



*Evolutionary Performance™*

**HEAVY DUTY  
DIESEL ENGINE OILS**



Evolutionary Performance™



FULL SYNTHETIC



MAG 1® Full Synthetic Heavy Duty Diesel Engine Oil is designed to provide the highest levels of protection and performance from our most advanced technology and formulations. Only the most advanced engine oils meet the difficult challenges of effectively balancing durability, extending drain intervals and protecting emissions control devices. MAG 1 with FMX® Technology creates a strong, durable and high-performing level of protection that controls friction and reduces metal-to-metal contact.

**MAG 1 FULL SYNTHETIC SAE SAE 5W-40 CK-4 HEAVY DUTY DIESEL ENGINE OIL**

MAG 1 Full Synthetic SAE 5W-40 is technologically advanced heavy duty diesel engine oil that provides unsurpassed protection and performance, including the following benefits

- Our best cold temperature performance.
- Superior extended drain capability.
- Meets or exceeds the requirements of OEMs.
- Delivers greater horsepower and improved fuel economy.

PACK SIZES	Pack Size	Product #
	6/1 Quart	62625
	3/1 Gallon	62627
	5 Gallon	68036
	55 Gallon	68037
	330 Gallon	68035

TYPICAL PHYSICAL PROPERTIES		
Properties	Test Method	Full Synthetic SAE 5W-40 CK-4
Calcium, wt. %	ASTM D5185	0.082
Cold Cranking Simulator at (°C), cP	ASTM D5293	6535 (-30)
Color	ASTM D1500	2.5
Gravity, °API	ASTM D287	33.57
High Temperature / High Shear Vis at 150°C, cP	ASTM D5481	3.5
Magnesium, wt. %	ASTM D5185	0.116
Molybdenum, wt. %	ASTM D5185	0.007
Nitrogen, wt. %	ASTM D4629	0.124
Noack Volatility, % loss	ASTM D6375	12
Phosphorus, wt. %	ASTM D5185	0.115
Pour Point °C (°F)	ASTM D5950	-45°C (-49°F)
Pumping Viscosity at (°C), cP	ASTM D4684	24,113 (-35)
Specific Gravity @ 60°F (15.6°C)	ASTM D4052	0.8572
Sulfated Ash, wt. %	ASTM D874	0.99
Sulfur, wt. %	ASTM D4951	0.314
TBN, mgKOH/g	ASTM D2896	10
Viscosity @ 100°C cSt	ASTM D445	14.76
Viscosity @ 40°C cSt	ASTM D445	87.75
Viscosity Index	ASTM D2270	177
Zinc, wt. %	ASTM D5185	0.127

\*Available in Bulk

CLAIMS		Full Synthetic SAE 5W-40 CK-4
	API CK-4	★
API CJ-4	●	
API SN	★	
ACEA E9, E7, E4, E2	●	
API CI-4 Plus, CI-4, CH-4, CG-4, CF-2, CF	●	
API SH, SG, SF, SE, SD, SC	●	
API SL	●	
API SM	●	
CAT ECF-3, ECF-2, ECF-1-a	●	
Chrysler/ Fiat MS-10902	●	
CID A-A-52306, MIL-PRF-2104G	●	
Cummins 20086	●	
Cummins CES 20081, 20077, 20076	●	
Detroit Diesel 93K218, 93K215, 93K214	●	
Detroit Diesel 93K222	●	
Ford WSS-M2C171-E	●	
Ford WSS-M2C171-F1	★	
Global DHD-1	●	
JASO DH-2	●	
Mack EO-O Premium Plus, EO-N Premium Plus 03, EO-M Plus, and prior	●	
Mack EOS-4.5	●	
MAN 3275, 270	●	
MAN 3575	●	
MB 228.3, 228.31	●	
MTU 2.1	●	
MTU Type I, Type II	●	
Renault RLD-4	●	
Volvo VDS-4, 3, 2	●	
Volvo VDS-4.5	●	
Allison C-4	○	

★ = Approved ● = Meets Requirements ○ = Suitable for Use



Evolutionary Performance™

**FMX** TECHNOLOGY **FRICION MANAGEMENT FOR XTREME PROTECTION**

SYNTHETIC BLEND



MAG 1® Synthetic Blend Heavy Duty Diesel Engine Oils provide extra protection and performance, compared to Conventional Heavy Duty Engine Oil. As today's engines are evolving and heavy duty engine manufacturers are recommending thinner, lighter oils, MAG 1 has evolved right along with them. Our advanced oil technology actually improves oil properties over time, retaining viscosity, friction and anti-wear benefits, in spite of severe engine temperatures.

- Backward compatible for CJ-4 and older API service categories.
- Meets or exceeds the requirements of OEMs.
- FMX Technology stands up to high heat and stress to protect as well on the last day as it does on the first day. Up to 83% better oxidation control and 63% better deposit control.<sup>1</sup>
- Excellent extended drain capability.

<sup>1</sup> Compared to new limits of API CK-4 requirements.

**MAG 1 SYNTHETIC BLEND SAE 10W-30 CK-4 HEAVY DUTY DIESEL ENGINE OIL**

Use MAG 1 Synthetic Blend SAE 10W-30 for improved fuel economy and cold temperature starts when engine oil for naturally aspirated and turbocharged four-stroke diesel engines in which the API CK-4 service categories are recommended. It is formulated for engines operating under severe service and a wide range of cold and hot temperatures.

**MAG 1 SYNTHETIC BLEND SAE 15W-40 CK-4 HEAVY DUTY DIESEL ENGINE OIL**

MAG 1 Synthetic Blend SAE 15W-40 CK-4 is recommended for naturally aspirated and turbocharged four-stroke diesel engines in which the API CK-4 service categories are recommended. It is formulated for engines operating under severe service and a wide range of cold and hot temperatures.

PACK SIZES	Pack Size	Product #
	<b>Synthetic Blend SAE 10W-30 CK-4*</b>	
	3/1 Gallon	66940
	330 Gallon	69203
	6/1 Quart	65033
<b>Synthetic Blend SAE 15W-40 CK-4*</b>		
	3/1 Gallon	64845
	330 Gallon	69205

TYPICAL PHYSICAL PROPERTIES			
Properties	Test Method	Synthetic Blend SAE 10W-30 CK-4	Synthetic Blend SAE 15W-40 CK-4
Calcium, wt. %	ASTM D5185	0.105	0.105
Cold Cranking Simulator at (°C), cP	ASTM D5293	6270 (-25)	5398 (-20)
Color	ASTM D1500	2.5	3
Flash Point °C	ASTM D92	220	224
Flash Point °F	ASTM D92	428	435
Gravity, °API	ASTM D287	31.39	30.55
High Temperature / High Shear Vis at 150°C, cP	ASTM D5481	3.5	4.3
Magnesium, wt. %	ASTM D5185	0.1	0.1
Molybdenum, wt. %	ASTM D5185	0.0066	0.0066
Nitrogen, wt. %	ASTM D4629	0.105	0.105
Noack Volatility, % loss	ASTM D6375	13	10
Phosphorus, wt. %	ASTM D5185	0.115	0.115
Pour Point °C (°F)	ASTM D5950	-39°C (-38°F)	-36°C (-33°F)
Pumping Viscosity at (°C), cP	ASTM D4684	23,000 (-30)	21,600 (-25)
Specific Gravity @ 60°F (15.6°C)	ASTM D4052	0.8687	0.8732
Sulfated Ash, wt. %	ASTM D874	0.99	0.99
Sulfur, wt. %	ASTM D4951	0.32	0.32
TBN, mgKOH/g	ASTM D2896	10	10
Viscosity @ 100°C cSt	ASTM D445	12.21	15.66
Viscosity @ 40°C cSt	ASTM D445	82.06	116.1
Viscosity Index	ASTM D2270	149	143
Zinc, wt. %	ASTM D5185	0.127	0.127

CLAIMS	Synthetic Blend SAE 10W-30 CK-4	Synthetic Blend SAE 15W-40 CK-4
	API CK-4	★
API CJ-4	●	●
API SN		★
ACEA E9, E7, E4, E2	●	●
API CI-4 Plus, CI-4, CH-4, CG-4, CF-2, CF	●	●
API SH, SG, SF, SE, SD, SC		●
API SL		●
API SM		●
CAT ECF-3, ECF-2, ECF-1-a	●	●
Chrysler/ Fiat MS-10902		●
CID A-A-52306, MIL-PRF-2104G	●	●
Cummins 20086	●	●
Cummins CES 20081, 20077, 20076	●	●
Detroit Diesel 93K218, 93K215, 93K214	●	●
Detroit Diesel 93K222	●	●
Ford WSS-M2C171-E	●	●
Ford WSS-M2C171-F1	★	★
Global DHD-1	●	●
JASO DH-2	●	●
Mack EO-O Premium Plus, EO-N Premium Plus 03, EO-M Plus, and prior	●	●
Mack EOS-4.5	●	●
MAN 3275, 270	●	●
MAN 3575	●	●
MB 228.3, 228.31	●	●
MTU 2.1	●	●
MTU Type I, Type II	●	●
Renault RLD-4	●	●
Volvo VDS-4, 3, 2	●	●
Volvo VDS-4.5	●	●
CAT T0-2	○	○
Allison C-4	○	○

★ = Approved ● = Meets Requirements ○ = Suitable for Use

\*Available in Bulk



Evolutionary Performance™

**FMX** TECHNOLOGY **FRICITION MANAGEMENT FOR XTREME PROTECTION**

**PREMIUM**  
CONVENTIONAL



MAG 1® Premium Conventional Heavy Duty Diesel Engine Oils have evolved to meet manufacturer recommendations for thinner, lighter oils in today's engines. MAG 1 with FMX® Technology provides unsurpassed protection in every viscosity and helps improve performance, extend engine life and resist thermal breakdown.

**MAG 1 PREMIUM CONVENTIONAL SAE 10W-30 CK 4 HEAVY DUTY DIESEL ENGINE OIL**

MAG 1 Premium Conventional SAE 10W-30 CK-4 is technologically advanced heavy duty diesel engine oil that provides protection and performance, including the following benefits:

- Better fuel economy, compared to 15W-40.
- Provides added oxidation control and protection against acid buildup that can cause rust and corrosion.

**MAG 1 PREMIUM CONVENTIONAL SAE 15W-40 CK-4 HEAVY DUTY DIESEL ENGINE OIL**

MAG 1 Premium Conventional SAE 15W-40 CK-4 is technologically advanced heavy duty diesel engine oil that provides outstanding performance.

- Recommended for use in a wide range of heavy-duty applications and operating environments found on and off highway.
- Backward compatible with diesel engines in which the API CJ-4, CI-4, CI-4 Plus and CH-4 service categories are recommended.

PACK SIZES	Pack Size	Product #
	Premium Conventional SAE 10W-30 CK-4*	3/1 Gallon
2/2.5 Gallon		60312
5 Gallon		67986
55 Gallon		67987
Premium Conventional SAE 15W-40 CK-4*	330 Gallon	67988
	6/1 Quart	61658
	3/1 Gallon	62631
	2/2.5 Gallon	61170
	5 Gallon	67980
	6 Gallon**	69280
	55 Gallon	67983
	330 Gallon	67985

TYPICAL PHYSICAL PROPERTIES			
Properties	Test Method	Premium Conventional SAE 10W-30 CK-4	Premium Conventional SAE 15W-40 CK-4
Calcium, wt. %	ASTM D5185	0.105	0.105
Cold Cranking Simulator at (°C), cP	ASTM D5293	6270 (-25)	5832 (-20)
Color	ASTM D1500	2.5	3
Gravity, °API	ASTM D287	31.39	30.10
High Temperature / High Shear Vis at 150°C, cP	ASTM D5481	3.5	4.2
Magnesium, wt. %	ASTM D5185	0.1	0.1
Molybdenum, wt. %	ASTM D5185	0.0066	0.0066
Nitrogen, wt. %	ASTM D4629	0.105	0.105
Noack Volatility, % loss	ASTM D6375	13	10
Phosphorus, wt. %	ASTM D5185	0.115	0.115
Pour Point °C (°F)	ASTM D5950	-39°C (-38°F)	-36°C (-33°F)
Pumping Viscosity at (°C), cP	ASTM D4684	23,000 (-30)	20,000 (-25)
Specific Gravity @ 60°F (15.6°C)	ASTM D4052	0.8687	0.8756
Sulfated Ash, wt. %	ASTM D874	0.99	0.99
Sulfur, wt. %	ASTM D4951	0.32	0.32
TBN, mgKOH/g	ASTM D2896	10	10
Viscosity @ 100°C cSt	ASTM D445	12.21	15.56
Viscosity @ 40°C cSt	ASTM D445	82.06	116.2
Viscosity Index	ASTM D2270	149	141
Zinc, wt. %	ASTM D5185	0.127	0.127

\*Available in Bulk \*\* Enviro Box®

CLAIMS	Premium Conventional SAE 10W-30 CK-4	Premium Conventional SAE 15W-40 CK-4
	API CK-4	★
API CJ-4	●	●
API SN		★
API CI-4 Plus, CI-4, CH-4, CG-4, CF-2, CF	●	●
API SH, SG, SF, SE, SD, SC		●
API SL		●
API SM		●
ACEA E9, E7, E4, E2	●	●
Allison C-4	○	○
CAT TO-2	○	○
CAT ECF-3, ECF-2, ECF-1-a	●	●
Chrysler/Fiat MS-10902		●
CID A-A-52306, MIL-PRF-21046	●	●
Cummins 20086	●	★
Cummins CES 20081, 20077, 20076	●	●
Detroit Diesel 93K218, 93K215, 93K214	●	●
Detroit Diesel 93K222	●	★
Ford WSS-M2C171-E	●	●
Ford WSS-M2C171-F1	★	★
Global DHD-1	●	●
JASO DH-2	●	●
Mack EO-O Premium Plus, EO-N Premium Plus 03, EO-M Plus, and prior	●	●
Mack EOS-4.5	●	★
MAN 3275, 270	●	●
MAN 3575	●	●
MB 228.3, 228.31	●	●
MTU 2.1	●	●
MTU Type I, Type II	●	●
Renault RLD-4	●	★
Volvo VDS-4, 3, 2	●	●
Volvo VDS-4.5	●	★

★ = Approved ● = Meets Requirements ○ = Suitable for Use



Evolutionary Performance™

CONVENTIONAL



MAG 1® Conventional Heavy Duty Diesel Engine Oils, with FMX® technology, are for older engine and OEM specifications, but still improve performance, extend engine life and resist thermal breakdown. MAG 1 engine oil provides outstanding technology for our heavier viscosities. These engine oils meet the difficult challenges of effectively balancing durability, extending drain intervals and protecting emissions control devices in modern and older engines.

- Recommended for use in a wide range of heavy-duty applications and operating environments found on and off highway, including engines operating under heavy loads.
- Outstanding for older engines.

**MAG 1 CONVENTIONAL SAE 20W-50 CH-4 HEAVY DUTY DIESEL ENGINE OIL**

MAG 1 Conventional SAE 20W-50 CH-4 is technologically advanced heavy duty diesel engine oil that provides excellent protection and performance.

- Backward compatible with diesel engines in which the API CH-4, and earlier service categories are recommended.

MAG 1 Monograde Heavy Duty Engine Oils are formulated to provide excellent protection for older diesel engines. These engines have served you well for a long time and deserve high-quality oil protection that meets or exceeds the engine manufacturers' recommendations.

- FMX Technology provides unsurpassed protection and stands up to high heat and shearing to protect as well on the last day as it does on the first day.

PACK SIZES	Pack Size	Product #	CLAIMS			
			SAE 20W-50 CH-4	SAE 10	SAE 30	SAE 40
SAE 20W-50 CH-4*	3/1 Gallon	60252	●			
	5 Gallon	60276				
	55 Gallon	60589				
SAE 10*	6/1 Quart	64097			●	●
	55 Gallon	62852			●	●
	6/1 Quart	61656			●	●
SAE 30*	2/2.5 Gallon	00132				
	5 Gallon	00034				
	55 Gallon	62854				
	330 Gallon	62086				
SAE 40*	5 Gallon	00045				
	55 Gallon	62855				

● = Meets Requirements ○ = Suitable for Use

TYPICAL PHYSICAL PROPERTIES					
Properties	Test Method	SAE 20W-50 CH-4	SAE 10	SAE 30	SAE 40
Cold Cranking Simulator at (°C), cP	ASTM D5293	6050 (-15)	4025 (-25)	-	-
Color	ASTM D1500	4.0	2.5	2.5	2
Flash Point °C	ASTM D92	225	206	208	210
Flash Point °F	ASTM D92	427	403	406	410
Gravity, °API	ASTM D287	28.15	31.42	30.03	29.61
Specific Gravity @ 60°F (15.6°C)	ASTM D4052	0.8863	0.8685	0.876	0.8783
TBN, mgKOH/g	ASTM D2896	10	5	5	5
Viscosity @ 100°C cSt	ASTM D445	17.2	6.794	10.91	13.29
Viscosity @ 40°C cSt	ASTM D445	155	42.83	91.05	124.5
Viscosity Index	ASTM D2270	124	114	105	101
Pour Point °C (°F)	ASTM D5950	-33°C (-27°F)	-36°C (-33°F)	-30°C (-22°F)	-27°C (-17°F)
Zinc, wt. %	ASTM D5185	0.127	0.086	0.086	0.086

\*Available in Bulk



Evolutionary Performance™

NATURAL GAS AND CNG/LNG

**MAG 1 NATURAL GAS LOW ASH SAE 40 ENGINE OIL**

Designed specifically for use in medium and high speed (rpm) gas engines fueled by processed or pipeline natural gas or other gas sources that may contain corrosive materials.

- Low ash formula helps neutralize corrosion.
- Outstanding deposit control.
- Thermal stability and long life.

**MAG 1 CNG/LNG SAE 15W-40 ENGINE OIL**

This heavy duty, low-ash formulation is designed for use in naturally aspirated and turbocharged four-stroke engines, running on compressed or liquefied natural gas, in on-road service. Also recommended for use in some stationary natural gas engine applications where SAE 40 oils are typically specified but where operators demand multi-grade performance or where low-temperature start-up issues exist.

- Backward compatible with diesel engines in which the API CH-4, and earlier service categories are recommended.



PACK SIZES	Pack Size	Product #
	Natural Gas Low Ash SAE 40	55 Gallon
CNG/LNG SAE 15W-40*	55 Gallon	66887

CLAIMS	CNG/LNG SAE 15W-40	
	Cummins 20074	○
Detroit Diesel 93K216	○	
○ = Suitable for Use		

**TYPICAL PHYSICAL PROPERTIES**

Properties	Test Method	Natural Gas SAE 40	CNG/LNG SAE 15W-40
Cold Cranking Simulator at (°C), cP	ASTM D5293	-	6410 (-20)
Color	ASTM D1500	2	1.5
Flash Point °C	ASTM D92	220	223
Flash Point °F	ASTM D92	428	433.4
Gravity, °API	ASTM D287	29.85	30.27
Phosphorus, wt. %	ASTM D5185	0.025	-
Pour Point °C (°F)	ASTM D5950	-27°C (-17°F)	-
Specific Gravity @ 60°F (15.6°C)	ASTM D4052	0.877	0.8747
Sulfated Ash, wt. %	ASTM D874	0.46	0.5
TBN, mgKOH/g	ASTM D2896	5.7	5.6
Viscosity @ 40°C cSt	ASTM D445	134.65	118.6
Viscosity @ 100°C cSt	ASTM D445	13.58	15.25
Viscosity Index	ASTM D2270	96	134
Zinc, wt. %	ASTM D5185	0.027	-

\*Available in Bulk

New standards have been established for a new generation of heavy duty diesel engine oil, initiated by changes in U.S. government fuel economy and emissions regulations.

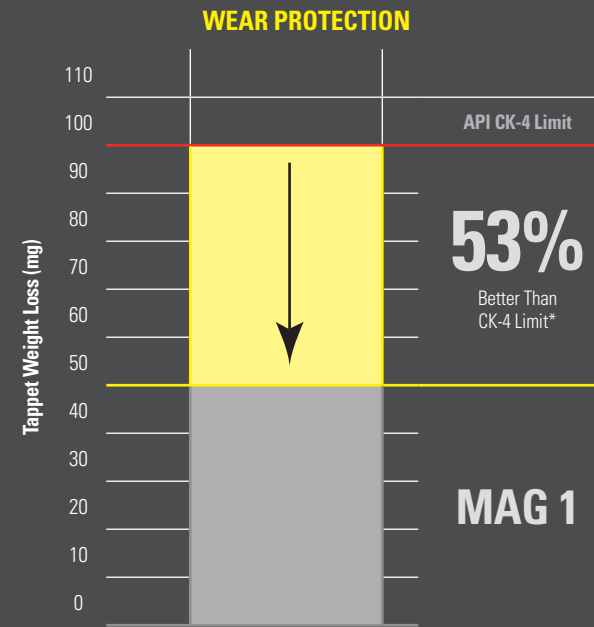
These updated performance requirements for the new PC-11 category of heavy duty oils have brought pressure to bear engine oil and lubricant manufacturers who had to pass stricter, more rigorous tests. Stricter limits were also imposed by the API on existing test specifications.

However, the inevitable move toward lighter viscosity oils, new classifications and category upgrades will mean better performance, including improved friction and wear protection, reduced oxidation, better shear stability, increased fuel efficiency and decreased emissions, among other things.

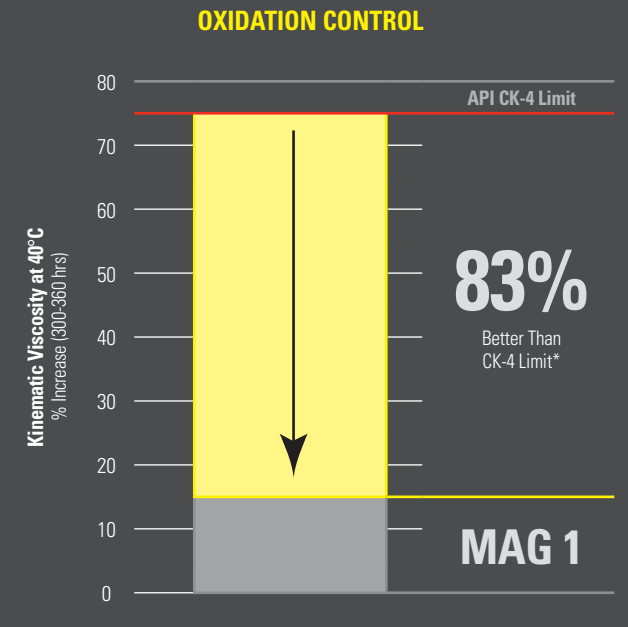
To be certified and approved, oil formulations must comply with API CK-4 category requirements, which represent the latest standard. These categories exceed the standards required by the previous standard API CJ-4 classification.

**MAG 1® NEW PERFORMANCE TEST RESULTS**

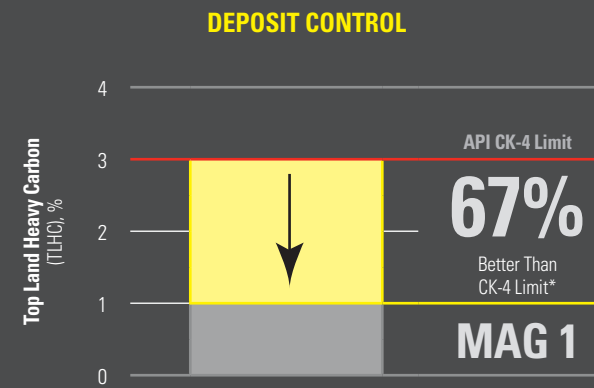
These charts show how MAG 1 Heavy Duty Diesel Engine Oil performs better than API limits for newest CK-4 standards and rigorous testing.



\*As measured in the Cummins ISB engine test (ASTM D7484)



\*As measured in the Volvo T-13 engine test (ASTM D8048)



\*As measured in the Caterpillar 1N engine test (ASTM D6750)



For more information about MAG 1 Heavy Duty Engine Oils, please visit [www.mag1.com/education](http://www.mag1.com/education).



## Evolutionary Performance™

MAG 1® motor oils, lubricants and chemicals are designed to keep pace with today's engine demands, requiring lighter viscosities and increased power densities. It's the only brand with FMX® Technology System, which meets the difficult challenges of effectively balancing performance, strength and durability.

### THE MEANING OF EVOLUTIONARY PERFORMANCE™

Today's engines, machinery and equipment are evolving rapidly as OEMs push for more power density, lighter viscosity oil and increased fuel or fluid efficiency. MAG 1 is leading the way in this new evolution, based on the science of advanced additives and powerful molecular structures. It's all part of our exclusive FMX Technology System that boosts performance on many levels under the most severe operating conditions.

It means, despite lower viscosities, MAG 1 still delivers extraordinary performance, strength and durability, in every grade. Even the thinnest MAG 1 oils and fluids perform better than thicker oils of the past.

MAG 1 engine oils and lubricants are chemically formulated to deliver a higher level of performance that rises to the challenge of ever-increasing demands and developments by automotive, heavy duty truck and industrial equipment manufacturers.



#### PERFORMANCE

MAG 1 delivers unsurpassed protection to control friction and wear well beyond standard industry requirements. It can also help extend engine life and improve the performance of all types of vehicles, trucks, machinery, and equipment.



#### STRENGTH

MAG 1 is bolstered by FMX Technology, which provides a very strong oil film that shields engines, parts and machinery at multiple points of contact and fights friction between rotating parts.



#### DURABILITY

MAG 1 protects as well on the last day as it does on the first. Even under the most extreme operating conditions, it retains viscosity and withstands heat and shearing.



#### EXTREME CONDITIONS

With a powerful, molecular-reinforced formulation, MAG 1 reduces engine and equipment stresses from high heat, cold starts, heavy loads, steep inclines, dusty roads, power density, and more.

### WELL-EARNED REPUTATION

MAG 1 is the brand to trust no matter what kind of vehicle you drive or equipment you operate. Manufactured in the U.S.A. by one of the world's leading suppliers of lubricants and automotive chemicals, its solid reputation and record of performance over many years is a testament to the consistent, dependable quality of every MAG 1 product.



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