDED TREAT RATE

Pour entire contents of bottle into nearly empty tank immediately before refueling, then install fuel on top of additive. Minimum recommended dose is one (1) 6oz. bottle to 20 gallons of fuel. The maximum effective dose is one (1) 6oz. bottle to 10 gallons of fuel.

## RECOMMENDED USAGE

For best results, use at every fill-up. Minimum recommended usage is every 3,000 miles.

## MAX-RESTORE PART NUMBERS

PACKAGE SIZE	ITEM NO.	MATERIAL NO.
6 x 6-Oz. Case	18001	500807175053
6-Oz. Bottle	18001	

The 1.4L GDI dyno test engine runs a 48 hr Dirty-Up (DU) phase to build injector deposits using a purposefully “dirty” gasoline blend. Max-Restore was added, and the engine runs a 24 hr Clean-Up (CU) phase. Coked injector deposits form, which reduce fuel flow due to clogging of holes, and optimal spray patterns are disrupted due to carbon deposits on injector tips, altering emissions, fuel economy, and horsepower. Long-Term Fuel Trim (LTFT) data is accumulated to quantify injector shift necessary to overcome injector deposit buildup. The engine is torn down at 48 hrs / 24 hrs for photographing injectors.

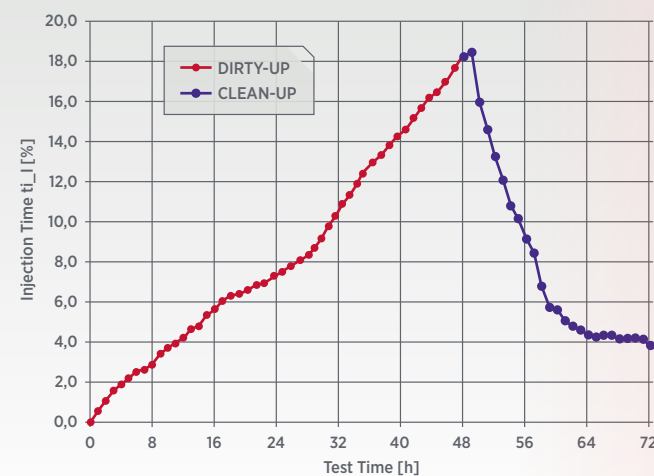


GDI fuel injector nozzle tip with coked deposits, after 48 hr Dirty-Up (DU) test phase.



GDI fuel injector nozzle tip with coked deposits, after 24 hr Clean-Up (CU) test phase.

Deposit removal began immediately at 48 hours, resulting in 79.2% total Clean-Up (CU) related to Dirty-Up (DU) fouling. This is indicated by the steep downward purple portion of the LTFT injector timing data.





# MAX-TANE® ALL-IN-ONE + ALL-SEASON DIESEL ADDITIVE



Royal Purple® Max-Tane® is formulated for year-round use in all types of light, medium and heavy duty diesel engines, and is compatible with any type or grade of diesel fuel, including #1 diesel and #2 diesel, biodiesel and ultra-low-sulfur diesel (ULSD). Max-Tane is specifically formulated to solve problems associated with today's new HPCR (High Pressure Common Rail) diesel injection systems. Safe for use with all types of diesel exhaust emission systems equipment, including diesel particulate filters (DPFs) and catalytic converters. Do not pour into Diesel Exhaust Fluid.

## PERFORMANCE ADVANTAGES

- + Increases Cetane Number by up to 8\*
- + Increases fuel economy by up to 10%
- + Improves engine startup and reliability in both warm and cold temps
- + Improves cold flow by preventing gelling
- + Cleans deposits from fuel injectors, combustion chambers, intake valves and piston crowns
- + Provides lubricity to entire fuel system
- + Reduces smoke and odor

\* When used as directed.

## RECOMMENDED TREAT RATE

The minimum recommended dosage is one (1) ounce per five (5) gallons of diesel fuel. High performance applications can safely use one (1) ounce per two (2) gallons of diesel fuel for maximum benefit. If uncertain of exact tank size, round up. Replace cap after bottle has been emptied and dispose of properly.

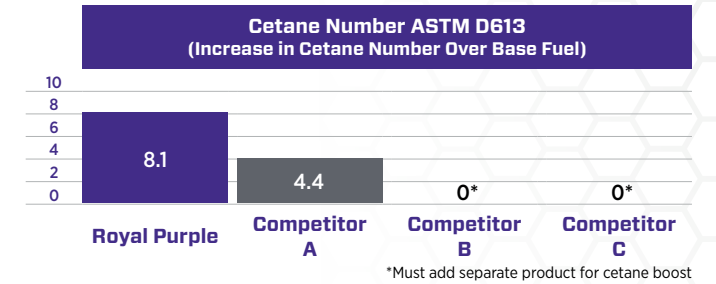
20 Ounces	→	100 Gallons
15 Ounces	→	75 Gallons
10 Ounces	→	50 Gallons
5 Ounces	→	25 Gallons

## MAX-TANE PART NUMBERS

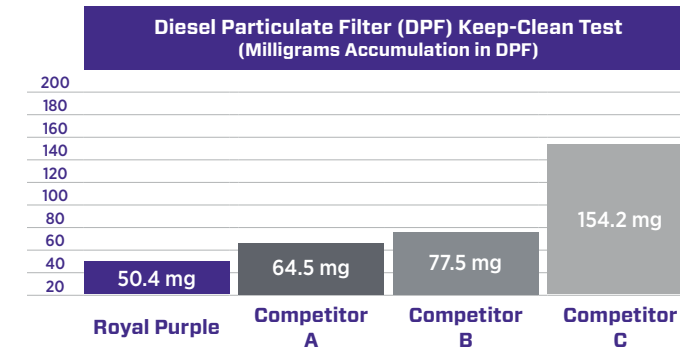
PACKAGE SIZE	ITEM NO.	MATERIAL NO.
6 x 20-Oz. Case	06755	301695175256
20-Oz. Bottle	11755	

Higher cetane allows quicker ignition of diesel, which boosts power/performance and improves completeness of combustion. With less non-ignited hydrocarbons inside the combustion chamber, deposit formation is reduced. Optimized combustion also results in faster cold startups, smoother and quieter engine operation, reduced downshifts, less soot/black smoke production, reduced emissions, and improved fuel economy. Max-Tane provides maximum cetane boost as it contains 100% active ingredients, and unlike other products is not blended with inactive solvent carriers.

\*Testing performed by Intertek Automotive Research.



\*Must add separate product for cetane boost

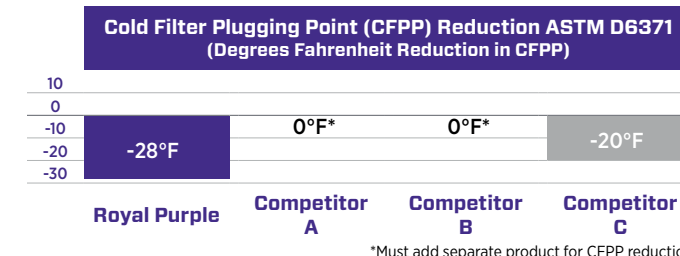
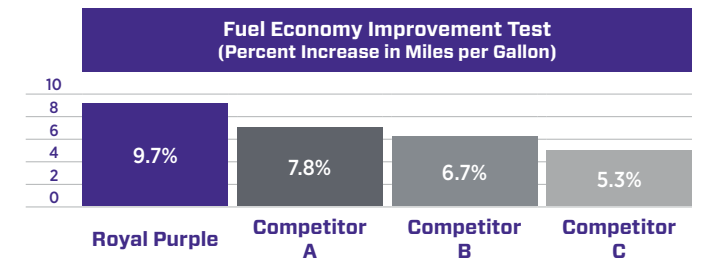


Diesel particulate emissions are captured by the DPF, where they accumulate and cause clogging unless burned off during regeneration cycles. With improved combustion efficiency, less particulate soot accumulates in the DPF, requiring fewer regenerations. Cleaner filters also reduce exhaust backpressure, allowing efficient engine operation and reduced temperatures. Stop-and-go urban driving causes incomplete regenerations, which can require removal/manual cleaning or replacement of DPF. Max-Tane keeps DPFs clean and helps prevent costly downtime resulting from manual cleaning or replacement of DPF.

\*Testing performed by ATD GmbH.

High Pressure Common Rail (HPCR) diesel injectors are vulnerable to fuel contaminants due to extremely tight 1-3 micron clearances between injector assemblies and needle plungers. When deposits form, needle plungers stick, resulting in reduced fuel atomization and 5-12% losses in fuel economy. Max-Tane contains potent, diesel-specific detergents that keep HPCR injectors clean and deposit-free. It also contains friction modifiers that prevent sticking of HPCR needle plungers. This allows complete atomization of diesel entering combustion chambers, and restores lost fuel economy.

\*Testing performed by ATD GmbH.



\*Must add separate product for CFPP reduction

Wax naturally found in diesel forms gels in cold temps, which clogs filters/injectors, and prevents engines from starting. The temperature at which gel begins to clog the fuel filter is the "Cold Filter Plugging Point" or (CFPP). Max-Tane reduces CFPP an average of 28°F., which allows diesels to reliably start/run in the cold temperatures. Max-Tane is the only "All-in-One" additive that combines summer benefits of cetane boost and fuel economy improvement with the winter benefit of CFPP reduction.

\*Testing performed by Intertek Automotive Research.





Royal Purple® Max-Boost® is a high-performance octane booster and fuel treatment that increases gasoline octane, reduces emissions, and enhances engine performance while stabilizing fuel. Max-Boost is formulated with MMT, which delivers the best octane enhancement to help eliminate engine damaging detonation, pre-ignition, and pinging or knocking from low octane gasoline.

Max-Boost is formulated for engines equipped with carburetors, port fuel injection and direct injection, as well as turbocharged, supercharged and nitrous-injected engines. Safe for use in leaded and unleaded gasolines, and alternate fuels like gasohol, reformulated gasoline, and all ethanol blends. Max-Boost is safe for oxygen sensors and catalytic converters.

### PERFORMANCE ADVANTAGES

- + Restores power and fuel economy
- + Raises octane rating up to 30 points or 3 numbers
- + Cleans deposits from fuel injectors
- + Stabilizes fuel
- + Reduces engine knocking and pinging
- + Restores lost power due to knock-retard in computer controlled engines
- + Replaces lead additives for protection of non-hardened valve seats

### RECOMMENDED TREAT RATE

Each 16-ounce bottle of the Royal Purple Max-Boost treats up to 25 gallons of gasoline, with the maximum recommend and effective dosage for vehicles with O2 sensors or catalytic converters at one (1) ounce of Max-Boost per gallon of fuel. We do not recommend going over our one (1) ounce per gallon dosing recommendation on vehicles equipped with O2 sensors and catalytic converters. For vehicles that do not have O2 sensors or catalytic converters, you could go with our maximum racing dosage of two (2) ounces per gallon of fuel. We do not recommend going over two (2) ounces per gallon of fuel. For best results we recommend installing the Max Boost into a nearly empty tank and then filling it up. Clean immediately if spills occur, as product can permanently stain painted surfaces. Do not expose liquid to direct or indirect sunlight. Replace cap after can has been emptied, and dispose of properly.

**PLEASE NOTE:** Max-Boost is a racing formula and is not street legal. Please consult Royal Purple's automotive technical support department at 281-354-8600 or 888-382-6300 for more information.

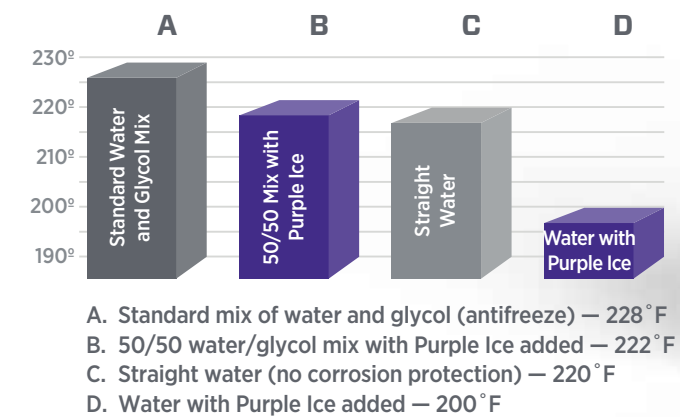
### MAX-BOOST PART NUMBERS

PACKAGE SIZE	ITEM NO.	MATERIAL NO.
6 x 16-Oz. Case	06757	301697175039
16-Oz. Bottle	11757	

Royal Purple® Purple Ice® is a high performance radiator conditioner. Its advanced 2-in-1 corrosion inhibitor and wetting agent provides year-round defense against corrosion and reduces the surface tension of the radiator coolant to help reduce engine temperatures.

### REDUCED COOLANT TEMPERATURES

Extensive testing confirms Purple Ice reduces coolant temperatures better than comparable products while providing extra corrosion protection. For example, the average operating temperature of a 350 c.i.d. V8 engine (equipped with 160° thermostat) when dyno-tested with different coolants are:



### PERFORMANCE ADVANTAGES

- + Reduces coolant surface tension to allow greater heat transfer, resulting in lower coolant temperatures
- + Reduces hot spots in the engine and cylinder heads, reducing the possibility of engine failure
- + Helps prevent overheating, keeps the system clean and extends the life of the water pump
- + Purple Ice is safe to use with water-only or antifreeze / water blends
- + Purple Ice is compatible with OEM and stock replacement coolants, including extended-life antifreezes
- + Purple Ice does not contain glycol and is safe and legal for track use

### PURPLE ICE PART NUMBERS

PACKAGE SIZE	ITEM NO.	MATERIAL NO.
12 x 12-Oz. Case	12600	500214175050
12-Oz. Bottle	01600	

### RECOMMENDED TREAT RATE\*

- + For use with 50/50 antifreeze / coolant mixture: 1 oz. / quart of cooling system capacity
- + For use with straight water or higher water percentage antifreeze / coolant mixture: 2 oz. / quart of cooling system capacity
- + Minimum of 20% antifreeze is recommended in street-driven vehicles. Purple Ice does not provide freeze protection. Use an appropriate amount of antifreeze for the cold temperatures in your area.





## SPECIALTY LUBRICANTS

Royal Purple® offers a variety of synthetic Synerlec® infused lubricants for a wide range of uses in both the DIY garage and home.





# MAX EZ® POWER STEERING FLUID



Royal Purple® Max EZ® is an advanced power steering fluid designed to maximize the life and performance of all power steering units. Max EZ is formulated with a blend of select synthetic base oils plus Royal Purple's proprietary Synerlec® additive technology, which is proven to make equipment run cooler, longer, quieter and more efficiently. Max EZ is compatible and can be mixed with any OEM or stock replacement power steering fluid and has excellent seal compatibility.

### PERFORMANCE ADVANTAGES

- + Greater wear protection
- + Clean, efficient equipment
- + Extended pump life
- + Much longer fluid life
- + Non-foaming
- + Outstanding rust / corrosion protection
- + High temperature service capability

### MAX EZ PART NUMBERS

PACKAGE SIZE	ITEM NO.	MATERIAL NO.
12 x 12-Oz. Case	12326	301145175050
12-Oz. Bottle	01326	

### MAX EZ — TYPICAL PROPERTIES\*

ASTM TESTS		
D445	Viscosity	
	cSt @ 40 °C	48.0
	cSt @ 100 °C	8.50
D2270	Viscosity Index	153
D92	Flash Point °C (°F)	204 (400)
D97	Pour Point °C (°F)	-45 (-49)

\*Properties are typical and may vary.

# MAX-TUFF™ SYNTHETIC ASSEMBLY LUBRICANT



Royal Purple® Max-Tuff™ is an ultra-tough, synthetic assembly lubricant. It's designed for use in the build or repair of any mechanical component that needs immediate lubrication and protection from the first use. Max-Tuff utilizes unique, synthetic molecules that adhere to metal surfaces to create a formidable, load-bearing physical barrier between surfaces. This minimizes the metal-to-metal contact and wear in boundary lubrication conditions. It also provides excellent protection against rust and corrosion of both ferrous and nonferrous metals.

### PERFORMANCE ADVANTAGES

- + Greater wear protection
- + Clean, efficient equipment
- + Extends equipment life
- + Compatible with conventional mineral and synthetic oils
- + Non-foaming
- + Outstanding rust / corrosion protection
- + High temperature service capability

### MAX-TUFF — TYPICAL PROPERTIES\*

ASTM TESTS		
D445	Viscosity	
	cSt @ 40 °C	650
	cSt @ 100 °C	47.0
D2270	Viscosity Index	122
D92	Flash Point °C (°F)	191 (375)
D97	Pour Point °C (°F)	-39 (-38)

\*Properties are typical and may vary.

### MAX-TUFF PART NUMBERS

PACKAGE SIZE	ITEM NO.	MATERIAL NO.
8-Oz. Bottle	01335	301451175046



# MAX-CHAIN® SYNTHETIC CHAIN LUBRICANT



Royal Purple® Max-Chain® is an advanced, high performance, synthetic lubricant that provides excellent protection for chains, open gears and exposed metal surfaces subjected to severe loading — even in dusty, wet, acidic environments.

Max-Chain is a unique, thixotropic lubricant blended with a solvent carrier. When applied, Max-Chain penetrates the rollers, pins and bushings of the chain, then the carrier evaporates leaving a tenacious, dry, wax-like film. This non-tacky film effectively minimizes the collection of abrasive dust and other airborne contaminants. The EP properties of Max-Chain greatly reduce wear and effectively extend equipment life. Max-Chain is suitable for operating temperatures up to 400°F (after carrying solvent has evaporated) and provided excellent protection against rust and corrosion. Max-Chain uses a non-petroleum CO2 propellant.

### PERFORMANCE ADVANTAGES

- + Easily applied
- + Long lasting
- + Does not attract dust / particulates
- + Protects heavily loaded surfaces
- + Excellent corrosion protection

Max-Chain should be used in an up-right position to maximize aerosol propellant life.

### MAX-CHAIN PART NUMBERS

PACKAGE SIZE	ITEM NO.	MATERIAL NO.
12 x 11-Oz. Case	12330	500133175261
11-Oz. Can	05330	

### MAX-CHAIN — TYPICAL PROPERTIES\*

ASTM TESTS		
D445	Viscosity	
	cSt @ 40 °C	4.90
	cSt @ 100 °C	1.70
D92	Aerosol Flash °C (°F)	102 (215)

\*Properties are typical and may vary.

# MAXFILM® SYNTHETIC PENETRATING LUBRICANT



Royal Purple® Maxfilm® is a high film strength, multipurpose, synthetic lubricant / penetrant that excels in a wide array of applications. Maxfilm deeply penetrates and loosens rusted parts. Once applied, its solvent carrier evaporates and leaves a tenacious, thixotropic lubricating film on all metal surfaces, providing long-lasting protection against wear, rust and corrosion.

Maxfilm contains Royal Purple's proprietary Synerlec® additive technology, which is proven to make equipment run smoother, cooler, quieter, longer and more efficiently. Maxfilm uses a non-petroleum (CO2) propellant.

### MAXFILM IS RECOMMENDED FOR:

- + Loosening stuck parts such as nuts, bolts, locks, hinges, etc.
- + Lubrication of power tools, hinges, chains, rollers, open gears, fishing tackle, lawn equipment, etc.
- + Preserving and protecting parts in storage, disassembled machinery parts, wire ropes, etc., against rust and corrosion
- + Use as a manual cutting fluid to facilitate the ease of hand drilling, tapping, metal cutting, etc., of steel and aluminum

For best results, shake Maxfilm well before each use and use the can in an upright position to maximize aerosol propellant life.

### MAXFILM — TYPICAL PROPERTIES\*

ASTM TESTS		
D445	Viscosity	
	cSt @ 40 °C	7.10
	cSt @ 100 °C	2.10
D2270	Viscosity Index	101
D92	Aerosol Flash °C (°F)	102 (215)

\*Properties are typical and may vary.

### MAXFILM PART NUMBERS

PACKAGE SIZE	ITEM NO.	MATERIAL NO.
12 x 11-Oz. Case	15000	500262175261
11-Oz. Can	05000	





Royal Purple Synfilm® Multi-Purpose Synthetic Lubricant is an outstanding choice for any small component or piece of equipment that needs a light lubricant and excellent corrosion protection. The formulation is very similar to the legacy Synthetic Gun Oil aerosol and is excellent for fire arm lubrication and protection. In the 2oz dropper bottle, application is much easier to control, allowing the lubricant to be applied with no overspray.

Recommended uses are for the lubrication of sporting equipment, such as firearms and fishing reels, pneumatic tools, antique fan bushings/bearings, door hinges, and any other light lubrication application.

Royal Purple® Ultra-Performance® Grease (UPG) is a high performance, multi-purpose, aluminum-complex, synthetic EP grease which significantly increases bearing life and equipment reliability. It also makes bearings run smoother, cooler and quieter.

UPG is an excellent choice for a wide range of applications including bearings, U-joints, greased suspension components, and general purpose use. It offers outstanding extreme pressure performance and excellent resistance to emulsion with water and water wash-out. UPG is stable at high temperatures. It also has excellent oxidation resistance for extended service life and to provide a margin of safety between lubrication intervals.

### PERFORMANCE ADVANTAGES

- + Handles extreme loads
- + Reduces heat
- + Reduces wear
- + Lowers operating temperatures
- + Reduces vibrations



### SYNFILM — TYPICAL PROPERTIES\*

ASTM TESTS		
D445	Viscosity	
	cSt @ 40 °C	30.0
	cSt @ 100 °C	5.4
D2270	Viscosity Index	120
D92	Flash Point °C (°F)	204 (400)
D97	Pour Point °C (°F)	-51 (-60)

\*Properties are typical and may vary.

### UPG — TYPICAL PROPERTIES\*

ASTM TESTS		
D445	Viscosity (base oil)	
	cSt @ 40 °C	180
	NLGI Grade	2
	Texture	Buttery
	Thickener Type (soap base)	Aluminum Complex
D2265	Dropping Point °C (°F)	274 (525)
D217	Cone Penetration	
	Worked, 60 Strokes, mm	285
D2596	4-Ball EP Test	
	Weld Load, kg	400
	Load Wear Index, kg	65.2
	Weld Point, kg	100
D2266	4-Ball Wear Test	
	Scar Diameter, mm	<0.6
D1743	Rust Protection	Pass
D4084	Copper Corrosion, 24 hr, 100 °C	18
D1264	Water Washout, 79 °C, %	4.5
FTMS 791B	Oil Separation, %	<5

\*Properties are typical and may vary.

### SYNFILM PART NUMBERS

PACKAGE SIZE	ITEM NO.	MATERIAL NO.
50 x 2-Oz. Case	22514	300867175066
2-Oz. Bottle	02514	

### AVAILABLE PACKAGE SIZES



### UPG PART NUMBERS

PACKAGE SIZE	ITEM NO.	MATERIAL NO.
35lb. / 5-Gal. Pail	35312	301961175015
14.1-Oz. Tube	01312	301961175235



# SYNFILM® RECIP. 100 RECIPROCATING AIR COMPRESSOR OIL

WITH SYNERLEC®



## AVAILABLE PACKAGE SIZES



## SYNFILM RECIP. 100 PART NUMBERS

PACKAGE SIZE	ITEM NO.	MATERIAL NO.
6 x 1-Qt. Case	06513	301996175115
1-Qt. Bottle	01513	

Royal Purple® Synfilm® Recip. 100 is recommended for lubrication of reciprocating air compressors (piston type) that specify a SAE 30 or a “non-detergent” 30 weight oil.

Synfilm Recip. 100 is a long life, high film strength, energy efficient, synthetic lubricant that significantly increases the reliability and efficiency of reciprocating air compressors. It excels at reducing wear and keeping discharge valves free of harmful carbon deposits. Synfilm Recip. 100 forms a better seal and reduces friction between the cylinder wall and piston rings for greater compressor efficiency. It is formulated with Royal Purple’s unique, proprietary Synerlec® additive technology, which is proven to make equipment run smoother, cooler, quieter, longer and more efficiently.

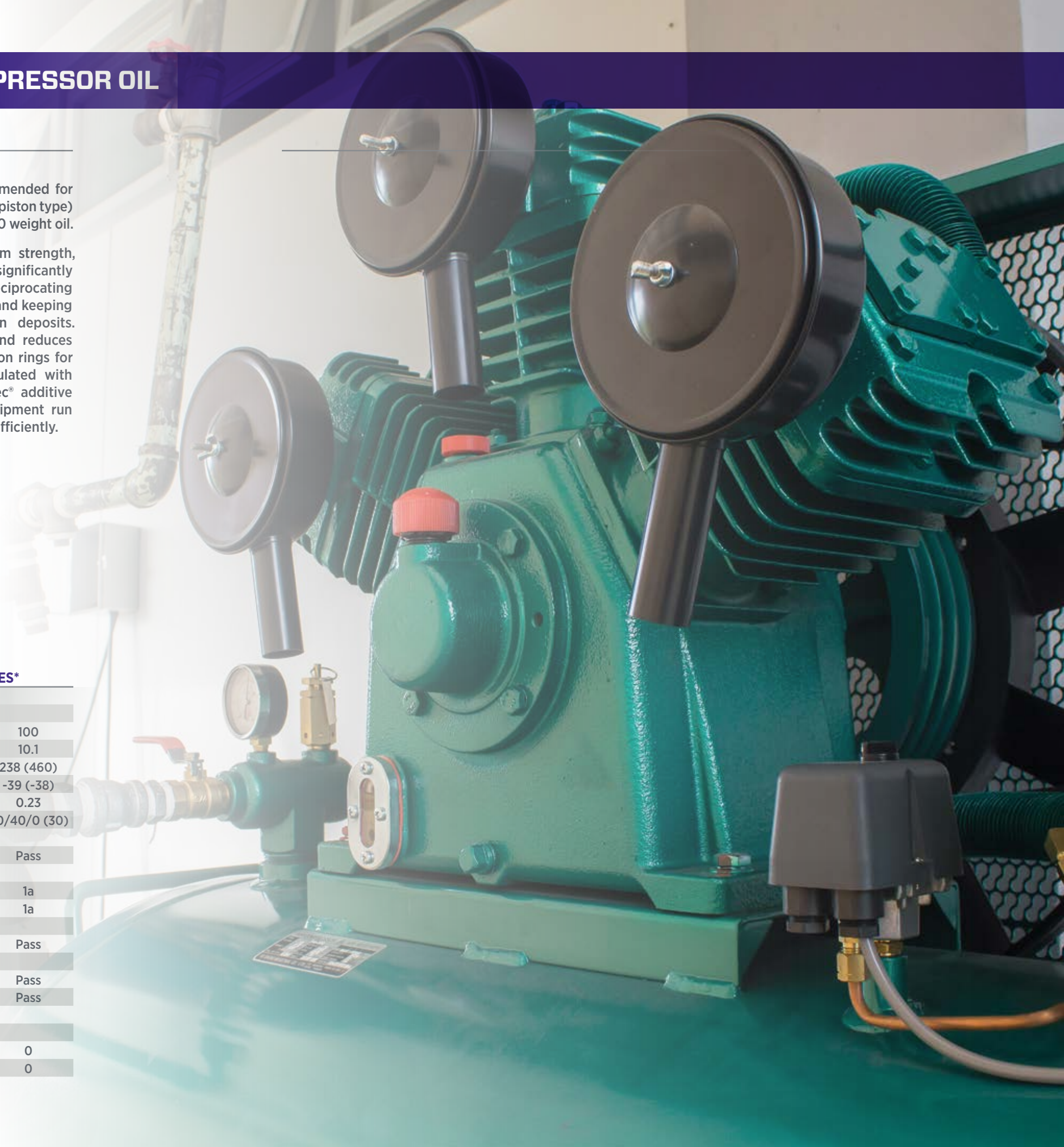
## PERFORMANCE ADVANTAGES

- + High film strength
- + Rapidly separates from water
- + Saves energy
- + Synthetic solvency
- + Longer oil life
- + Excellent corrosion protection

## SYNFILM RECIP. 100 — TYPICAL PROPERTIES\*

ASTM TESTS		
D445	Viscosity	
	cSt @ 40 °C	100
	cSt @ 100 °C	10.1
D92	Flash Point °C (°F)	238 (460)
D97	Pour Point °C (°F)	-39 (-38)
D664	Acid Number	0.23
D1401	Demulsibility	40/40/0 (30)
D892	Foam Tests	
	Sequence I, II & III	Pass
D130	Copper Corrosion	
	3 hrs. @ 210 °F	1a
	250 hrs. @ 210 °F	1a
	Cincinnati Millicron “A”	
	Corrosion / Oxidation	Pass
D665	Rust Test	
	Fresh Water	Pass
	Salt Water	Pass
D2893	Dry Air Oxidation	
	312 hrs. @ 203 °F	
	% Viscosity Increase	0
	Precip. No. (% Solids)	0

\*Properties are typical and may vary.







## FAQS

Get the answers to frequently asked questions about our most popular products.

### MOTOR OILS

#### What is the difference between HPS® and Royal Purple® High Performance motor oils?

Royal Purple High Performance motor oil is formulated specifically to meet current American Petroleum Institute (API), International Lubricant Standardization and Approval Committee (ILSAC), and Association des Constructeurs Européens d'Automobiles (ACEA) specifications for new vehicle warranties. Over the last several years, these specifications have become increasingly restrictive on certain additives, particularly those commonly used for anti-wear. As such, API/ILSAC compliant oils aren't the best solution for consumers that have modified their vehicles or those simply looking for the greatest performance.

HPS is formulated with consumers in mind. This motor oil line offers the incredible performance and protection provided by Royal Purple's proprietary Synerlec technology as well as a dramatically enhanced anti-wear package. HPS is also the choice for those seeking to maximize horsepower and torque, while reducing wear, heat and fuel consumption. HPS is the most robust engine oil Royal Purple makes for non-racing applications.

#### Will HPS harm my catalytic converters?

No. Testing has shown no short or long term adverse affects on catalysts in mechanically sound vehicles.

#### Can I use HPS in my diesel engine?

Absolutely. All viscosities of HPS are formulated for use in gas and/or diesel engines and are ideal for those with modified diesels or those simply looking for more performance out of their diesel.

#### Are Royal Purple oils compatible with other motor oils?

Yes. Royal Purple lubricants are fully compatible with mineral or synthetic oils. No special procedures are necessary when switching to Royal Purple. We recommend against intentionally creating a mixture of different brands or product lines of engine oils.

#### Can your motor oil be used in older engines?

Yes. Mileage and/or age is not a factor when used in a mechanically sound engine. In high-mileage applications, we do recommend running a minimum of two short 3,000 mile (5,000 km) intervals before extending the oil drain intervals. This will enable Royal Purple's high solvency to remove existing deposits gradually; if excessive, such deposits can restrict oil flow, as well as reduce the oil service life significantly.

#### Can I use Royal Purple in my brand new car?

Yes. Royal Purple currently offers many viscosity grades of High Performance motor oils<sup>1</sup>. To allow for proper break-in of the engine, Royal Purple recommends waiting until the manufacturer's first scheduled oil

change or a minimum of 2,000 miles (3218 km) in new gasoline engines. Allow a minimum of 6,000 miles (9656 km) before using Royal Purple in diesel engines.

#### How many miles can I go between oil changes in vehicles that use gasoline?

Royal Purple suggests adhering to manufacturer's recommended oil change intervals for vehicles under warranty using Royal Purple High Performance SAE motor oils. With Royal Purple HMX<sup>1</sup> and HPS series oils, drain intervals may be extended to 15,000 miles (20,000 km) or one year, whichever occurs first in street-driven, mechanically-sound vehicles. For guidelines specific to your vehicle, we recommend contacting our technical department 888-382-6300.

#### How many miles can I go between oil changes in vehicles that use diesel engine oil?

Royal Purple suggests adhering to manufacturer's recommended oil change intervals for vehicles under warranty. Vehicles no longer under warranty using Royal Purple Duralec Super, Duralec Ultra, or HPS engine oils, that hold 10-quarts of oil or more, can extend oil change intervals up to 15,000 miles (24,140 km) or one year, whichever occurs first in street driven, mechanically-sound vehicles. For smaller capacity diesel engines, oil change intervals should be every 12,000 miles (19,312 km) or one year if using the Duralec Super engine oil series, or if using the Duralec Ultra or HPS engine oil series we recommend every 15,000 miles (24,140 KM) or 1 year. For guidelines specific to your vehicle, we recommend contacting our technical department at [rpautotech@royalpurple.com](mailto:rpautotech@royalpurple.com).

#### Is Royal Purple synthetic motor oil?

Yes. Royal Purple Motor Oils are composed of a proprietary formulation of synthetic base oils and synthetic additives containing iso-paraffinic diluents.

Royal Purple Break-In Oil is the only non-synthetic consumer engine oil offered by Royal Purple.

#### Will synthetic oil cause my engine to leak or consume more oil?

Properly formulated synthetic oils will generally not cause an engine oil leak. Synthetic oils possess a higher degree of natural solvency, which can clean and remove deposits left by previous oils. The removal of extensive oil deposits can expose marginal or damaged oil seals, which may then leak. If an engine currently has excessive oil consumption (i.e. greater than 1 quart / 1,000 miles) the recommended course of action is to solve the oil consumption problem before switching to a synthetic.

#### Should I use an oil additive with Royal Purple?

No. We strongly recommend against using any oil additives as do most automotive manufacturers. Engine oils are formulated with a fine balance of additives (anti-foam, corrosion inhibitors, anti-wear, detergent / dispersants, oxidation inhibitors), and more is not necessarily better. The use of an oil additive could upset the balance resulting in reduced performance.



**MOTOR OILS**

**Does Royal Purple maintain its purple color after it's put into service?**

No. The dye that's used to color the oil dissipates shortly after being put into service. The oil will appear brown at some point.

**Do your motor oils contain zinc/phosphorus?**

Yes. All Royal Purple® engine oils contain the zinc/phosphorus compound zinc dialkyl dithiophosphate (ZDDP), but the maximum amounts are restricted by the current API oil specifications. For stock, non-performance automotive street applications, High Performance API SP or API SN Euro formulations licensed oils are OK. For better wear protection, Royal Purple HPS® and XPR® lines of engine oils are formulated with a higher concentration of the zinc and phosphorus anti-wear additive and are suitable for ALL flat tappet and roller tappet camshaft valve trains. For a specific recommendation, contact our tech department at 888-382-6300.

**Can your oil be used with flat tappet cams?**

Yes. For stock, non-performance valve trains, Royal Purple High Performance oils (API SP or API SN Euro formulations and ILSAC GF-6A licensed) are OK. For upgraded performance flat tappet camshafts, and vintage high performance engines, we recommend our HPS or XPR engine oils. For a specific recommendation, contact our tech department at 888-382-6300.

**Is a special oil filter required when using Royal Purple?**

While no special oil filter is required, we do recommend upgrading to a high quality oil filter. A high quality filter will prevent contaminants from circulating through the system and causing damage.

**Is HMX® different from your High Performance engine oils?**

Yes, HMX is fortified with Royal Purple's proprietary Synerlec additive technology as well as additional seal conditioners beneficial to higher mileage engines to maintain elasticity of gaskets and seals. HMX is also formulated with a slightly higher amount of anti-wear additive to provide more wear protection for older engines.

**Why should I use a high mileage oil?**

A properly formulated High Mileage oil like HMX will help reduce oil consumption and restore lost power. HMX is chemically enhanced to revitalize hardened seals reducing oil consumption common in higher mileage engines.

**OIL FILTERS**

**Are Royal Purple Extended Life Oil Filters compatible with all conventional and synthetic oils?**

Yes. All Royal Purple premium oil filters are compatible with both types of motor oils.

**Do Royal Purple Extended Life Oil Filters meet all original equipment requirements and vehicle warranty?**

Royal Purple filters meet or exceed original equipment manufacturers' requirements. All new car warranties remain in effect when using Royal Purple Filters.

**How does the quality of Royal Purple Extended Life Oil Filters compare with other manufacturers'?**

Royal Purple premium filters use 100% synthetic micro-glass media for superior particle removal with 99% filtration efficiency at 25 microns and larger, and 80% of particles 10 microns and larger.

**What is the recommended change interval?**

Vehicles under warranty should follow the vehicle manufacturer's recommended change intervals. For non-warranty applications, the useful life of Royal Purple premium oil filters is the life of the engine oil. Vehicles driven in severe conditions should follow the change intervals recommended in their owner's manual; severe conditions are defined as racing or commercial applications, frequent towing or hauling, extremely dusty or dirty conditions, or excessive idling.

**What is the efficiency rating and at what micron size?**

The efficiency of a filter is described in terms of a percentage of particles caught at a certain particle size (and larger). Using the ISO 4548-12 multi-pass filtration efficiency test, Royal Purple filters are:

- 99% at 25 micron and larger
- 98.7% at 20 micron and larger
- 80% at 10 micron and larger

**Are all Royal Purple Extended Life Oil Filters constructed with a silicone anti-drain back valve? Why silicone?**

There are a couple of options for anti-drain back in the engine oil system. Some systems work best with the valve in the filter, some have anti-drain back function installed elsewhere in the engine's oiling system (in the oil pump, for example). For those applications that benefit from an anti-drain back valve in the filter, there will be one in the Royal Purple filter. All of the anti-drain back valves used in Royal Purple filters are silicone to provide outstanding high-temperature resistance and function, and to retain flexibility.

**MOTORCYCLE OILS**

**What oil do you recommend for Harley Davidson® motorcycles?**

For all Harley Davidson and other air-cooled V-twin motorcycles, we recommend Royal Purple Max-Cycle 20W-50. If the owner's manual recommends a 10W-40 or 15W-40, Max-Cycle 10W-40 is the best option.

**Will Royal Purple Max-Cycle cause my clutch to slip?**

No. Royal Purple Max-Cycle engine oils are rated JASO MA2 in the JASO T903:2011 Clutch Friction Test. MA2 is the highest wet clutch compatibility rating.

**I notice a strange odor when running Max-Cycle in my Harley. Is this normal?**

Yes. Royal Purple uses a different additive chemistry than most manufacturers, which is the very foundation of the benefits RP offers. This technology has a distinctive odor, different from the common odor of exhaust gases to which most have become immune.

**2-CYCLE OILS**

**Can I use Royal Purple to pre-mix with alcohol, methanol or nitro-methane?**

No. Royal Purple's 2-cycle oils are formulated for use in gasoline applications only.

**What product do you recommend for oil injected engines?**

HP 2-C® is recommended for most stock oil-injection applications. For cold weather oil-injection applications, Snow 2-C® is recommended.

**What product do you recommend for pre-mix in my 2-cycle engine?**

HP 2-C or Snow 2-C™ may be used in pre-mix applications.

**What product should I use in my oil-injected snow machine?**

For low temperature, oil-injected applications, Royal Purple Snow 2-C is recommended.

**Does Royal Purple 2-Cycle oil void new engine warranties?**

Royal Purple HP 2-C meets JASO FD and NMMA TCW-3 performance requirements of any 2-stroke gasoline engine; however it does not carry any OEM oil licenses.

**OIL FILTERS**

**What function does the wire-backed media provide?**

The wire backing is to support the filtration media. This further reduces the chance that the filter media could collapse. The use of stainless steel wire provides a strong, durable, AND low restriction way to provide the support.

**What are the beta ratios?**

Average beta rating based on ISO 4548-12 multi-pass test methods:

- $\beta_{25}$  = 100 (at 25 or greater micron, media is 99% efficient.)
- $\beta_{20}$  = 75 (at 20 or greater micron, media is 98.7% efficient. Also considered absolute rating.)
- $\beta_{10}$  = 5 (at 10 micron or greater, media is 80% efficient.)

**MOTORCYCLE OILS**

**What viscosity is recommend for motorcycles?**

Follow the manufacturer's recommendations regarding viscosity. Most manufacturers recommend a 10W-40 for 4-cycle, liquid-cooled motorcycles. Air / oil cooled motorcycles typically specify a 20W-50. Check your owner's manual for verification or contact Royal Purple's Automotive Technical Department at 888-382-6300 for assistance.

**How many miles can I go between oil changes?**

Royal Purple® suggests adhering to manufacturer's recommended oil change intervals for vehicles under warranty. Vehicles that are no longer under warranty can frequently double or triple the number of miles between oil changes depending on the vehicle, its condition, the way it's used (excessive idling), and the oil filter that is used. For guidelines specific to your vehicle, we recommend contacting our technical department at rpautotech@www.royalpurple.com.

**What product do you recommend for 2-cycle gearboxes?**

For 2-cycle motorcycles with a separate transmission fluid reservoir, we recommend Royal Purple Synchromax® or an engine oil from our Max-Cycle® or HPS series. Please contact Royal Purple Automotive Technical department at 888-382-6300 for assistance

**What do you recommend for the primary case and transmission?**

Royal Purple Max-Cycle® 10W-40 or 20W-50 motor oil may be used in the primary tank. For transmissions, Royal Purple recommends Max-Cycle 20W-50 or Max Gear® 75W-90 or 75W-140. NOTE: DO NOT use Max Gear lubricants in the primary or in any other component containing a wet clutch.



## RACING OILS

### Can I use racing oils in my street car?

Yes. Royal Purple XPR® racing oils are fully formulated engine oils with complete additive packages needed for long-term use. The XPR ultra-light viscosity OW-8 is considered suitable only for dedicated competition engines that are built specifically to use very low viscosity engine oils. Non-ultra light viscosities, XPR 0W-20, 0W-30, 5W-20, 5W-30, 5W-40, 10W-40, 5W-50, 20W-50 and 10W-60 may be used in street driven and daily driver applications, street and track duty vehicles and dedicated competition applications with gasoline or exotic fuels. Please note: Royal Purple XPR racing oils do not conform to API and/or ILSAC licensing requirements and should not be used when manufacturer's warranties are an issue.

### Can I run your oils with exotic fuels (alcohol, methanol, etc.)?

Yes. Royal Purple's lubricants can be used with exotic fuels. For the best protection, Royal Purple® has formulated its XPR® specifically with this in mind. The XPR oils are formulated to combat fuel emulsification to hold up even better than Royal Purple's other engine oils in alcohol and methanol applications. Royal Purple's other synthetic engine oils will still perform better than conventional racing oils; however, significant fuel dilution will reduce the effectiveness of these oils much more than the XPR oils.

### How will running your product affect my oil temperature?

In most cases, vehicles with properly functioning cooling systems can reduce oil temperatures by 5-20°F by using Royal Purple.

### What is the difference between your High Performance motor oils and your racing oils?

Royal Purple High Performance motor oils are formulated to provide unparalleled performance and protection while complying with API and ILSAC specifications. XPR racing oils vary in viscosity and formulation from the High Performance motor oils to provide the greatest performance and protection possible, without regard to API, ILSAC, or OEM specifications.

### My retailer doesn't carry XPR - why can't they order it?

We do not restrict any automotive product from any retailers that carry Royal Purple consumer products. Any lack of availability of Royal Purple products at local retail stores is due to the choices made by the store owners/buyers. Retailers choose the products they stock and order for a myriad of reasons. Many times, a local retailer will special order Royal Purple products if you can provide the part

number. Another option is to shop online. Several online retailers, including Amazon.com, JEGS.com, Lucky7Trucks.com, PacePerformance.com, and SummitRacing.com carry just about all Royal Purple automotive and consumer products, and they will ship directly to you.

### Is it true that your oils lose their performance edge after six or eight passes? (Drag Racing)

No. Royal Purple has not found any evidence that it shows deterioration in performance after being subjected to race conditions. Excessive fuel dilution may effect the performance of any engine oil; however, XPR offers greater protection than other oils even with excessive fuel contamination.

## TRANSMISSION & GEAR OILS

### Can I use your Max ATF® in my transmission?

Check your owner's manual for verification. A complete list of warranty applications can be found on page 24.

### My vehicle has a limited-slip differential. Do I need to add additional friction modifiers when using your Max Gear®?

No. All viscosity grades of Max Gear are formulated with limited-slip friction modifier necessary for some limited-slip differentials. No additional additives should be necessary.

### My vehicle's transmission specifies an API GL-4 gear oil. Can I use Max Gear?

Yes. Max Gear is completely non-corrosive to soft yellow metals (brass, bronze, copper) so it is synchronizer-safe like a GL-4 gear oil. However, because of Royal Purple's proprietary Synerlec® additive technology, Max Gear oils retain the load carrying and shock protection capability of a GL-5 gear oil.

## FUEL ADDITIVES

### What happens when fuel breaks down?

It forms non-combustible gums that form deposits in fuel systems / combustion chambers, which decreases engine performance / fuel economy and increases emissions.

### Will Max-Clean® rejuvenate old fuel?

No, but it will prevent it from degrading any further, and allow it to be safely used without forming engine deposits.

### How long does Max-Clean stabilize fuel?

When used at our recommended dosages, Max-Clean will stabilize fuels with less than 10% ethanol for up to 2 years. For fuels containing 10% or great ethanol content, Max-Clean will stabilize for up to 1 year.

### With what fuels does Max-Clean work?

Max-Clean is suitable for use in all liquid automotive-type fuels, including gasoline, ethanol, diesel, and biodiesel.

## FUEL ADDITIVES

### Can Max-Clean be used in modern, fuel injected engines?

Yes, it will not harm catalytic converters or oxygen sensors, and will clean/remove deposits in port injected, direct injected, and carbureted engines.

### How does Max-Clean remove deposits?

It contains polyetheramine (PEA), a proprietary detergent that solubilizes deposits so they can be burned during the combustion cycle in an engine.

### Does Max-Clean increase octane?

No, but a cleaner burning engine has a reduced octane requirement, which allows less expensive, lower octane gasoline to be used without the risk of detonation.

### What is the recommended treat rate for Max-Clean®?

Pour entire contents of can into a nearly empty tank and refuel. One (1) can treats up to 20 gallons. For tank sizes outside of this range, use one (1) ounce per gallon. In 2-cycle engines, to ensure best mixing with the 2-cycle fuel/oil mixture, we recommend adding Max-Clean to the gas tank prior to putting the 2-cycle fuel/oil mixture into it.

### What makes Max-Boost® any better than other octane boosters?

Royal Purple Max-Boost provides up to 30 points (3 octane numbers) increase in fuel octane, which meets or exceeds the boost of any other non-lead consumer octane boosting product available, and it carries the added benefits of stabilizing fuel, cleaning deposits, and providing protection for non-hardened exhaust valve seats (lead substitute). It effectively replaces 2 to 4 products, depending on your needs.

### How do I use Max-Boost?

Each 16oz bottle of Max-Boost treats up to 25 gallons of gasoline with a recommended dosage of 1 ounce of Max-Boost per gallon of fuel. To ensure best mixing with fuel, it is best to add Max-Boost to your fuel tank at fill-up, prior to putting the fuel into the tank.

### Is Max-Boost a good product for any vehicle?

Max-Boost is safe for use in any gasoline and gasoline/ethanol blend of fuel, but many non-performance cars do not benefit from high octane fuel. If the fuel stabilization and cleaning benefits of Max-Boost are what you want, rather than the increase in octane, we recommend Royal Purple Max-Clean Fuel System Cleaner & Stabilizer.

### I have a [carbureted/throttle body injected /port injected/direct injected] performance engine. Will Max-Boost work for me?

Yes, Max-Boost works in any gasoline or gasoline/ethanol blend fuel delivery system and will work great for any engine that runs best with high octane fuel.

### What makes Max-Tane® any better than other diesel fuel treatments?

Royal Purple Max-Tane is better than any other consumer diesel additive because it does the job of every other consumer diesel fuel additive. Max-Tane is a cetane booster, a fuel lubricity enhancer, a fuel anti-gel, fuel system and injector cleaner and improves fuel economy up to 10%. Royal Purple Max-Tane effectively replaces up to 4 other diesel fuel additive products.

### What types of fuels is Max-Tane intended for?

Royal Purple Max-Tane is formulated for use in any diesel-type vehicular fuel including #1 and #2 diesel, biodiesel, and ultra-low sulfur diesel fuels.

### How do I use Max-Tane?

Royal Purple Max-Tane is available in a 20 ounce can. Each 20 ounce can treats up to 100 gallons of fuel. To ensure best mixing with fuel, it is best to add Max-Tane to your fuel tank at fill-up, prior to putting the fuel into the tank.

### I have a high performance diesel engine. What is the best treat-rate (dose) of Max-Tane?

The minimum recommended dosage for the Royal Purple Max-Tane is one (1) ounce per five (5) gallons of diesel fuel. High performance applications can safely use one (1) ounce per two (2) gallons of diesel fuel for maximum benefit.

### What makes Max-Atomizer™ different than other fuel injector cleaners?

It is the only additive formulated specifically for direct injection gasoline (DIG) engines, and is the most concentrated PEA fuel injector cleaner available on the market today.

### What is PEA?

It is polyether amine, a powerful detergent proven most effective at removing coked deposits found on injectors in DIG engines.

### Should Max-Atomizer be used only in DIG engines?

No, it can be used with any type of injectors, including port injectors, and diesel injectors.

### How does Max-Atomizer improve engine performance?

It cleans injectors and restores proper flow, which optimizes injector spray patterns and better atomizes fuel as it enters the combustion chamber.



## FUEL ADDITIVES

### Can Max-Atomizer be used in fuel with ethanol?

Yes, it can be used in any gasoline and ethanol blend (E5, E10, E15, E85, etc.), and it provides the additional benefit of ethanol stabilization.

### How often should Max-Atomizer be used?

For best results, use at every fill-up. Use every 3,000 miles, or as necessary, to maintain adequate engine operation.

### How is Max-Atomizer different than Max-Clean?

Max-Atomizer is a stand-alone fuel injector cleaner. Max-Clean offers the injector cleaning of Max-Atomizer and also provides cleaning of piston crowns and combustion chambers, fuel stabilization, and demulsification of water from ethanol-containing fuels.

## COOLING SYSTEM ADDITIVES

### Is Purple Ice® compatible with other cooling system additives?

Purple Ice should not be used with other heat-transfer or cooling enhancing products or “water wetters”. If such a product has been used in the cooling system, the system should be drained and flushed before using Purple Ice.

Purple Ice is compatible with cooling system additives intended to stop or slow leaks. Please note that such stop-leak products often typically put a coating on the interior surfaces of the cooling system, so the effects of Purple Ice may be diminished.

### Is Purple Ice compatible with anti-freeze in my car?

Purple Ice is compatible with all current OEM/factory and major brand automotive anti-freeze. This includes traditional green ethylene glycols, as well as OAT/HOAT antifreezes (e.g. DexCool; Ford and Chrysler orange, gold, pink; European and Japanese OEM red, pink, etc.).

### What water / antifreeze concentration is recommended when using Purple Ice?

Purple Ice may be added to any antifreeze / water mix; however, testing has shown higher water concentrations yield greater cooling benefits. While Purple Ice does contain corrosion inhibitors as well as lubricants to compensate for a lower antifreeze / water concentration, Royal Purple recommends using a concentration of antifreeze appropriate for the cold winter temperatures in your area because Purple Ice offers no freeze or boiling protection. The preferred coolant mix would contain a minimum of 20% antifreeze (offers 12°F protection) to provide a higher boiling point, and greater corrosion and deposit protection for the coolant, along with 1 to 2 ounces of Purple Ice per quart of coolant.

### How much Purple Ice do I need to add to my cooling system?

When using Purple Ice with a 50/50 antifreeze/water mix, we recommend adding 1 ounce of Purple Ice per quart of cooling system capacity. For straight water (racing) or higher water ratio applications, we recommend adding 2 ounces of Purple Ice per quart of cooling system capacity.

### How often should I add Purple Ice to my radiator?

When used with antifreeze, Purple Ice should be added once a year or every 30,000 miles (48,280 km), whichever comes first, in order to maintain proper performance. When using Purple Ice in a cooling system running straight water, Purple Ice should be added once a year or every 15,000 miles (24,140 km), whichever comes first.

### Will adding too much Purple Ice harm my cooling system?

No, a higher concentration of Purple Ice than recommended will not harm the cooling system or engine. However, going well beyond 2 ounces of Purple Ice per quart of coolant won't offer any additional cooling benefit, but may result in some foam generation in the system.

### Can Purple Ice be used in diesel engines?

Yes. Purple Ice may be used in diesel engines for improved heat transfer as well as reduced cavitation.

## ROTARY ENGINES

### Can Royal Purple synthetic oil be used in a rotary engine?

Yes. A rotary engine is a modified 4-cycle engine that recommends the use of an API-licensed motor oil for street applications.

### How is a rotary engine different from a piston engine?

Unlike in a piston engine, in which intake, compression, combustion and exhaust happen in the same space, a rotary engine relegates each of these four tasks to separate areas of an oval-shaped chamber, separated by the corners of a triangular rotor. The rotor moves around a spirographic path and forms three distinct volumes of gas.

### How are rotary engines lubricated?

In a rotary engine, the oil lubricates the eccentric shaft bearings, thrust needle bearings and rotor bearings (similar to a crank and rod bearing of a piston engine). It also is injected into the combustion chambers to lubricate the apex seals, corner seals and side seals, all of which helps to create the sealing mechanism (the equivalent job of the piston rings).

Royal Purple provides outstanding protection for the e-shaft, rotor bearings and thrust bearings and is suitable for the oil injection system, as it has proven to run cleaner than other oils and is an excellent choice for rotary apex seals, corner seals and side seals.

### Mazda makes a statement in the owner's manual not to use synthetic oils in a rotary engine. Why do you say that it is OK?

Royal Purple has performed seal compatibility testing on the components used in Mazda rotary engines with excellent results — including older rotary engine seals dating back to the Cosmo (mid to late 1960's). Royal Purple's former Technical Services Manager had owned and raced rotary engine cars using synthetic motor oils since 1985 with excellent results. Extensive research by the Royal Purple Technical Services department has been unable to determine a credible and valid technical explanation for this recommendation against the use of synthetic engine oils in Mazda rotary engines. Please note that review of vehicle owner's manuals for the Mazda RX8 shows no warning or note about not using synthetic engine oils. In the early development of synthetic engine oils decades ago, there were purportedly some seal compatibility issues. Today's synthetic oils do not have the compatibility issues of the old oils. There is no substantiated evidence of seal compatibility issues with Royal Purple.

Here are some facts:

The Mazda Factory racing departments recommend and use 'synthetic' oils including the winning 1991 Leman's 20-G 4 rotor Mazda 787B.

The MazdaComp USA printed manual (now Mazdaspeed) recommends the use of synthetic oils for racing conditions.

Royal Purple Motor Oils have been used in rotary engines (both race and street) for 10+ years with excellent results.

Royal Purple Motor Oil is compatible with the bearing material, sealing elastomers and combustion seals used in a rotary engine.

### I heard that synthetic oil doesn't burn like mineral based oils and will coat the inside of the engine with deposits. Is this true?

If this was a problem with synthetic motor oils in general, then all internal combustion engines using a 'synthetic' would experience increased deposits on internal surfaces. The opposite is actually the norm.

Conventional four-cycle motor oils will typically leave deposits of carbon and ash when injected into the rotary apex seal, corner seal and side seal areas. Royal Purple's motor oil burns cleaner because its synthetic base stock is free of contamination, and many of its additives are “ashless”. This may not be true for all synthetics but Royal Purple has been proven to work extremely well in rotary engines.

Royal Purple's formulation of synthetic hydrocarbon motor oil burns at the nominal combustion temperatures experienced in both street and racing applications, whether normally aspirated, turbocharged or supercharged. (500 – 1700°F idle to race rpms typical combustion temperatures).

### I hear that synthetic is 'thinner or lighter' oil. Is there a greater possibility that the oil will leak between the seals?

No. If an engine's sealing surfaces are in good condition, synthetic oil should not cause any leakage. However, if an engine has marginal seals, there is some chance the seals will leak. A synthetic motor oil is going to have similar viscosity to that of a conventional motor oil—except at extreme temperatures. Due to a flatter viscosity curve, at low temperatures it will not thicken as much (easier winter cranking) and will not thin out as quickly at higher operating temperatures (better oil film at higher rpm).

### If I premix my fuel for the rotary engine, do I use the same ratio as with mineral-based oils? Does it burn at the same rate?

In an ideal world, the rotary engine metered oil pump should inject an ashless oil designed to burn in the combustion chamber and use a 4-cycle oil in the crankcase for the eccentric shaft, rotor bearings and thrust bearings. For the street, Mazda simplified the OE system to use just one oil—a typical 4-cycle oil for both the e-shaft as well as the combustion chamber. Royal Purple recommends using our standard HP 2-C if the metered oil pump is still enabled. The 2-cycle oil being added to the fuel tank is in addition to what Mazda designed to inject and acts as a supplement or insurance. Depending on the kind of engine, the level of modifications (street port, Bridgeport, peripheral port, nitrous turbocharged) and application, the typical mix ratio could vary from 200:1 to 800:1.

For a pure racing application in which the metered oil pump has been disabled or removed, again based on the actual engine and modification level, the ratio could vary from 150:1 to 600:1. For this application, we recommend our HP 2-C engine oil.

A stock FD twin turbo 13B with the MOP oil injection system can typically use about one quart per 1,500 miles under hard street driving. If this vehicle is getting 15 mpg, the gasoline to oil ratio is 400:1. If the oil consumption on this vehicle reduces to 1 quart per 2,500 miles and fuel efficiency increases to 20 mpg, the gasoline to oil ratio increases to 600:1. The stock metering oil pump is a great system as it varies with throttle position (load on the engine). Premixing has to be calculated for the “worst case” that will be seen by the engine for that fuel load. Under racing conditions, that's wide open throttle at racing rpms. This means that at idle, the ratio may be slightly fat (rich).

### Will the synthetic oil affect the oil seals?

No. Royal Purple's motor oil is fully compatible with the elastomers found in rotary engines as well as more conventional piston engines. The oil seals, housing seals and other elastomers used in rotary engines typically consist of Buna N, Nitriles, Neoprene or Viton materials, which are also commonly found in piston engine cars.



## OIL FILTER CROSS REFERENCE

MOBIL 1	FRAM	WIX	K&N	PUREONE	ROYAL PURPLE
M1-107	PH3506	51042	HP-1007	PL14006	10-44
M1-101	PH3387A	51040	HP-1001	PL10111	10-47
M1-113	PH10060	57060	HP-1017		10-48
M1-111	PH30, PH8873	51069, 57099	HP-1011, HP-2002	PL15313	10-454
M1-104	PH3593A, PH9688	51334	HP-1004	PL14459	10-2808
M1-102	PH3614	51348	HP-1002	PL10241	10-2835
M1-103	PH4967	51394	HP-1003	PL14476	10-2840
M1-110	PH7317	51356, 51357	HP-1010	PL14610, PL14620	10-2867
M1-108	PH6607, PH9715	51365	HP-1008	PL14622	10-2876
M1C-151	CH9018	57082	HP-7000	PL15436	10-3244
M1C-254	CH8765	57090	HP-7003	PL25274	20-2129
M1-213	PH9010	57302	HP-1014	PL15317	20-2009
M1-204	PH16	51085	HP-2004	PL14670	20-253
M1-209	HP10, PH3600	51516	HP-2009	PL20195	20-400
M1-212	PH10575, PH10590	57045, 57502	HP-2011, HP-7019	PL22500	20-500
M1-201	HP11, PH3980	51036	HP-2001	PL24011	20-51A
M1-205	PH2870A	51088, 51342	HP-2005	PL20252	20-561
M1-206	PH3675, PH9837	51522	HP-2006	PL25288	20-59
M1-210	PH2	57063, 51372, 57899	HP-2010	PL24651	20-820
M1C-251	CH9972	57047	PS - 7020	PL25608	20-967
M1-302	HP4, PH5	51060, 51061	HP-3002	PL34631	30-1218
M1-303	PH9100	57202	HP-3003	PL35399	30-2999
M1-301	HP1, PH8A, PH2815, PH3569	51333, 51452, 51515	HP-3001	PL30001	30-8A
M1-405	PH10890	57151			40-2051
M1-403	PH3976A	51607, 57620, 57620XE	HP-4003	PL45335	40-780
M1C-651	CH9549	57311, 57314	HP-7009	PL45515, PL45526	50-2017
M1-601	PH3786	51734	HP-6001	PL44872	50-2286





# PRODUCT RECOMMENDATIONS

## GENERAL APPLICATIONS

This is a general outline. Always follow manufacturer's recommendations for oil viscosities or contact Royal Purple's Automotive Technical Support Department at 888-382-6300.

### AUTOMOTIVE

#### ENGINES

Gasoline	Royal Purple Motor Oils*
Diesel	Duralec Super 5W-40 Duralec Super 10W-30 Duralec Super 15W-40
European Passenger Car & Small Diesel	0W-40 5W-40

#### TRANSMISSIONS

Automatic	Max ATF
Manual	Synchromax*
Heavy Duty Manual	Max Gear 75W-90 HPS 10W-30

#### POWER STEERING

Power Steering	Max EZ
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#### REAR ENDS

Heavy Duty	Max Gear 75W-90 Max Gear 75W-140
Light Truck & Passenger Car	Max Gear 75W-90 Max Gear 75W-140

### 4-CYCLE MOTORCYCLE

#### LIQUID-COOLED JAPANESE

Engine	Max-Cycle 10W-40
Shaft Drive	Max Gear 75W-90

#### LIQUID COOLED - EUROPEAN

Engine	Max-Cycle 10W-40
Shaft Drive	Max Gear 75W-90

### 4-CYCLE MOTORCYCLE, CONT.

#### AIR / OIL COOLED METRIC

Engine	Max-Cycle 20W-50 Max-Cycle 10W-40
Shaft Drive	Max Gear 75W-90

#### AIR / OIL COOLED DOMESTIC

Buell Engine	Max-Cycle 20W-50
Transmission	Max-Cycle 10W-40
H/D Sportster Engine	Max-Cycle 20W-50
H/D Evo / TwinCam Engine	Max-Cycle 20W-50
Transmission	Max Gear 75W-90 Max-Cycle 20W-50
Primary	Max-Cycle 10W-40 Max-Cycle 20W-50

### OFF-ROAD / DUAL SPORT: 2-C, 4-C

#### 4-CYCLE

Engine	Max-Cycle 10W-40 Max-Cycle 20W-50
Transmission - Separate Tank	Synchromax Max-Cycle 10W-40
Final Drive - Shaft	Max Gear 75W-90

#### 2-CYCLE

Engine	HP 2-C
Pre-mix	HP 2-C
Racing	HP 2-C
Oil Injection	HP 2-C
Transmission	Synchromax

\*CONSULT ROYAL PURPLE'S TECHNICAL SUPPORT DEPARTMENT FOR RECOMMENDATIONS.

# PRODUCT RECOMMENDATIONS

## GENERAL APPLICATIONS

This is a general outline. Always follow manufacturer's recommendations for oil viscosities or contact Royal Purple's Automotive Technical Support Department at 888-382-6300.

### OFF-ROAD / DUAL SPORT: 2-C, 4-C, CONT.

#### AIR / OIL COOLED METRIC

Engine	Max-Cycle 10W-40 Max-Cycle 20W-50
Final Drive - Shaft	Max Gear 75W-90

### MX MOTORCYCLE & ATV: 2-CYCLE, 4-CYCLE

#### 4-CYCLE

Engine	Max-Cycle 10W-40
Transmission - Separate Tank	Synchromax Max-Cycle 10W-40
Final Drive - Chain	Max-Chain
Final Drive - Shaft	Max Gear 75W-90
2-Cycle Engine	HP 2-C
Pre-mix and Oil-injection	HP 2-C
Transmission	Synchromax Max-Chain
Final Drive - Chain	Max Gear 75W-90
Shaft Drive	Max Gear 75W-90

### PERSONAL WATER CRAFT

#### 4-CYCLE

Engine	HPS 10W-30 HPS 10W-40
Outdrive/Lower Unit	Max Gear 75W-90

#### 2-CYCLE

Engine	HP 2-C
Pre-mix and Oil-injection	HP 2-C
Outdrive/Lower Unit	Max Gear 75W-90

### MARINE APPLICATIONS

#### BOATS

Inboard	4-Cycle Gasoline Engine	HPS 10W-30 HPS 10W-40
	4-Cycle Diesel Engine	Duralec Super 10W-30 Duralec Super 15W-40 HPS 10W-40 Max Gear 75W-90
Outdrive/Lower Unit		
Outboard	4-Cycle Engine	HPS 10W-30 HPS 10W-40
	2-Cycle Engine Pre-mix	HP 2-C
	Oil Injection Lower Unit	HP 2-C Max Gear 75W-90

### SNOWMOBILE & SNOW MACHINE

#### 4-CYCLE

Engine	Max-Cycle 10W-40
Transmission/Chain Case	Synchromax* HPS 5W-30 Max-Cycle 10W-40

#### 2-CYCLE

Engine	HP 2-C
Pre-mix	HP 2-C
Oil Injection	Snow 2-C
Transmission/Chain Case	Synchromax*

### GENERAL MAINTENANCE

Pivots, Cables, Oiled Bearings	Maxfilm
Trailer (wheel bearings)	Ultra Performance Grease

\*CONSULT ROYAL PURPLE'S TECHNICAL SUPPORT DEPARTMENT FOR RECOMMENDATIONS.



# PRODUCT RECOMMENDATIONS

## HIGH PERFORMANCE & RACING APPLICATIONS

This is a general outline. Always follow manufacturer's recommendations for oil viscosities or contact Royal Purple's Automotive Technical Support Department at 888-382-6300.

### AUTOMOTIVE

#### ENGINES

Drag Racing\*  
HPS 10W-30  
HPS 10W-40  
HPS 20W-50  
XPR 0W-8  
XPR 0W-20  
XPR 0W-30  
XPR 5W-40  
XPR 5W-50

Midgets  
XPR 0W-30  
XPR 5W-40  
XPR 5W-50

Sprint Cars  
XPR 0W-30  
XPR 5W-40  
XPR 5W-50

Late Models\*  
HPS 10W-30  
HPS 10W-40  
HPS 20W-50  
XPR 0W-30  
XPR 5W-40  
XPR 5W-50

Road Racing\*  
HPS 10W-30  
HPS 10W-40  
HPS 20W-50  
XPR 0W-30  
XPR 5W-40  
XPR 5W-50  
XPR 10W-60

Super Speedway  
XPR 0W-20  
XPR 5W-40

### AUTOMOTIVE

#### AUTO TRANSMISSIONS

Max ATF

#### MANUAL TRANSMISSIONS

Max Gear 75W-90  
Synchromax

#### DIFFERENTIALS

Max Gear 75W-90  
Max Gear 75W-140

### KARTS

#### ENGINES

2-Cycle  
4-Cycle  
HP 2-C  
XPR 0W-20  
XPR 0W-30

#### CHAINS

Max-Chain

### MARINE

#### ENGINES

2-Cycle  
4-Cycle  
HP 2-C  
HPS 10W-30  
HPS 10W-40  
XPR 0W-30  
XPR 5W-40  
Max-Cycle 20W-50

\*CONSULT ROYAL PURPLE'S TECHNICAL SUPPORT DEPARTMENT FOR RECOMMENDATIONS.

# PRODUCT RECOMMENDATIONS

## HIGH PERFORMANCE & RACING APPLICATIONS

This is a general outline. Always follow manufacturer's recommendations for oil viscosities or contact Royal Purple's Automotive Technical Support Department at 888-382-6300.

### MOTORCYCLE & ATV

#### ENGINES

2-Cycle  
Pre-mix and  
Oil-injection  
4-Cycle\*  
- Gas  
HP 2-C  
XPR 0W-20  
XPR 0W-30  
XPR 5W-40  
XPR 5W-50  
XPR 0W-8  
XPR 0W-20  
XPR 0W-30  
XPR 5W-40  
Max-Cycle 10W-40  
XPR 5W-50  
Max-Cycle 20W-50  
XPR 0W-20  
XPR 5W-40

- Liquid-Cooled

- Air- / Oil-Cooled

- N2O & Exotic Fuel

#### TRANSMISSION

Separate Tank  
Synchromax  
Max-Cycle 10W-40  
Max-Cycle 20W-50  
XPR 0W-30  
XPR 5W-30  
XPR 5W-40  
XPR 5W-50

#### FINAL DRIVE

Shaft  
Max Gear 75W-90

### SNOW MACHINE

#### ENGINES

2-Cycle Pre-mix  
or Mod. Oil Injection  
2-Cycle Stock Oil Injection  
4-Cycle  
HP 2-C  
Snow 2-C  
XPR 0W-20  
XPR 0W-30  
XPR 5W-40

#### TRANSMISSIONS / CHAIN CASES

Synchromax

\*FOLLOW MANUFACTURER'S VISCOSITY RECOMMENDATIONS



## TRANSMISSION LUBRICANT CROSS REFERENCE

This is a general outline. Always follow manufacturer's recommendations or contact Royal Purple's Automotive Technical Support Dept. at 888-382-6300.

TRANSMISSION	LUBRICANT SPEC / PART NUMBER	ROYAL PURPLE'S RECOMMENDATION
<b>AUTOMATIC TRANSMISSION</b>		
See Max ATF Specs Page 24		
<b>MANUAL TRANSMISSION</b>		
Manual Transmission/ Transaxle	Spec ATF's	Synchromax
Manual Transmission/ Transaxle	75W-90, 80W-90, 80W, 90W GL-4 or GL-5	Max Gear 75W-90
Manual Transmission/ Transaxle	75W-90, 80W-90 GL-3	HPS 10W-40 or XPR 5W-40
Bert & Brinn		Synchromax
Liberty & G-Force		Synchromax
APPLICATION	OEM SPEC # / PART #	ROYAL PURPLE RECOMMENDED
AUDI / VW	G-052-145	Max Gear 75W-90
BMW / MINI 1983 - 1992: Inspect for color-coded label - typically affixed to passenger side of transmission	Green Label (Mobil SHC 630) Red Label (Dexron III) No Label (80W GL-4) 1993 - 1997 (Dexron III) 1998 & up (Mobil SHC 630) Esso MTF-LT-1, MTF-LT-2 MTF LT-3, MTF-LT-4, MTF-94 Castrol SAF-XJ (limited-slip) Castrol SAF-XO	Max Gear 75W-90 Synchromax HPS 5W-30 Synchromax Max Gear 75W-90 Synchromax Synchromax Max Gear 75W-90 XPR 5W-20 Max Gear 75W-140 Max Gear 75W-90

ALL THIRD PARTY TRADEMARKS REFERENCED BY ROYAL PURPLE REMAIN THE PROPERTY OF THEIR RESPECTIVE OWNERS.

## TRANSMISSION LUBRICANT CROSS REFERENCE

This is a general outline. Always follow manufacturer's recommendations or contact Royal Purple's Automotive Technical Support Dept. at 888-382-6300.

TRANSMISSION	LUBRICANT SPEC / PART NUMBER	ROYAL PURPLE'S RECOMMENDATION
APPLICATION	OEM SPEC # / PART #	ROYAL PURPLE RECOMMENDED
CHRYSLER / JEEP	75W-90 GL-3 04873167 04874459 04874464 04874465 04874469 05179014AA Mopar C635 DDCT Trans Fluid, 75W MS-9224 MS-9417 NV4500 5-spd (75W-85) Viper Trans, 1993 (DEX III) Viper Trans, 1994 -2006 (75W-85) Viper Trans, 2008 & up (ATF+4)	HPS 10W-40 Synchromax Max Gear 75W-90 Synchromax Synchromax Max Gear 75W-140 Synchromax Synchromax Synchromax Synchromax Max Gear 75W-90 Synchromax Max Gear 75W-90 Synchromax
FORD MOTOR CO.	ESP-M2C166-H Mercon F32Z 19C547 XL-12 XT-2-QSM XT-5-QM XT-M5-QS XT-11-QDC	Synchromax Max Gear 75W-90 Synchromax Synchromax Synchromax Synchromax HPS 10W-40 Synchromax
GENERAL MOTORS	SAE 80W-90 GM 1052931 GM 12345349 (Synchromesh) GM 12345577 GM 12346190 (SynTorque LT) GM 1235977 GM 12377916 (Synchromesh) GM 12378261 GM 12378396	Max Gear 75W-90 HPS or XPR 5W-30 Synchromax Synchromax Max Gear 75W-90 Max Gear 75W-90 Synchromax Max Gear 75W-90 Synchromax



## TRANSMISSION LUBRICANT CROSS REFERENCE

This is a general outline. Always follow manufacturer's recommendations or contact Royal Purple's Automotive Technical Support Dept. at 888-382-6300.

TRANSMISSION	LUBRICANT SPEC / PART NUMBER	ROYAL PURPLE'S RECOMMENDATION
APPLICATION	OEM SPEC # / PART #	ROYAL PURPLE RECOMMENDED
GENERAL MOTORS	GM 12378505	Synchromax
	GM 12378508	Synchromax
	GM 12378514	Synchromax
	GM 12378515	Synchromax
	GM 12378557 (QuadraSteer)	Max Gear 75W-90
	GM 19256084	Synchromax
	GM 19259104	HPS or XPR 5W-30
	GM 21018899	HPS or XPR 5W-30
	GM 88861800	Synchromax
	GM 88862472 or 88862473	HPS or XPR 5W-30
	GM 88900402	Synchromax
	GM 89021677	Max Gear 75W-90
	GM 89021806	HPS or XPR 5W-40
	GM 92184900 (Castrol SAF Carbon Mod)	Max Gear 75W-90
	AutoTrak II	Synchromax
	BOT 0063	HPS or XPR 5W-30
	MTF 0063	HPS or XPR 5W-30
	Saab 12799117	HPS or XPR 5W-30
Saturn 21005966	Synchromax	
Saturn MTF	HPS or XPR 5W-30	
VersaTrak fluid	Synchromax	
HONDA / ACURA	Honda MTF # 08798-9031	HPS or XPR 5W-20 Synchromax
	Acura MTF # 08798-9031A	HPS or XPR 5W-20 Synchromax
	Honda MTF # 08798-9016	HPS or XPR 5W-30
	Acura MTF # 08798-9016A	HPS or XPR 5W-30
HYUNDAI	SAE 75W-85 (6-spd manual)	HPS or XPR 10W-40, XPR 5W-40

## TRANSMISSION LUBRICANT CROSS REFERENCE

This is a general outline. Always follow manufacturer's recommendations or contact Royal Purple's Automotive Technical Support Dept. at 888-382-6300.

TRANSMISSION	LUBRICANT SPEC / PART NUMBER	ROYAL PURPLE'S RECOMMENDATION
APPLICATION	OEM SPEC # / PART #	ROYAL PURPLE RECOMMENDED
JAGUAR / LAND ROVER	Shell TF 0753	Synchromax
	Shell Spirax TS 90	Max Gear 75W-90
	Castrol SAF XO Castrol SAF Carbon Mod	Max Gear 75W-90 Max Gear 75W-90
MERCEDES BENZ / SMART CAR	MB 000 989 2603	Synchromax
	MB 001 989 2603	Synchromax
	MB 001 989 1703 (Hypoid Gear Oil)	Max Gear 75W-90
	Shell ATF 3403 M115	Max ATF
	NAG1	Max ATF
	Fuchs ATF 3353 Castrol Manual BOT 328	Max ATF Max Gear 75W-90
MITSUBISHI	Texaco MTX Fluid FM	XPR 5W-20
NISSAN	Castrol SAF-XJ	Max Gear 75W-140
	Nissan Trans Oil R35 Special	Synchromax
PORSCHE	000 043 300 38	Synchromax
	000 043 304 71	HPS or XPR 10W-40, XPR 5W-40
	000 043 300 37	Max Gear 75W-90
	Castrol BOT 338 (75W-80)	Synchromax
	Shell Spirax S5 ATF (75W-90)	HPS or XPR 10W-40, XPR 5W-40
	Burmah Carbon Mod (75W-90)	Max Gear 75W-90
TOYOTA	V-160, 08885-01306 ( '93 & up Turbo Supra)	Synchromax
	Toyota Genuine LF Gear Oil	Synchromax



**MOTOR OIL**

**HEAVY-DUTY**

<b>SAE 30</b>	6 x 1-Qt. Case	06030
	1-Qt. Bottle	01030
<b>SAE 40</b>	6 x 1-Qt. Case	06040
	1-Qt. Bottle	01040
<b>SAE 50</b>	5-Gal. Pail	05050
	6 x 1-Qt. Case	06050
	1-Qt. Bottle	01050

**HIGH PERFORMANCE**

<b>0W-20</b>	1-Qt. Bottle	01020
	55-Gal. Drum	55020
	6-Gal. BIB	60020
	5-Gal. Pail	05020
	3 x 5-Qt. Case	53020
	5-Qt. Bottle	51020
	6 x 1-Qt. Case	06020
<b>5W-20</b>	1-Qt. Bottle	01020
	55-Gal. Drum	55520
	6-Gal. BIB	60520
	5-Gal. Pail	05520
	3 x 5-Qt. Case	53520
	5-Qt. Bottle	51520
	6 x 1-Qt. Case	06520
<b>5W-30</b>	1-Qt. Bottle	01520
	55-Gal. Drum	55530
	6-Gal. BIB	60530
	5-Gal. Pail	05530
	3 x 5-Qt. Case	53530
	5-Qt. Bottle	51530
	6 x 1-Qt. Case	06530
<b>10W-30</b>	1-Qt. Bottle	01530
	5-Gal. Pail	05130
	3 x 5-Qt. Case	53130
	5-Qt. Bottle	51130
	6 x 1-Qt. Case	06130
	1-Qt. Bottle	01130

**HIGH PERFORMANCE - ULTRA-LOW**

<b>0W-16</b>	55-Gal. Drum	55016
	6-Gal. BIB	60016
	3 x 5-Qt. Case	53016
	5-Qt. Bottle	51016
	6 x 1-Qt. Case	06016
	1-Qt. Bottle	01016

**MOTOR OIL**

**HIGH PERFORMANCE - EUROPEAN FORMULA**

<b>0W-40</b>	55-Gal. Drum	55484
	6-Gal. BIB	60040
	6 x 1-Qt. Case	06484
	1-Qt. Bottle	11484
<b>5W-40</b>	55-Gal. Drum	55540
	6-Gal. BIB	60540
	5-Gal. Pail	05540
	6 x 1-Qt. Case	06540
	1-Qt. Bottle	01540

**HPS® - HIGH PERFORMANCE STREET OIL**

<b>HPS 5W-20</b>	55-Gal. Drum	37520
	6 x 1-Qt. Case	36520
	1-Qt. Bottle	31520
<b>HPS 5W-30</b>	55-Gal. Drum	37530
	5-Gal. Pail	35530
	6 x 1-Qt. Case	36530
	1-Qt. Bottle	31530
<b>HPS 10W-30</b>	5-Gal. Pail	35130
	6 x 1-Qt. Case	36130
	1-Qt. Bottle	31130
<b>HPS 10W-40</b>	55-Gal. Drum	37140
	5-Gal. Pail	35140
	6 x 1-Qt. Case	36140
	1-Qt. Bottle	31140
<b>HPS 20W-50</b>	55-Gal. Drum	37250
	6 x 1-Qt. Case	36250
	1-Qt. Bottle	31250

**MOTOR OIL**

**HMX® - HIGH MILEAGE MOTOR OIL**

<b>HMX 0W-20</b>	6-Gal. BIB	11902
	3 x 5-Qt. Case	11904
	5-Qt. Bottle	11903
	6 x 1-Qt. Case	11901
	1-Qt. Bottle	11900
<b>HMX 5W-20</b>	1-Qt. Bottle	17511
	3 x 5-Qt. Case	37518
	5-Qt. Bottle	17518
	6 x 1-Qt. Case	67511
	1-Qt. Bottle	17511
<b>HMX 5W-30</b>	3 x 5-Qt. Case	11749
	5-Qt. Bottle	11748
	6 x 1-Qt. Case	11745
	1-Qt. Bottle	11744
<b>HMX 10W-30</b>	3 x 5-Qt. Case	11751
	5-Qt. Bottle	11750
	6 x 1-Qt. Case	11747
	1-Qt. Bottle	11746

**RACING OIL**

**XPR® - EXTREME PERFORMANCE RACING**

<b>XPR 0W-8</b>	6 x 1-Qt. Case	06009
	1-Qt. Bottle	01009
<b>XPR 0W-20</b>	6 x 1-Qt. Case	06008
	1-Qt. Bottle	01008
<b>XPR 0W-30</b>	6 x 1-Qt. Case	06010
	1-Qt. Bottle	01010
<b>XPR 5W-20</b>	6 x 1-Qt. Case	06011
	1-Qt. Bottle	01011
<b>XPR 5W-30</b>	5-Gal. Pail	05021
	6 x 1-Qt. Case	06021
	1-Qt. Bottle	01021
<b>XPR 5W-40</b>	6 x 1-Qt. Case	01042
	1-Qt. Bottle	01042
<b>XPR 10W-40</b>	55-Gal. Drum	55041
	5-Gal. Pail	05041
	6 x 1-Qt. Case	06041
	1-Qt. Bottle	01041
<b>XPR 5W-50</b>	6 x 1-Qt. Case	01052
	1-Qt. Bottle	01052
<b>XPR 20W-50</b>	5-Gal. Pail	05051
	6 x 1-Qt. Case	06051
	1-Qt. Bottle	01051
<b>XPR 10W-60</b>	6 x 1-Qt. Case	06061
	1-Qt. Bottle	01061

**2-CYCLE OIL**

<b>HP 2-C®</b>	3 x 1-Gal. Case	43311
	1-Gal. Bottle	04311
	6 x 1-Qt. Case	06311
	1-Qt. Bottle	01311
<b>Snow 2-C™</b>	3 x 1-Gal. Case	43511
	1-Gal. Bottle	04511

**MOTORCYCLE OIL**

**MAX-CYCLE®**

<b>10W-40</b>	6 x 1-Qt. Case	06315
	1-Qt. Bottle	01315
<b>20W-50</b>	6 x 1-Qt. Case	06316
	1-Qt. Bottle	01316

**DURALEC®**

**MOTOR OIL**

<b>Duralec Super™ 5W-40</b>	55-Gal. Drum	87540
	6-Gal. BIB	86540
	3 x 1-Gal. Case	80540
	1-Gal. Bottle	83540
<b>Duralec Super 10W-30</b>	275-Gal. Tote	68130
	55-Gal. Drum	87130
	5-Gal. Pail	85130
	3 x 1-Gal. Case	80130
	1-Gal. Bottle	83130
<b>Duralec Super 15W-40</b>	320-Gal. Tote	88154
	275-Gal. Tote	68154
	55-Gal. Drum	55154
	6-Gal. BIB	60154
	5-Gal. Pail	05154
	3 x 1-Gal. Case	43154
	1-Gal. Bottle	04154
	6 x 1-Qt. Case	06154
	1-Qt. Bottle	01154
<b>Duralec Ultra™ 10W-30</b>	55-Gal. Drum	87456
	5-Gal. Pail	85456
	3 x 1-Gal. Case	80456
	1-Gal. Bottle	83456
<b>Duralec Ultra 15W-40</b>	55-Gal. Drum	87561
	5-Gal. Pail	85561
	3 x 1-Gal. Case	80561
	1-Gal. Bottle	83561



## PART NUMBERS

### GEAR OILS

#### MAX GEAR®

75W-90	5-Gal. Pail	05300
	6 x 1-Qt. Case	06300
	1-Qt. Bottle	01300

75W-140	55-Gal. Drum	55301
	5-Gal. Pail	05301
	6 x 1-Qt. Case	06301
	1-Qt. Bottle	01301

80W-90	5-Gal. Pail	05302
85W-140	6 x 1-Qt. Case	06303
	1-Qt. Bottle	01303

### TRANSMISSION FLUID

#### AUTOMATIC

Max ATF®	6-Gal. BIB	61320
	5-Gal. Pail	05320
	6 x 1-Qt. Case	06320
	1-Qt. Bottle	01320

### TRANSMISSION FLUID

#### MANUAL

Synchromax®	6 x 1-Qt. Case	06512
	1-Qt. Bottle	01512

### SPECIALTY LUBRICANTS

#### FUEL SYSTEM CLEANER AND STABILIZER

Max-Clean®	6 x 20-Oz. Case	11723
	20-Oz. Bottle	11722

#### FUEL INJECTOR CLEANER

Max-Atomizer™	12 x 6-Oz. Case	18000
	6-Oz. Bottle	18000

#### HIGH MILEAGE FUEL SYSTEM TREATMENT

Max-Restore	6 x 6-Oz. Case	18001
	6-Oz. Bottle	18001

#### OCTANE BOOST & STABILIZER

Max-Boost™	6 x 16-Oz. Case	06757
	16-Oz. Bottle	11757

### SPECIALTY LUBRICANTS

#### DIESEL CETANE BOOSTER

Max-Tane®	6 x 20-Oz. Case	06755
	20-Oz. Bottle	11755

#### POWER STEERING FLUID

Max EZ®	12 x 12-Oz. Case	12326
	12-Oz. Bottle	01326

#### RADIATOR COOLANT ADDITIVE

Purple Ice®	12 x 12-Oz. Case	12600
	12-Oz. Bottle	01600

#### PENETRATING FLUID

Maxfilm®	12 x 11-Oz. Case	15000
	11-Oz. Can	05000

#### COMPRESSOR LUBRICANT

Synfilm® Recip. 100	6 x 1-Qt. Case	06513
	1-Qt. Bottle	01513

#### ASSEMBLY LUBRICANT

Max-Tuff®	12 x 8-Oz. Case	01335
	8-Oz. Bottle	01335

#### CHAIN LUBRICANT

Max-Chain®	12 x 11-Oz. Case	12330
	11-Oz. Can	05330

#### ENGINE BREAK-IN OIL

Break-In Oil	6 x 1-Qt. Case	06487
	1-Qt. Bottle	11487

#### MULTI-PURPOSE GREASE

Ultra-Performance Grease®	30 x 14.1-Oz. Case	10069
	14.1-Oz. Tube	01312

### MOTOR OILS

#### HIGH PERFORMANCE

0W-20	3 x 5-Qt. Case	23020
	5-Qt. Bottle	20020
	6 x 1-Qt. Case	26020
	1-Qt. Bottle	21020

5W-20	3 x 5-Qt. Case	23520
	5-Qt. Bottle	20520
	6 x 1-Qt. Case	26520
	1-Qt. Bottle	21520

5W-30	3 x 5-Qt. Case	23530
	5-Qt. Bottle	20530
	6 x 1-Qt. Case	26530
	1-Qt. Bottle	21530

#### DURALEC® SUPER™ DIESEL MOTOR OIL

15W-40	3 x 5-Qt. Case	23154
	5-Qt. Bottle	20154

## PART NUMBERS - CANADA

### MOTORCYCLE OIL

#### MAX-CYCLE®

10W-40	6 x 1-Qt. Case	26315
	1-Qt. Bottle	21315

20W-50	6 x 1-Qt. Case	26316
	1-Qt. Bottle	21316

### TRANSMISSION FLUID

#### AUTOMATIC

Max ATF®	6 x 1-Qt. Case	21320
	1-Qt. Bottle	26320

### TRANSMISSION FLUID

#### MANUAL

Synchromax®	6 x 1-Qt. Case	26512
	1-Qt. Bottle	21512

### GEAR OIL

#### MAX GEAR®

75W-90	6 x 1-Qt. Case	26300
	1-Qt. Bottle	21300

75W-140	6 x 1-Qt. Case	26301
	1-Qt. Bottle	21301

### SPECIALTY LUBRICANTS

#### FUEL SYSTEM CLEANER AND STABILIZER

Max-Clean®	6 x 20 -Oz. Case	26722
	20-Oz. Bottle	21722

#### FUEL INJECTOR CLEANER

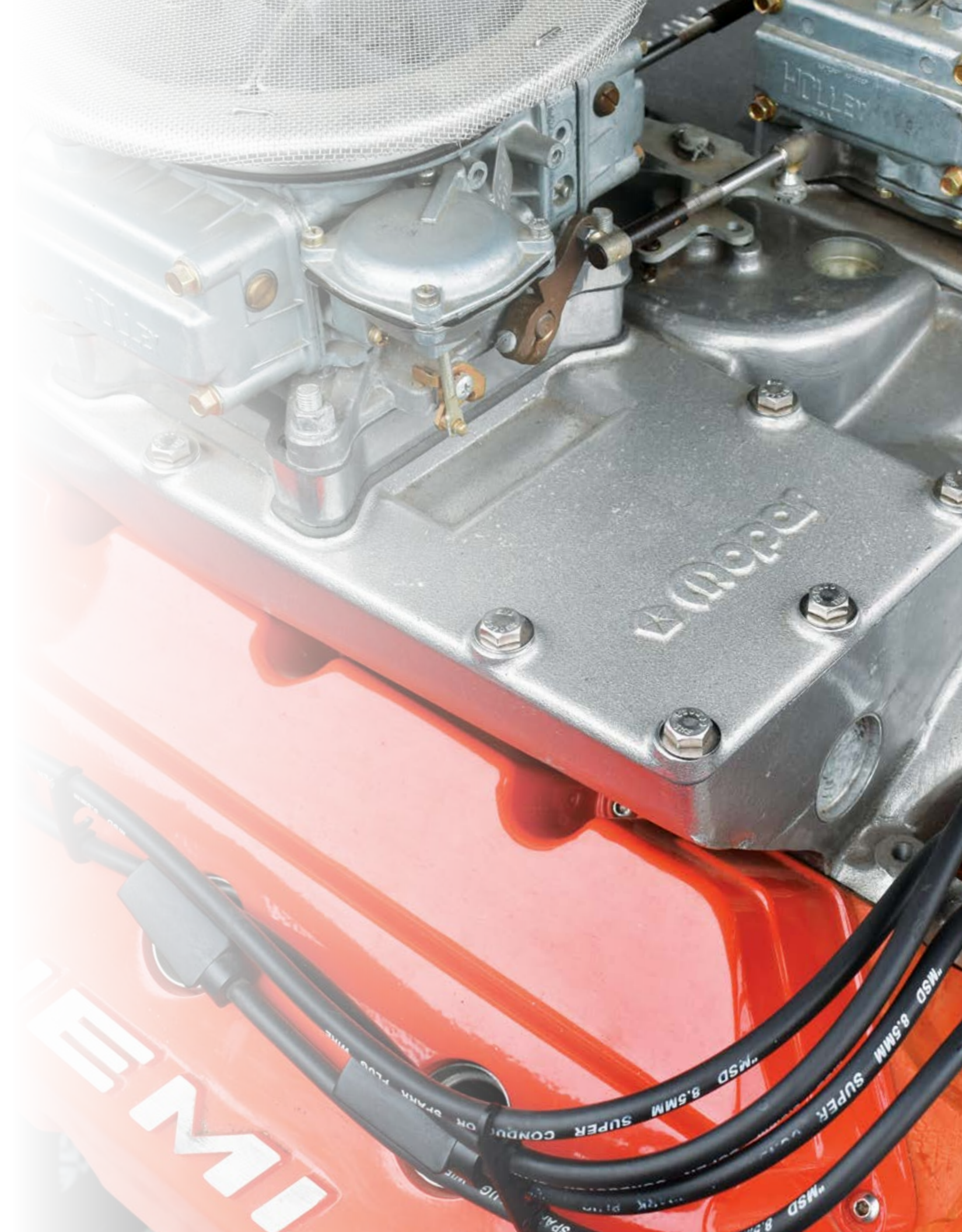
Max-Atomizer™	12 x 6-Oz. Case	—
	6-Oz. Bottle	26000



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