The First in Synthetics ®

Product Features and Benefits

Review: Features and Benefits

From the G1229 *How to Sell AMSOIL Products Manual*, you will recall that features and benefits are the core of an AMSOIL sales presentation.

Feature: A product characteristic.

Benefit: A useful function that comes from a feature.

Features	Benefits
• No paraffin or wax	• Easy cold temperature starting
• Low coefficient of friction	• Excellent gas (or fuel) mileage
• Oxidation resistance	• Clean engine

Benefits are easier to understand than features are. That's why successful salespersons, according to the G1229, talk almost exclusively about product benefits – and develop a keen understanding of product features so they may explain the "whys" behind the benefits if they are asked.

AMSOIL Benefits

Synthetic lubricants are pure, uniform and designable.

With AMSOIL, vehicles and equipment:

- last longer
- need fewer repairs
- perform better – more responsive, more power
- get better fuel economy (more miles to the gallon)
- emit cleaner exhaust ...

... and AMSOIL synthetic lubricants last longer than other lubricants do.

AMSOIL Features

What are the features of AMSOIL synthetic lubricants that support these benefits? To find our answer, let's review some basics about synthetic lubricants. Synthetic lubricant basestocks are:

Pure – Because they are derived from pure chemicals, synthetic lubricants contain no contaminants or molecules that "don't pull their own weight."

Uniform – Because synthetics contain only smooth lubricating molecules, they slip easily across one another. On the other hand, the potpourri of jagged, irregular and odd-shaped molecules of refined lubricants don't slip quite so easily. The ease with which lubricant molecules slip over one another affects the lube's ability to reduce friction, which in turn, affects wear control, heat control and fuel efficiency. Synthetics are superior.

Uniformity also helps synthetics resist thinning in heat and thickening in cold, which helps them protect better over a system's operating temperature range and helps lubes provide better seals than conventional lubes do.

Designable – Synthetic lubricants may be made to fulfill virtually every lubricating need. On the other hand, the applicability of conventional lubes is limited, due to their functional limitations in high temperatures, low temperatures and other demanding conditions.

AMSOIL Features and Benefits: putting it all together

Benefits: Vehicles and equipment last longer, need fewer repairs and emit cleaner exhaust.

Failure and wear may lead to shortened equipment life. They often require vehicles and equipment to need repair. And when excessive wear occurs in an engine, increased exhaust emissions are almost always the outcome.

Feature: Synthetic lubricant molecules are uniform.

HEAT CONTROL

Lubricated components are designed to operate in a range of temperatures which are considered optimal. However, demands for more power, faster operation and more load-carrying capacity often push actual operating temperatures above the optimal range. High temperature operation is often a cause of component failure and even more often a significant cause of component wear.

Because uniformly smooth synthetic lubricant molecules slip easily over one another, they are superior friction-reducers to conventional lubricants. (Technically, because they slip more easily over one another, synthetics are said to have a lower "coefficient of friction" than conventional lubricants.) The less friction in a system, the less heat in it, too. Friction and heat are two major contributors to component failure and wear. By controlling friction and heat more effectively, synthetics significantly reduce the incidence of component failure and significantly reduce the rate of component wear.

In addition, uniformly sized synthetic lubricant molecules makes them better heat transfer agents than conventional lubricant molecules. Some petroleum lubricant molecules are large and heavy. Others are small and light. As oil flows in a lubricated system, the small, light molecules tend to flow in the center of the oil stream while the large, heavy ones get stuck on the metal surfaces where they create a barrier against the movement of heat from

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the component and into the oil stream. In effect, the large, heavy molecules work like a blanket around hot components. If those large, heavy molecules are chemically unstable, they may also breakdown and form deposits on component surfaces, making the blanketing effect even more pronounced.

Since synthetic lubricants have no large heavy molecules, they don't blanket hot components. Instead, every molecule is equally likely to touch the hot component surface and take some of its heat into the oil stream which carries the heat away. Also, since synthetics tend to be chemically stable, they are not prone to form deposits.

VISCOSITY INDEX

Lubricant viscosity plays an important role in component efficiency and life expectancy. (Remember, viscosity is a measure of fluid flow.) If a component is lubricated with a lubricant whose viscosity is too low, the component will not be protected adequately and will wear excessively. If the component is lubricated with a lubricant whose viscosity is too high, the component will expend excess energy doing its job, which reduces efficiency and may affect the life of other components, such as motors.

High viscosity index lubricants protect better and provide for greater efficiency than low viscosity index lubricants do.

"Viscosity index" is a number assigned to lubricants to describe how much their viscosity changes with temperature changes. The higher the viscosity index, the less the lubricant's viscosity changes. High viscosity index lubricants protect better and provide for greater efficiency than low viscosity index lubricants do because the high viscosity index fluids are more apt to retain the correct viscosity for the job, neither thickening as much in cold nor thinning as much in heat.

Synthetic lubricants have higher viscosity indexes than conventional lubricants, due, in part, to the uniformity of synthetic lubricant molecules. Large, heavy lubricant molecules tend to increase lubricant viscosity more in cold temperatures than smaller, lighter lubricant molecules do. Conventional lubricants, which contain some relatively large, heavy molecules, tend to thicken in cold temperatures more than synthetic lubricants, with their uniformly sized molecules, do. Since temperature affects the viscosity of conventional lubricants more than it does the viscosity of synthetic lubricants, conventional lubricants have a lower viscosity index than synthetics do.

Feature: Synthetic lubricants are pure.

THERMAL AND OXIDATIVE STABILITY

Some of the chemicals in conventional lubricants break down at temperatures within the normal operating range of many vehicle and equipment components. Some are prone to break down in these relatively mild temperatures if oxygen is present, which it almost invariably is in vehicles and equipment. These thermally and oxidatively unstable contaminants do not help the lubrication process in any

way. They are present in conventional oils simply because removing them is impossible or too expensive.

When conventional oil contaminants break down, they coat components with varnish, deposits and sludge and leave the lubricant thick, hard to pump and with very poor heat transfer ability.

Because synthetic lubricants do not contain contaminants, they are much more resistant to thermal and oxidative breakdown. That means they can be used in higher temperatures than conventional oils can without breaking down and they are impervious to breakdown at normal operating temperatures. With synthetics, components stay varnish-free, deposit-free and sludge-free.

And, because thermally and oxidatively stable lubricants retain their fluidity, pumpability and original heat transfer abilities, they protect and lubricate better, longer.

Because synthetic lubricants do not contain contaminants, they are much more resistant to thermal and oxidative breakdown.

COLD TEMPERATURE FLUIDITY

You're familiar with paraffin. It hardens at room temperature. Conventional lubricants often contain paraffins which cause the lubricants to thicken in cold temperatures as the paraffin gels.

However, a lubricant must flow readily throughout the system it protects or the system goes unprotected, and cold-thickened lubricants lose their ability to flow readily, or sometimes even to flow at all. In fact, at startup, conventional oils may leave working parts unprotected for as long as five minutes – plenty of time for significant wear to occur.

Synthetic lubricants do not contain paraffins or other waxes that thicken dramatically in cold temperatures. Synthetic lubricants flow readily in extremely cold temperatures, much colder than those at which conventional oils flow, which provides rapid post-startup lubrication and protection, keeping startup wear in check.

The superior cold temperature fluidity of synthetic lubricants also helps engines start more dependably in cold temperatures than they do with conventional oils. Cold thickened conventional oils sometimes hinder the rotation of the crankshaft so much, it cannot rotate fast enough to start the engine.

Benefit: Vehicles and equipment perform better and get better fuel economy.

The "goal" of the engine and drivetrain is the maximum transfer of the energy released from fuel combustion to the wheels to move the vehicle.

The engine and drivetrain accomplish their goal mechanically. Each mechanical component has moving parts that require lubrication for friction, heat and wear control. Ironically, while parts move with significantly

reduced friction when a lubricant separates them than when one doesn't, the lubricant itself contributes some friction to the system, due to the way its molecules slip over one another.

Feature: Synthetic lubricant molecules are uniform.

FRICTION CONTROL

Uniform, smooth synthetic lubricant molecules slip across one another easily. That minimizes friction, which in turn, improves power and fuel economy because more of the energy released from fuel combustion reaches the wheels and moves the vehicle. The vehicle accelerates more quickly and powerfully because more of the fuel goes to moving the vehicle rather than to overcoming friction. The vehicle also works more efficiently, getting better fuel economy (more miles to the gallon) for the same reason – more of the fuel goes to moving the vehicle than to overcoming friction.

LOW VOLATILITY

The small, light molecules in conventional lubricants "boil off" at relatively low temperatures: just as you put less energy into throwing a light ball into the air than you do a heavy one, so light molecules require less energy, in the form of heat, to lift out of solution and into the air than heavier molecules do. The tendency of a liquid to boil off is referred to as its "volatility." Conventional lubricants are more volatile than synthetic oils are.

Volatility affects more than the rate of oil consumption. Because the light molecules are lost through volatility, volatile oils tend to grow thick with use, which makes them hard to pump. The harder the oil pump works, the more energy it consumes, which reduces fuel economy and the quicker the pump wears out. Plus, parts require more energy to move through thicker oil than they do through thinner oil. All the energy spent on pumping and moving through thick oil is energy lost to performance and fuel economy.

Synthetic lubricants lose very little to volatility, because their molecules are uniformly sized. None are smaller and lighter than others and therefore more susceptible to boiling off. The low volatility of synthetic lubricants keeps performance and fuel economy at their peak.

Benefit: AMSOIL synthetic lubricants last longer than other lubricants do.

Predictive maintenance is a growing practice in commercial and industrial applications. Predictive maintenance practice calls for oil drain intervals based on used oil analysis. As a result, commercial and industrial lubricant users of AMSOIL synthetic lubricants are finding their lubricant drain intervals may be substantially increased with no danger to their vehicles and equipment. The practice of extending drain intervals saves them money on used oil disposal costs and replacement oil costs, and most importantly, it saves them downtime.

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"Downtime" to a motorist may mean inconvenience – a lost Saturday afternoon changing oil or having to take the bus while the car is being serviced. The value of a Saturday afternoon or the convenience of having the car may be very high.

Feature: Synthetic lubricant molecules are pure.
Heat and oxidation are the main enemies of lubricant basestocks – especially of the contaminants in conventional basestocks. Once heat or oxidation cause a lubricant to breakdown, the lubricant must be replaced or the equipment or vehicle may be damaged by a lack of lubrication or by chemical attack. The excellent resistance of synthetic lubricants to thermal and oxidative breakdown allow them to be safely used for much longer drain intervals than conventional lubricants. In fact, AMSOIL synthetic motor oils may be used for 25,000 miles or one year under normal service conditions.

Feature: Synthetic lubricant molecules are uniform.
Because their uniform and smooth molecular structure allows AMSOIL synthetic lubricants to operate with less friction than conventional lubricants do, they control heat better than conventional lubricants. By keeping heat lower, the lubricant is stressed less, which helps it last longer. And because oxidation and heat are directly related – more heat leads to more oxidation – the lubricant is less stressed by oxidation, too, which also helps it last.

What benefits come from the feature of designability?

For industry, the feature of designability is often important. In industrial applications, lubricants may be exposed to temperatures, loads and other stresses far beyond the capabilities of conventional products to endure. The nearly infinite designability of synthetic lubricants makes synthetics the only products useful for such applications.

Is there more to a lubricant than its basestock?

Lubricants contain basestocks and additives, with the basestock comprising the greatest volume of the finished lubricant. Additives either enhance basestock properties or add properties to the finished lubricant that the basestocks don't have.

Very broadly, each additive performs one or more of the following functions:

- Protect metal surfaces
- Extend the range of lubricant applicability
- Extend lubricant life

The largest market for lubricant additives is in the transportation field, including additives for lubricants used in engines and drivetrains.

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Surface protective additives

- Antiwear agents inhibit wear
- Rust and corrosion inhibitors inhibit rust and corrosion
- Detergents keep surfaces free of deposits
- Alkalinity additives neutralize acids
- Dispersants keep insoluble materials dispersed in the lubricant to inhibit wear
- Friction modifiers reduce friction

Lubricant applicability extending additives

- Viscosity modifiers reduce the rate of viscosity change with changes in temperature
- Seal swell agents help form and maintain tight seals

Lubricant life enhancing additives

- Antifoam agents inhibit lubricant foaming
- Antioxidants inhibit lubricant oxidation

Feature: AMSOIL synthetic lubricants contain high quality additives.

Just as quality differences exist between lubricant basestocks, quality differences also exist between lubricant additives. For example, low quality viscosity modifiers are often damaged by the shearing forces in the engine. Once damaged, they no longer work to increase the lubricant's viscosity in high temperatures, leaving lubricated components open to wear and damage during high temperature operations.

The quality of lubricant additives is directly related to their cost. Lubricants made to be sold at a low price contain low cost additives, and, of course, a low cost conventional basestock. Lubricants formulated for performance contain additives proven to perform, despite their usually higher cost. Over time, the performance-formulated lubricant proves to be the more cost effective choice, due to the superior lubricant and protection it provides. Vehicles and equipment last longer and perform better with performance-formulated lubricants.

Additive quality also affects lubricant life. For example, some alkalinity additives last much longer than others do. In diesel engines, the lubricant must be replaced when the alkalinity additives are used up or the engine is subject to corrosion which may cause failure or significantly accelerated wear. It doesn't pay to pair long-life additives with short-lived conventional basestocks. It does pay, however, to pair long-life additives with long-life synthetic basestocks. Here, too, quality pays – in reduced oil drains, reduced used oil disposal costs and reduced downtime.

In fact, every benefit attributed to AMSOIL synthetic lubricants comes not only from the lubricants' synthetic basestocks, but also from their top-quality additives.

AMSOIL Benefits

With AMSOIL, vehicles and equipment:

- last longer
- need fewer repairs
- perform better – more responsive, more power
- get better fuel economy (more miles to the gallon)
- emit cleaner exhaust ...

... and AMSOIL synthetic lubricants last longer than other lubricants do.

Remember: sell the benefits!

Which Product? How Much?

When a prospect is ready to buy an AMSOIL lubricant or filter, you may determine which product and how much the prospect needs in one of four ways:

1) **Recommend the same type of product the prospect is using** – If your prospect uses a 10W-30 motor oil now, you may recommend AMSOIL Synthetic 10W-30 Motor Oil to replace the prospect's present product – provided 10W-30 motor oil is the correct product for the application. Of the four, recommending products based on current use is the least reliable method of making recommendations.
2) **Check the owner's manual** – If the owner's manual for your prospect's vehicle recommends 80W-90 gear lube for the rear differential, you may recommend AMSOIL Synthetic 80W-90 Gear Lube to replace the prospect's present product.
3) **Check with the equipment or vehicle dealership** – If the prospect doesn't have an owner's manual, call the dealership for product recommendations.
4) **Use an AMSOIL reference** – If you know the make, model and engine of your prospect's vehicle or the make and model of your prospect's equipment, you can use the **AMSOIL Product Selection Guide (G50)** or the **AMSOIL Filter Applications and Cross Reference Guide (G3000)** to determine which products and how much you need.

The G50 AMSOIL Product Selection Guide contains lubricant recommendations for domestic and foreign passenger cars, trucks, tractors, outboard motors, motorcycles, snowmobiles, ATVs, chain saws, lawn mowers and personal water craft. To use it, first read the "How to Use This Selection Guide and Cross Reference." Next, go to the Table of Contents and find the appropriate section. For example, let's say you want to know what

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lubricant to use in the crankcase of a Buick passenger car. The appropriate section to look in is "Passenger Cars & Light Trucks."

The passenger car listings are arranged alphabetically, with "Crankcase" being the first heading under each listing. Here, motor oil requirements by model year and operating temperatures are listed. You will find the quantity required for the application under the bold heading, "CAPACITY, Refill."

The G3000 Filter Applications and Cross Reference Guide contains information to help you determine which AMSOIL, Donaldson and WIX filters correspond to the application you wish to fill. You may use the guide to make filter recommendations based on one of two pieces of information:

1) The vehicle's make, model, year and engine. A Table of Contents appears in the G3000 Filter Applications and Cross Reference Guide. Use the chapter, "Automobile and Light Truck Applications" to find the oil, air, fuel, cabin air, transmission and breather filters for the application you wish to fit. Each vehicle make is divided according to model year with the most recent year appearing first.

Note the Vehicle Identification Number (VIN) code, next to the engine listing. The VIN code is included to help you verify the accuracy of the engine identification. For example, the Vehicle Identification Number (VIN) chart on page 929 shows that the 8th character in "1981 - on" GMC vehicles is shown in the VIN code description provided in the engine listing.

2) The stock number and manufacturer of the filter you wish to replace. Use the chapter, "WIX Master Interchange" to find the appropriate AMSOIL or WIX filter for an application based on the filter currently being used.

Let's say you wish to replace a General Motors oil filter 5579164. Follow the alphabetical filter manufacturer listing under "WIX Master Interchange" until you reach, "General Motors." Under the General Motors heading, note the filter numbers are arranged numerically in plain type at the left side of each column. Follow the filter number listings until you reach, "5579164." The AMSOIL filter is listed in bold type to its right. The appropriate replacement oil filter is the AMSOIL EAO43.

Let's say you also want to replace a General Motors air filter 6486924. Follow the left-hand filter number listings until you reach "6486924." The appropriate replacement air filter is the WIX 46165.

Use the "Donaldson Heavy Duty Cross Reference" to find the appropriate Donaldson filters for heavy duty applications.

Engine lubricants

How Does MOTOR OIL Work?

Lubricate and cool – Generally, when people talk about "motor oil," they are talking about the oil that goes into the crankcase, a special oil reservoir, in a four-cycle engine, like the engine in your car. Motor oil lubricates the engine of a vehicle or piece of equipment and cools a significant portion of the engine.

While the engine is at rest, the motor oil rests in the crankcase, a pan bolted to the bottom of the engine block. When the engine starts, the oil pump feeds oil from the pan to the oil distribution system, a network of passages, tubes, grooves and holes leading to the engine bearings and other surfaces that receive a large volume of pressurized oil for lubrication. Other parts receive oil through splash or spray. For example, the overhead valve system receives a carefully controlled quantity of non-pressurized oil for lubrication.

Other functions – In addition to lubricating and cooling engine parts, motor oil must allow easy engine starting, protect the engine from corrosion and oxidation, keep the engine clean, form a tight seal between piston rings and cylinder walls, and help the engine use fuel efficiently.

Diesel engines require protection against the corrosion caused by a combination of their extremely high operating temperature and acidic products introduced into the engine by diesel fuel and products of oil breakdown. Diesel oils provide protection against corrosion through detergent-alkalinity additives, which give the oil its Total Base Number (TBN). Oils with high TBN neutralize acids over a longer period than oils with low TBN do. In fact, in programs of used oil analysis, used by fleets to reduce their maintenance costs, an oil's fitness for ongoing service is determined largely by its TBN.

AMSOIL Motor Oils

Series 2000 SAE 20W-50 Synthetic Racing Oil (TRO)
Signature Series SAE 0W-30 Synthetic Motor Oil (SSO)
Series 3000 SAE 5W-30 Synthetic Heavy Duty Diesel Oil (HDD)
SAE 5W-30 XL Synthetic Motor Oil (XLF)
SAE 10W-30 XL Synthetic Motor Oil (XLT)
SAE 5W-20 XL Synthetic Motor Oil (XLM)
SAE 10W-40 XL Synthetic Motor Oil (XLO)
SAE 10W-40 Premium Protection Synthetic Motor Oil (AMO)
SAE 10W-30 Synthetic Motor Oil (ATM)
SAE 5W-30 Synthetic Motor Oil (ASL)
SAE 0W-20 Synthetic Motor Oil (ASM)

SAE 20W-50 Premium Protection Synthetic Motor Oil (ARO)
SAE 10W-30 / SAE 30 Synthetic Diesel Oil (ACD)
SAE 15W-40 Synthetic Blend Diesel Oil (PCO)
SAE 15W-40 Synthetic Heavy Duty Diesel and Marine Oil (AME)
SAE 5W-40 Synthetic Premium API CJ-4 Diesel Oil (DEO)
SAE 20W-50 Synthetic Motorcycle Oil (MCV)
SAE 10W-40 Synthetic Motorcycle Oil (MCF)
SAE 0W-40 Formula 4-Stroke Power Sports Synthetic Motor Oil (AFF)
SAE 10W-30 Formula 4-Stroke Marine Synthetic Motor Oil (WCT)
SAE 10W-40 Formula 4-Stroke Marine Synthetic Motor Oil (WCF)
SAE 10W-30 / SAE 30 Formula 4-Stroke Synthetic Small Engine Oil (ASE)
SAE 10W-40 Formula 4-Stroke Synthetic Scooter Oil (ASO)
SAE 60 Synthetic Super Heavy Weight Racing Oil (AHR)
SAE 5W-40 Synthetic European Motor Oil (AFL)

Features and Benefits

Feature Cooler operation.
Benefit Cooler engines resist stress and wear. They last longer, perform better and require fewer repairs.

Feature Thermal and oxidative stability – AMSOIL synthetic motor oils resist formation of sludge, varnish, acids, deposits and other degradation products.
Benefit Engines stay clean, which helps them perform better, last longer and require fewer repairs.

Feature Consistent viscosity in high and low temperatures.
Benefit Easier cold temperature starting. Better high and low temperature protection, which helps engines last longer and require fewer repairs.

Feature Superior friction reduction.
Benefit Lower wear rate, which helps engines last longer and require fewer repairs. Improves fuel economy.

Feature Low temperature fluidity.
Benefit Easier cold temperature starting. Better wear protection in cold temperatures, which helps engines last longer and require fewer repairs.

Feature Low volatility – AMSOIL synthetic motor oils don't evaporate.
Benefit Reduced oil consumption. Better oil flow gives better fuel economy and better wear protection.

Feature Broad temperature range of application.
Benefit AMSOIL synthetic motor oils work safely and protect at higher and lower temperatures than conventional oils do.

Feature High TBN (diesel oils).

Benefit Reduces rate of engine corrosion, which helps diesel engines last longer and require fewer repairs. Increases oil service life, which reduces maintenance costs.

Feature Extended service life capability.

Benefit AMSOIL synthetic motor oils last longer than conventional oils do, which saves motorists money and reduces the environmental impact of used lubricants.

Application and Market

Racing Oil (TRO): For use in gasoline-fueled four-cycle engines in race and performance vehicles.

Super Heavy Weight Racing Oil (AHR): For use in high-horsepower racing engines, typically supercharged and alcohol-burning or nitro-fueled.

Passenger vehicle motor oils (SSO, XLF, XLT, XLM, XLO, AMO, ARO, ATM, ASL, ASM, AFL): For use in gasoline-fueled four-cycle engines in passenger vehicles.

Diesel engine oils (HDD, ACD, PCO, AME, DEO): For use in on- and off-road diesel engines.

Motorcycle oils (MCV, MCF): For use in four-cycle motorcycle engines.

4-Stroke Power Sports Oil (AFF): For use in four-cycle recreational equipment, including ATVs and snowmobiles.

4-Stroke Marine Oils (WCT, WCF): For use in four-cycle marine engines.

4-Stroke Small Engine Oil (ASE): For use in four-cycle small engines.

4-Stroke Scooter Oil (ASO): For use in four-cycle scooter engines.

Availability

AMSOIL synthetic motor oils are available in 1-quart, 1-gallon, 2½-gallon, 16-gallon, 30-gallon, 55-gallon and 275-gallon containers. See your price list for more information.

For More Information

G52 *Motor Oil and Engine Filter Information*
G359 *Question and Answer Brochure*
G391 *Motorcycle Products Brochure*
G1053 *All Purpose Handout*
G1489 *Diesel Power Brochure*
G1747 *Four-Stroke Brochure*

See your **G15** *Literature and Sales Aids Price List* and **G1045** *Literature and Business Tools Catalog* for appropriate product data bulletins and additional motor oil literature.

How Does TWO-CYCLE OIL Work?

Two-cycle oil, used to lubricate two-cycle gasoline-fueled engines, mixes with the engine's gasoline and the mixture is burned for energy. Some engines are designed to use a gasoline-oil mixture that must be made before introducing the mixture into the engine's fuel tank; the oil used in these engines is called **pre-mix oil.** Some engines are designed for introduction of oil and gasoline into separate compartments with the oil injected into the combustion chamber or into the fuel system; the oil used in these engines is called **injector oil.**

Due to their light weight, two-cycle gasoline-fueled engines find application in outboard marine engines, motorcycles, ATVs, chainsaws, portable equipment and snowmobiles.

Two-cycle engines rev high, so they wear fast. If you were to leave a two-cycle engine and a four-cycle engine of the same displacement running for an hour, the four-cycle engine would complete about 100,000 revolutions while the two-cycle would complete 300,000 to 400,000. Each revolution causes wear.

AMSOIL 2-Cycle Oils

DOMINATOR Synthetic 2-Cycle Racing Oil (TDR)
INTERCEPTOR Synthetic 2-Cycle Oil (AIT)
HP Injector Synthetic 2-Cycle Oil (HPI)
Saber Professional Synthetic 100:1 Pre-Mix 2-Cycle Oil (ATP)
Saber Outboard Synthetic 100:1 Pre-Mix 2-Cycle Oil (ATO)

Features and Benefits

Feature Cooler operation.
Benefit Cooler two-cycle engines resist stress and wear. They last longer, perform better and require fewer repairs.

Feature Consistent viscosity in high and low temperatures.
Benefit Better high and low temperature protection, which helps two-cycle engines last longer and require fewer repairs.

Feature Superior friction reduction.
Benefit Lower wear rate, which helps two-cycle engines last longer and require fewer repairs. Improves fuel economy.

Feature Low temperature fluidity and miscibility (ability to mix with gasoline).
Benefit Better wear protection in cold temperatures, which helps two-cycle engines start better, last longer and require fewer repairs.

Feature Clean burning.
Benefit Reduced deposits and emissions.

Feature 100:1 2-Cycle Oil introduces less oil into engine than conventional 32:1 oils do.

Benefit Reduced emissions.

Application and Market

Racing oil (TDR): For use in gasoline-fueled two-cycle engines in race and performance equipment.

Pre-mix and injector oils (AIT, HPI, ATP, ATO): For use in gasoline-fueled two-cycle engines in vehicles and power equipment.

Availability

AMSOIL synthetic 2-cycle oils are available in 1½-oz, 3½-oz, 8-oz, 1-quart, 1-gallon, 16-gallon, 30-gallon, 55-gallon and 275-gallon containers. See your price list for more information.

For More Information

G1008 *Marine Products Brochure*
G1056 *Lawn and Garden Products Brochure*
G1526 *Snowmobile Products Brochure*
G1955 *INTERCEPTOR Data Bulletin*
G1985 *DOMINATOR Data Bulletin*
G1986 *HP Injector Data Bulletin*
G1987 *Saber Data Bulletin*
G1988 *2-Cycle Oil Recommendation Chart*

Suspension/Fork Fluids

How Does SUSPENSION FLUID Work?

Suspension/fork fluids lubricate and protect the inner walls of shocks and forks in motocross and cruiser motorcycles, snowmobiles, ATVs and other high-performance and recreational vehicles. They may contain friction modifiers to reduce frictional energy loss and anti-wear agents to protect against premature wear and scuffing. Suspension/fork fluids also prevent fade and allow for smooth rebounds.

AMSOIL Shock Therapy Suspension Fluid (STL & STM)

Shock Therapy Suspension Fluid (STL) – Lightweight Grade
Shock Therapy Suspension Fluid (STM) – Medium Grade

Features and Benefits

Feature Cooler operation.

Benefit Cooler suspension systems resist stress and wear. They last longer, perform better and require fewer repairs.

Feature Thermal and oxidative stability - AMSOIL Shock Therapy Suspension Fluid resists formation of sludge, varnish, deposits, acids and other degradation products.

Benefit Suspension stays clean, helping it perform better, last longer and require fewer repairs.

Feature Broad temperature range of application.

Benefit Maintains ability to protect in temperature extremes, helping suspension systems last longer.

Feature Superior friction characteristics

Benefit Lower wear rate, reduces heat and frictional energy loss and helps shocks and forks last longer.

Feature Reduced aeration and foam

Benefit Limits shock fade and inconsistent dampening, provides for smooth rebounds.

Feature Seal conditioners

Benefit Keeps seals soft and pliable, extending their service life.

Feature Extended service life capability

Benefit Saves money and reduces the environmental impact of used lubricants.

Application and Market

Shock Therapy Suspension Fluid (STL): For use in shocks and forks of motocross and cruiser motorcycles, snowmobiles, ATVs and other high-performance and recreational vehicles that require quick rebounds in temperature extremes.

Shock Therapy Suspension Fluid (STM): For use in shocks and forks of motocross and cruiser motorcycles, snowmobiles, ATVs and other high-performance and recreational vehicles that require more dampening and slower rebounds.

Availability

AMSOIL STL and STM are available in 1-quart and 5-gallon containers. See your price list for more information.

For More Information: **G1663** *Shock Therapy Suspension Fluid Data Bulletin*

Chain case lubricants

How Does CHAIN CASE LUBRICANT Work?

Chain case lubricants lubricate and protect enclosed chains, such as those on snowmobiles, ATVs, and other equipment. Chain case lubricants may contain extreme

pressure additives for added wear protection. Chain case lubricants may also repel water and inhibit rust, oxidation and foam. Synthetic chain case lubricants allow easy cold temperature equipment startup, performance and protection.

AMSOIL Series 2000 Synthetic Chain Case Lubricant (TCC)

Features and Benefits

Feature Superior protection.

Benefit Longer lasting chains.

Feature Extreme pressure protection.

Benefit Protection in operations in which a full lubricating film does not develop, for longer lasting chains.

Feature Repels water and inhibits rust, oxidation and foam.

Benefit Longer lasting and better performing chains.

Feature Superior low temperature fluidity.

Benefit Easier cold temperature starting, better cold temperature performance and longer lasting chains.

Drive train lubricants

How Does AUTOMATIC TRANSMISSION FLUID Work?

Automatic transmission fluid (ATF) is used in passenger car and commercial vehicle automatic transmissions; off-highway construction, agricultural and mining equipment powershift transmissions; and in some industrial applications which require hydraulic fluids with extreme high or low temperature performance capabilities. Almost half of all ATF goes to the automotive transmission market.

A vehicle's transmission is the first link in transmitting the engine's power to the wheels, allowing the vehicle to begin moving from a standstill, move forward or in reverse, move at various speeds, or to allow the engine to continue running while the vehicle is stopped. An automatic transmission uses a hydraulic coupling between the engine and the gears. The hydraulic coupling, rather than the driver, does the work of selecting gears.

Automatic transmission fluid serves as a **hydraulic fluid**, transmitting power from the engine to the gears, and serves as a **lubricant**, cooling the torque converter assembly and lubricating the transmission gears. ATF is perhaps the most complex lubricant in existence.

Notes: (1) Due to the extremely narrow passageways in their electronic shift selectors, automatic transmissions are extremely sensitive to fluid viscosity and do not function properly when cold thickens ATF excessively. (2) Due to their extremely high operating temperatures, automatic transmissions tend to thermally and oxidatively degrade ATF rapidly. (3) Due to the special frictional requirements of lockup torque converters and continuously slipping converter clutches, automatic transmissions are vulnerable to shudder, a condition that develops after roughly 30,000 miles use and causes severe vehicle handling difficulties.

AMSOIL Automatic Transmission Fluids

Synthetic Universal Automatic Transmission Fluid (ATF)
Torque-Drive™ Synthetic Automatic Transmission Fluid (ATD)
SAE 10W Super Shift Racing Transmission Fluid (ART)

Features and Benefits

Feature Cooler operation.
Benefit Cooler transmissions resist stress and wear. They last longer, perform better and require fewer repairs.
Feature Thermal and oxidative stability – AMSOIL synthetic automatic transmission fluids resist formation of sludge, varnish, deposits, acids and other degradation products.
Benefit Transmissions stay clean, which helps them perform better, last longer and require fewer repairs.
Feature Consistent viscosity in high and low temperatures.
Benefit Improved low temperature shifting. Better high temperature protection, which helps transmissions last longer and require fewer repairs.
Feature Superior friction characteristics.
Benefit Lower wear rate, which helps transmissions last longer and require fewer repairs. Improves fuel economy. Helps prevent shudder.
Feature Low temperature fluidity.
Benefit Improved low temperature shifting. Better wear protection in cold temperatures, which helps transmissions last longer and require fewer repairs.
Feature Low volatility – AMSOIL synthetic automatic transmission fluids don't evaporate.
Benefit Better fluid flow gives better fuel economy and better wear protection.
Feature Broad temperature range of application.

Benefit AMSOIL synthetic automatic transmission fluids work safely and protect at higher and lower temperatures than conventional automatic transmission fluids.

Feature Extended service life capability.

Benefit Saves motorists money and reduces the environmental impact of used lubricants.

Feature Slip-free shifting

Benefit AMSOIL Super Shift (ART) Racing Transmission Fluid allows transmission gears to shift quickly and efficiently, helping racers improve on elapsed times.

Application and Market

Synthetic Universal Automatic Transmission Fluid (ATF): For use in passenger car and commercial vehicle automatic transmissions.

Torque-Drive™ Synthetic Automatic Transmission Fluid (ATD): For use in heavy duty, on and off highway automatic transmissions, specifically those calling for the Allison® TES-295 specification.

Super Shift Transmission Fluid (ART): For use in racing automatic transmissions facing high horsepower and torque conditions.

Note: *Super Shift Transmission Fluid provides instant slip-free shifting for racing applications. It is not recommended as a standard replacement for Dexron, Mercon or ATF+ fluids, where smooth shifting is desired.*

Availability

AMSOIL synthetic automatic transmission fluids are available in 1-quart, 1-gallon, 2½-gallon, 16-gallon, 30-gallon, 55-gallon and 275-gallon containers. See your price list for more information.

For More Information: **G173** *ATF Data Bulletin*
G1746 *ATF Brochure*
G1646 *Super Shift Racing Transmission Fluid Data Bulletin*
G1966 *Torque-Drive™ Data Bulletin*
G1967 *Torque-Drive™ Brochure*

How Do MANUAL TRANSMISSION/ TRANSAXLE Oils Work?

Transmissions and transaxles are an assembly of gears and shafts designed to transmit power to the drive wheels of vehicles. Power from the engine is provided in the form of torque, or twisted force. The amount of this force varies a great deal, depending on the individual characteristics of the engine and the speed at which the engine is running.

When the driver shifts a manual transmission or transaxle, some gears disengage and others engage inside the transmission. However, these gears are moving at different speeds and could grind during shifting. Synchromesh components are used to resolve this possible gear-grinding situation. A synchromesh system equalizes the speed of each gear for smooth shifting without gear grinding.

Proper lubrication is essential and plays a vital role in manual transmissions and transaxles. The fluid must reduce gear and bearing wear as well as provide smooth synchromesh engagements. Smooth shifting reduces "bump shifts," which occur when the shift lever bumps back out of gear. Smooth shifting also minimizes gear grinding and extends transmission life.

AMSOIL Manual Transmission/ Transaxle Oils

Synthetic Manual Transmission and Transaxle Gear Lube (MTG)

Synthetic Synchromesh Transmission Fluid (MTF)

Features and Benefits

Feature Cooler operation.

Benefit Cooler transmissions and transaxles resist stress and wear. They last longer, perform better and require fewer repairs.

Feature Thermal and oxidative stability – AMSOIL synthetic manual transmission/transaxle oils resist formation of sludge, varnish, deposits, acids and other degradation products.

Benefit Transmissions and transaxles stay clean, which helps them perform better, last longer and require fewer repairs.

Feature Consistent viscosity in high and low temperatures.

Benefit Improved low temperature shifting. Better high temperature protection, which helps transmissions and transaxles last longer and require fewer repairs.

Feature Superior friction characteristics.

Benefit Lower wear rate, which helps transmissions and transaxles last longer and require fewer repairs. Improves fuel economy. Helps prevent grinding and bump shifting.

Feature Low temperature fluidity.

Benefit Improved low temperature shifting. Better wear protection in cold temperatures, which helps transmissions and transaxles last longer and require fewer repairs.

Feature Low volatility – AMSOIL synthetic manual transmission/transaxle oils don't evaporate.

Benefit Better fluid flow gives better fuel economy and better wear protection.

Feature Broad temperature range of application.

Benefit AMSOIL synthetic manual transmission/transaxle oils work safely and protect at higher and lower temperatures than conventional manual transmission/transaxle oils.

Feature Extended service life capability.

Benefit Saves motorists money and reduces the environmental impact of used lubricants.

Application and Market

Synthetic Manual Transmission and Transaxle Gear Lube (MTG): For use in synchronized manual transmissions and transaxles that require 75W-85, 75W-90 or 80W-90 API GL-4 gear lube.

Synthetic Synchromesh Transmission Fluid (MTF): For use in automotive and light truck applications that require synchromesh transmission fluid.

Availability

AMSOIL synthetic manual transmission/transaxle oils are available in 1-quart, 5-gallon and 55-gallon containers. See your price list for more information.

For More Information

G2077 *Synthetic Manual Transmission and Transaxle Gear Lube Data Bulletin*

G2080 *Synthetic Synchromesh Transmission Fluid Data Bulletin*

How Does GEAR LUBE Work?

Gear lubes lubricate, cool and protect geared systems. They also carry wear debris away from contact zones between gears and muffle the sound of geared system operation. Gear lubricants are used in differential gears and some standard (non-automatic) transmission gears in equipment, commercial vehicles and passenger vehicles, with the majority of gear lubes going to the commercial vehicle market. Some industrial machinery gears are also lubricated with gear lubes.

The transmission carries the engine's power to the driveshaft and allows selection of appropriate gears to start the vehicle moving from a standstill, move up to road speed, pull a heavy load or move in reverse. The differential carries the power from the driveshaft to the wheels. Because the driveshaft and the wheels rotate at 90° angles to one another, the differential contains gears to change the direction of the rotational power it

receives. The severe angle of differential gears does not allow them to maintain a full lubricating film to separate mating surfaces. Additionally, the severe angles of their contact tend to concentrate load on a very small area of the gear face. Due to the lack of full film separation and to the concentrated points of load, differential gears are protected from excessive wear by extreme pressure agents, additives that form a protective shield over surfaces.

Notes: (1) Vehicle power and load generate heat in the transmission and differential. Commercial vehicle differential temperatures have risen dramatically in recent years, due to increased engine output, increased vehicle loads and aerodynamic body styling. Higher temperatures increase the occurrence of thermal degradation of the lubricant, which leads to sludge, deposits and seal damage. **Thermally stable** gear lubes keep parts free of sludge and deposits, and protect seals, even when the gear lubes are subjected to sustained high temperature service.

(2) Gear lubes can lose their extreme pressure performance when they are subjected to sustained thermal stress. Loss of extreme pressure performance allows metal to metal contact in susceptible areas, causing wear rates to accelerate. **Thermally durable** gear lubes protect surfaces from wear, even when the gear lubes are subjected to sustained high temperature service.

AMSOIL Gear Lubes

SAE 75W-90 SEVERE GEAR® Synthetic EP Gear Lube (SVG)
SAE 75W-110 SEVERE GEAR® Synthetic EP Gear Lube (SVT)
SAE 75W-140 SEVERE GEAR® Synthetic EP Gear Lube (SVO)
SAE 190 SEVERE GEAR® Synthetic EP Gear Lube (SRN)
SAE 250 SEVERE GEAR® Synthetic EP Gear Lube (SRT)
SAE 75W-90 Long Life Synthetic Gear Lube (FGR)
SAE 80W-140 Long Life Synthetic Gear Lube (FGO)
SAE 80W-90 Synthetic Gear Lube (AGL)
SAE 75W/80W-90 Universal Synthetic Marine Gear Lube (AGM)

Features and Benefits

Feature Cooler operation.
Benefit Cooler gears resist stress and wear. They last longer, perform better and require fewer repairs.

Feature Thermal and oxidative stability – AMSOIL synthetic gear lubes resist formation of sludge, varnish, acids, deposits and other degradation by-products.
Benefit Gears stay clean, which helps them perform better, last longer and require fewer repairs.

Feature Thermal durability.
Benefit Gear surfaces remain protected even during extended high temperature service.

Feature Consistent viscosity in high and low temperatures.

Benefit Improved low temperature shifting. Better high and low temperature protection, which helps gears last longer and require fewer repairs.

Feature Superior friction reduction.

Benefit Lower wear rate, which helps gears last longer and require fewer repairs. Improves fuel economy.

Feature Low temperature fluidity.

Benefit Improved low temperature performance. Better wear protection in cold temperatures, which helps gears last longer and require fewer repairs.

Feature Low volatility – AMSOIL synthetic gear lubes don't evaporate.

Benefit Better gear lube flow gives better fuel economy and better wear protection.

Feature Broad temperature range of application.

Benefit AMSOIL synthetic gear lubes work safely and protect at higher and lower temperatures than conventional lubes do.

Feature Extended service life capability.

Benefit AMSOIL synthetic gear lubes last longer than conventional gear lubes do, which saves motorists money and reduces the environmental impact of used lubricants.

Application and Market

SEVERE GEAR Synthetic Gear Lubes (SVG, SVT, SVO): For use in all types of vehicles such as turbo diesel pickups, SUVs, autos, trucks, heavy equipment and motor homes.

SEVERE GEAR SAE 190 and SAE 250 Synthetic Gear Lubes (SRN, SRT): For use in severe racing conditions, including off-road truck racing, rock racing, rock crawling, tractor pulling, funny car racing and dragster racing.

Long Life Synthetic Gear Lubes (FGR, FGO): For use in over-the-road trucks.

Synthetic 80W-90 Gear Lube (AGL): For use in automotive, commercial or industrial applications requiring SAE 80W-90 EP gear lube.

Universal Synthetic Marine Gear Lube (AGM): For use in marine applications.

Availability

AMSOIL synthetic gear lubes are available in 13-oz, 1-quart, 1-gallon, 5-gallon, 16-gallon, 30-gallon, 55-gallon and 275-gallon containers. See your price list for more information.

For More Information

G2042 *Long Life Synthetic Gear Lubes Data Bulletin*

G2043 *SEVERE GEAR Synthetic EP Gear Lubes Data Bulletin*
G2044 *Universal Synthetic Marine Gear Lube Data Bulletin*
G2045 *Synthetic 80W-90 Gear Lube Data Bulletin*
G2498 *SEVERE GEAR SAE 190 and SAE 250 Synthetic Gear Lubes Data Bulletin*

How Do DIFFERENTIAL ADDITIVES Work?

Differential additives contain friction modifiers that quiet chatter within vehicle differentials by allowing clutches to slip freely under normal driving conditions and lock when a load is applied.

AMSOIL Slip-Lock Differential Additive (ADA)

AMSOIL Slip-Lock Differential Additive is formulated with advanced friction modifiers that eliminate gear-housing chatter in cars, trucks and SUVs equipped with limited-slip, positraction and locking differentials. It also reduces the banging and clunking associated with automatic locking differentials.

Features and Benefits

Feature Advanced friction modifiers.

Benefit Eliminates gear-housing chatter.

Feature Versatile.

Benefit Formulated for use with both synthetic and petroleum gear lubricants.

Feature Convenient flip-top dispenser.

Benefit Quick and easy application.

Application and Market

For use in limited-slip, positraction and locking differentials experiencing gear-housing chatter.

Availability

AMSOIL Slip-Lock Differential Additive is available in 4-ounce bottles. See your price list for more information.

For More Information

G1968 *Slip Lock Data Bulletin*

How Do POWERSHIFT TRANSMISSION FLUIDS Work?

Powershift transmission fluids protect and lubricate the powershift transmissions found in heavy equipment used in construction, logging, mining, farming and other equipment. In servo-equipped applications, powershift transmission fluids also serve as hydraulic fluids.

Note: Powershift transmissions equipped with advanced friction materials may suffer excessive brake noise and vibration, clutch slippage, friction surface deposits and design material degradation if fluids with inappropriate friction characteristics are installed. Excessive brake noise and friction, clutch slippage and friction surface deposits may cause loss of equipment control. Friction surface deposits and design material degradation cause equipment wear.

Heavy equipment manual transmissions built by Eaton-Fuller, Rockwell-Spicer and Clark and requiring a CD 50 or SAE 90 GL-1 lubricant may use powershift transmission fluids.

AMSOIL Powershift Transmission Fluids

SAE 10W Powershift Transmission Fluid (CTG)
SAE 30 Powershift Transmission Fluid (CTJ)
SAE 50 Powershift Transmission Fluid (CTL)

Features and Benefits

Feature Cooler operation.

Benefit Cooler transmissions resist stress and wear. They last longer, perform better and require fewer repairs.

Feature Thermal and oxidative stability – AMSOIL synthetic powershift transmission fluids resist the formation of sludge, varnish, acids, deposits and other degradation by-products.

Benefit Transmissions stay clean, which helps them perform better, last longer and require fewer repairs.

Feature Consistent viscosity in high and low temperatures.

Benefit Improved low temperature shifting. Better high and low temperature protection, which helps gears last longer and require fewer repairs. Reduces or eliminates the need for seasonal fluid changes and inventories of seasonal fluids.

Feature Superior friction reduction.

Benefit Lower wear rate, which helps transmissions last longer and require fewer repairs. Improves fuel economy.

Feature Low temperature fluidity.

Benefit Improved low temperature performance. Better wear protection in cold temperatures, which helps gears last longer and require fewer repairs.

Feature Low volatility – AMSOIL synthetic powershift transmission fluids don't evaporate and thicken.

Benefit Better fluid flow gives better fuel economy and wear protection. Reduces need for fluid top-offs.

Feature Broad temperature range of application.

Benefit AMSOIL synthetic powershift transmission fluids work safely and protect at higher and lower temperatures than conventional lubes do.

Feature Extended service life capability.

Benefit AMSOIL synthetic powershift transmission fluids last longer than conventional transmission fluids do, which saves users money and reduces the volume of used lubricants destined for disposal, an environmental consideration.

Feature Advanced friction material compatibility.

Benefit Smooth brake and clutch operations and deposit-free friction material surfaces for dependable equipment control. Deposit-free friction material surfaces and design material compatibility, which helps transmissions last longer and require fewer repairs.

Application and Market

Commercial vehicle and equipment powershift transmissions.

Availability

AMSOIL Synthetic Powershift Transmission Fluids are available in 5-gallon pails, 55-gallon drums and 275-gallon totes. See your price list for more information.

For More Information: **G1317** *Synthetic Powershift Transmission Fluids Data Bulletin*

WHEEL, CHASSIS AND FIFTH WHEEL LUBRICANTS

How Does GREASE Work?

Grease is the lubricant of choice in applications where liquid lubricants cannot stay in place. Such applications include wheels and auto chassis. Because it is a semi-solid lubricant, grease stays in place; prevents debris from entering greased systems; and provides structure for the suspension of solid lubricating materials, such as molybdenum. The use of grease reduces lubricant loss and relubrication frequency.

Note: (1) High load applications, such as those in heavy equipment bearings, benefit from the addition of solid lubricant additives, such as molybdenum, which "plate out" on metal surfaces and protect them from lubricating film breakdown in extreme load conditions. (2) Many applications subject greases to water. To provide adequate protection against wear, greases must resist washing out. Rust protection is important, too.

(3) The automatic greasing systems used to distribute grease in industrial machinery require greases with good cold temperature characteristics for dependable feeding into the automatic grease system.

AMSOIL Synthetic Greases

Series 2000 Synthetic Racing Grease (GRG)
Synthetic Multi-Purpose No. 0 Grease (GLA)
Synthetic Multi-Purpose No. 1 Grease (GLB)
Synthetic Multi-Purpose No. 2 Grease (GLC)
Synthetic Multi-Purpose No. 2 Spray Grease (GLC)
Synthetic Heavy Duty No. 1 Grease (GHB)
Synthetic Heavy Duty No. 2 Grease (GHD)
Synthetic Water Resistant Grease (GWR)
Synthetic X-treme Food Grade Grease (GXC)
Semi-Fluid 00 Synthetic EP Grease (GSF)
Synthetic High Viscosity Lithium Complex Grease (GVC)

Features and Benefits

Feature Cooler operation.
Benefit Cooler components resist wear, last longer, perform better, require fewer repairs.

Feature Thermal and oxidative stability – AMSOIL synthetic greases resist formation of sludge, varnish, acids, deposits and other degradation products.

Benefit Components stay clean, which helps them perform better, last longer and require fewer repairs.

Feature Consistent viscosity in high and low temperatures.

Benefit Better high and low temperature protection, which helps components last longer and require fewer repairs. Allows dependable use in automatic feed systems.

Feature Superior friction reduction.

Benefit Lower wear rate, which helps components last longer and require fewer repairs. Reduces fuel or power consumption.

Feature Low temperature fluidity.

Benefit Better wear protection in cold temperatures, which helps components last longer and require fewer repairs.

Feature Broad temperature range of application.

Benefit AMSOIL synthetic greases work safely and protect at higher and lower temperatures than conventional greases do.

Feature Extended service life capability.

Benefit AMSOIL synthetic greases last longer than conventional greases do, which saves users money and reduces the environmental impact of used lubricants.

Feature High quality additives for rust protection.

Benefit Less rust helps components work better, last longer and require fewer repairs.

Feature Molybdenum additive (GHD).

Benefit Extra wear protection in high load conditions, which helps components last longer and require fewer repairs.

Application and Market

Series 2000 Synthetic Racing Grease (GRG): For use in high speed/temperature/load applications, such as race vehicle wheel bearings. May also be used in low speed/high temperature/high load applications.

Multi-Purpose No. 0 Grease (GLA) and No. 1 Grease (GLB): For use in gearbox applications (where recommended by equipment manufacturer) and in low temperature applications.

Multi-Purpose No. 2 Grease (GLC): For use in high speed/high temperature applications, such as wheel bearings and electric motors.

Heavy Duty No. 1 Grease (GHB): For use in gearbox applications (where recommended by equipment manufacturer) and in low temperature applications.

Heavy-Duty No. 2 Grease (GHD): For use in low speed/high load applications, such as bearings in construction, farming and other heavy duty equipment.

Water Resistant Grease (GWR): For use in high speed/high temperature applications in which water exposure is likely, such as in low vehicle and boat trailer wheel bearings.

Food Grade Grease (GXC): For use in food processing and food packaging facilities.

Semi-Fluid 00 Synthetic EP Grease (GSF): For use in leaky gearboxes in industrial and fleet applications and in applications that are difficult to service.

High Viscosity Lithium Complex Grease (GVC): For use in heavy duty industrial and offroad applications where equipment is working under adverse conditions such as exposure to environmental elements, slow, heavily-loaded applications and shock-loading conditions.

Availability

AMSOIL synthetic greases are available in 8-oz, 10.5-oz, 14-oz, 35-lb, 120-lb and 400-lb containers. See your price list for more information.

For More Information:
G1207 *Grease Brochure*
G1243 *Series 2000 Synthetic Racing Grease Data Bulletin*
G1279 *Synthetic Multi-Purpose Grease Data Bulletin*
G1280 *Synthetic Heavy Duty Grease Data Bulletin*
G1281 *Synthetic Water Resistant Grease Data Bulletin*
G1294 *High Viscosity Lithium Complex Grease Data Bulletin*
G1664 *X-Treme Food Grade Grease Data Bulletin*
G1809 *Semi-Fluid Synthetic Grease Data Bulletin*

How Does FIFTH WHEEL AND OPEN GEAR COMPOUND Work?

Semi-truck trailers attach to semi-truck tractors at the fifth wheel, which requires lubrication for steering and component wear control. The fifth wheel and trailer king pin dictate how articulate the movement is between the tractor and trailer, which directly affects steering. In warm temperatures, improper lubrication may cause binding of the fifth wheel and king pin, which leads to understeer. In cold temperatures, the friction between the tires and the road declines dramatically, and the friction between the fifth wheel and trailer increase, especially if the fifth wheel is improperly lubricated. The friction imbalance may lead to loss of control.

AMSOIL Synthetic Fifth Wheel and Open Gear Compound (GFW)

AMSOIL Synthetic Fifth Wheel and Open Gear Compound's highly polar synthetic base materials gives the product exceptional metal adhesion. Its exceptional metal adhesion and outstanding cold temperature fluidity assure that the product does not flake off in cold

temperatures. In high temperatures, its exceptional adhesion assures the product does not soften and migrate. Packaged as an aerosol spray, GFW applies easily, evenly and economically.

Features and Benefits

Feature Broad temperature range of application.

Benefit AMSOIL Synthetic Fifth Wheel and Open Gear Compound dependably lubricates and protects in high and low temperatures for superior steering control and component wear inhibition.

Feature Strongly adhesive.

Benefit Resists displacement by water or temperature extremes for dependable component protection and steering. May be applied to imperfectly prepared surfaces for time savings.

Feature Spray application.

Benefit Applies quickly, neatly, easily and economically.

Application and Market

For use on tractor-trailer fifth wheels, open gears, wire ropes, flexible couplings and the sliding surfaces of drag lines, shovels, construction equipment and dredging equipment.

Availability

AMSOIL Synthetic Fifth Wheel and Open Gear Compound is available in 11½ oz. spray cans. See your price list for more information.

For More Information

G1359 *AMSOIL Synthetic Fifth Wheel and Open Gear Compound Data Bulletin*

MACHINERY AND EQUIPMENT LUBRICANTS

How Does TRACTOR HYDRAULIC/ TRANSMISSION FLUID Work?

Some heavy equipment use a single fluid, tractor hydraulic/transmission fluid, for transmission lubrication and transmission of hydraulic power. The benefit of using a common fluid for transmission lubrication and hydraulic power is threefold: it reduces equipment tankage requirements, reduces fluid inventories and reduces the opportunity for fluid misapplication.

Hydraulic power comes from applying pressure to a confined liquid, the hydraulic fluid, and forcing the fluid to flow with a given force in a given direction. The pressure applied to the liquid at one point will be

transmitted to all points the fluid reaches. Hydraulic systems include a pump for generating fluid flow and force, pipes and tubes for directing the fluid, and cylinders or fluid motors to convert the fluid energy into mechanical work, such as raising the fork on a forklift.

Note: (1) Hydraulic power cannot be developed with cold-thickened fluids. Long equipment warmup periods require equipment idle-time and fuel consumption during idling. (2) Hydraulic pumps can work air into fluids, creating foam. Foamy fluids neither transmit hydraulic pressure fully nor lubricate and protect surfaces well. (3) Wet brake chatter, caused by frictional differences between brakes, leads to excessive brake vibration and difficulty in steering the equipment. Transmission fluid friction modifier additives aid control of wet brake chatter. (4) Hydraulic systems tend to accumulate water,due to the difference in temperature between ambient air and the hydraulic system, which generates foam and substantial heat.

AMSOIL Tractor Hydraulic/Transmission Fluid (ATH)

Features and Benefits

Feature Cooler operation.

Benefit Cooler hydraulic/transmission systems resist stress and wear. They last longer, perform better and require fewer repairs.

Feature Thermal and oxidative stability – AMSOIL Synthetic Tractor Hydraulic/Transmission Fluid resists formation of sludge, varnish, acids, deposits and other degradation products.

Benefit Hydraulic/transmission systems stay clean, which helps them perform better, last longer and require fewer repairs.

Feature Consistent viscosity in high and low temperatures.

Benefit Better cold temperature shifting and quick availability of hydraulic power during cold temperature operation. Better high and low temperature protection, which helps hydraulic/transmission systems last longer and require fewer repairs.

Feature Superior friction reduction.

Benefit Lower wear rate, which helps hydraulic/transmission systems last longer and require fewer repairs.

Feature Low temperature fluidity.

Benefit Better cold temperature shifting and quick availability of hydraulic power during cold temperature operation. Better wear protection in cold temperatures, which helps hydraulic/transmission systems last longer and require fewer repairs.

Feature Low volatility – AMSOIL fluid doesn't evaporate.

Benefit Better fluid flow gives better wear protection.

Feature Broad temperature range of application.

Benefit AMSOIL Synthetic Tractor Hydraulic/Transmission Fluid works safely and protects at higher and lower temperatures than conventional fluids do.

Feature Extended service life capability.

Benefit AMSOIL Synthetic Tractor Hydraulic/Transmission Fluid lasts longer than conventional fluids do, which saves users money and reduces the environmental impact of used lubricants.

Feature High quality foam and water control additives.

Benefit Control of foam and water increases fluid service life and helps hydraulic/transmission systems last longer and require fewer repairs.

Feature High quality friction modifiers.

Benefit Wet brake chatter control for improved control and safety.

Application and Market

Heavy equipment with a common transmission/hydraulic fluid sump.

Availability

AMSOIL Synthetic Tractor Hydraulic/Transmission Fluid is available in 1-quart, 5-gallon, 30-gallon, 55-gallon and 275-gallon containers. See your price list for more information.

For More Information

G28 *Tractor Hydraulic/Transmission Fluid Data Bulletin*

How Does HYDRAULIC FLUID Work?

Hydraulic power comes from applying pressure to a confined liquid, the hydraulic fluid, and forcing the fluid to flow in a prescribed direction. The pressure applied to the liquid at one point will be transmitted to all points the fluid reaches. Hydraulic systems include a pump for generating fluid flow and pressure, pipes and tubes for directing the fluid, and cylinders or fluid motors to convert the fluid energy into mechanical work, such as raising the fork on a forklift.

In addition to providing the medium for hydraulic power, hydraulic fluid lubricates hydraulic components and protects them from rust and contaminants.

Note: (1) Hydraulic power cannot be developed with cold-thickened fluids. Long equipment warmup periods require equipment idle-time and idle fuel consumption. (2) Hydraulic pumps can work air into fluids, creating foam. Foamy fluids neither transmit hydraulic pressure fully nor lubricate and protect surfaces well.

(3) Hydraulic systems tend to accumulate water, due to the difference in temperature between ambient air and the hydraulic system.

AMSOIL Synthetic AW Series Antiwear Hydraulic Oils

ISO 15 Synthetic AW Series Antiwear Hydraulic Oil (AWF)
ISO 22 Synthetic AW Series Antiwear Hydraulic Oil (AWG)
ISO 32 Synthetic AW Series Antiwear Hydraulic Oil (AWH)
ISO 46 Synthetic AW Series Antiwear Hydraulic Oil (AWI)
ISO 68 Synthetic AW Series Antiwear Hydraulic Oil (AWJ)

AMSOIL Synthetic Biodegradable Hydraulic Oils

ISO 32/46 Synthetic Biodegradable Hydraulic Oil (TBI)

Features and Benefits

Feature Cooler operation.
Benefit Cooler hydraulics resist stress and wear. They last longer, perform better and require fewer repairs.

Feature Thermal and oxidative stability – AMSOIL Synthetic Hydraulic Fluid resists formation of sludge, varnish, deposits, acids and other degradation products.
Benefit Hydraulics stay clean, which helps them perform better, last longer and require fewer repairs.

Feature Consistent viscosity in high and low temperatures.
Benefit Quick availability of hydraulic power during cold temperature operation. Better extreme temperature protection, which helps hydraulics last longer, require fewer repairs.

Feature Superior friction reduction.
Benefit Lower wear rate, which helps hydraulics last longer and require fewer repairs.

Feature Low temperature fluidity.
Benefit Quick availability of hydraulic power during cold temperature operation. Better wear protection in cold temperatures, which helps hydraulics last longer and require fewer repairs.

Feature Low volatility – AMSOIL Synthetic Hydraulic Fluid doesn't evaporate.
Benefit Better fluid flow gives better wear protection.

Feature Broad temperature range of application.

Benefit AMSOIL Synthetic Hydraulic Fluid works safely and protects at higher and lower temperatures than conventional fluids do.

Feature Extended service life capability.

Benefit AMSOIL Synthetic Hydraulic Fluid lasts longer than conventional fluids do, which saves users money and reduces the environmental impact of used lubricants.

Feature High quality foam and water control additives.

Benefit Control of foam and water increases fluid service life and helps hydraulics last longer and require fewer repairs.

Application and Market

For use in hydraulic machinery and equipment.

Availability

AMSOIL Synthetic Hydraulic Fluid is available in 5-gallon, 55-gallon and 275-gallon containers. See your price list for more information.

For More Information

G1009 *Commercial and Industrial Products Brochure*

G1253 *AMSOIL Synthetic AW Series Hydraulic Oils Data Bulletin*

G1257 *Biodegradable Hydraulic Oil Data Bulletin*

How Does COMPRESSOR OIL Work?

Compressed air is a source of energy used for powering tools, inflating pneumatic tires and spraying liquids. Compressor oils lubricate compressor components, such as bearings, pistons, rings and valves.

The bicycle pump is a simple compressor: as the cyclist pulls the pump handle up, air is drawn past the leather cup "piston" into the cylinder of the pump and held at normal pressure. When the cyclist pushes the handle down, the resistance of the air in the cylinder spreads the leather cup, enabling it to compress the air in the cylinder until the air achieves sufficient pressure to pass through the non-return valve into the bicycle tire.

Note: (1) Because compressors often generate intense heat, small, high-pressure compressor oil leaks create an explosion and fire hazard. (2) Due to their exposure to ambient air, which always contains moisture, compressors accumulate water in the compressor oil. (3) Compressors can work air and water into fluids, creating foam, which impedes the oil's ability to protect surfaces.

AMSOIL Synthetic Compressor Oils
SIROCCO®: (SEI)
PC Series: (PCH, PCI, PCJ, PCK, PCL)

Features and Benefits

Feature Cooler operation.
Benefit Cooler compressors resist stress and wear. They last longer, perform better and require fewer repairs.

Feature Thermal and oxidative stability – AMSOIL Synthetic Compressor Oils resist formation of sludge, varnish, deposits, acids and other degradation products.
Benefit Compressors stay clean, which helps them perform better, last longer and require fewer repairs.

Feature Consistent viscosity in high and low temperatures.
Benefit Better high and low temperature protection, which helps compressors last longer and require fewer repairs.

Feature Superior friction reduction.
Benefit Lower wear rate, which helps compressors last longer and require fewer repairs.

Feature Low temperature fluidity.
Benefit Better wear protection in cold temperatures, which helps compressors last longer and require fewer repairs.

Feature Low volatility – AMSOIL Synthetic Compressor Oils don't evaporate.
Benefit Better fluid flow gives better wear protection.

Feature Broad temperature range of application.
Benefit AMSOIL Synthetic Compressor Oils work safely and protect at higher and lower temperatures than conventional fluids do.

Feature Extended service life capability.
Benefit AMSOIL Synthetic Compressor Oils last longer than conventional oils do, which saves users money and reduces the environmental impact of used lubricants.

Feature High quality foam and water control additives.
Benefit Control of foam and water increases fluid service life and helps compressors last longer and require fewer repairs.

Feature High flash and fire points.
Benefit Reduces fire and explosion danger.

Application and Market

For use in air compressors.

Availability

AMSOIL Synthetic Compressor Oils are available in 1-quart, 5-gallon, 30-gallon, 55-gallon and 275-gallon containers. See your price list for more information.

For More Information

G1264 *AMSOIL Synthetic PC Series Compressor Oils Data Bulletin*

G1684 *AMSOIL SIROCCO® Synthetic Ester Oil/Coolant Data Bulletin*

How Does BAR AND CHAIN OIL Work?

Bar and chain oil lubricates the contact between the stationary chain saw bar and the moving chainsaw chain. It also lubricates each articulated link in the chain. It is injected into a groove between the bar and the chain.

Synthetic Bar and Chain Oil (ABC)

AMSOIL Synthetic Bar and Chain Oil contains a highly effective tackifier, which prevents the oil from splattering off the end of the chain saw as the chain moves around the bar at high speed. Because it is a synthetic lubricant, it also provides superior friction reduction and superior lubrication in high and low temperatures. All three features work to improve bar and chain durability.

Features and Benefits

Feature Effective tackifier – keeps oil in place.

Benefit Keeping the oil in place reduces bar and chain wear so they last longer, perform better and require fewer repairs.

Feature High quality friction reduction; high quality high and low temperature protection.

Benefit Friction reduction and high and low temperature protection reduce wear, helping chainsaws last longer, perform better and require fewer repairs.

Application and Market

For use on chainsaws.

Availability

AMSOIL Bar and Chain Oil is available in 1-quart, 1-gallon, 5-gallon, and 55-gallon containers. See your price list for more information.

ENGINE AIR AND OIL FILTERS

How Do AIR FILTERS Work?

Engines draw in air to form a fuel-air mixture for combustion; combustion cannot take place without air. In fact, one gallon of gasoline requires the air filling a 10′x15′x8′ room for complete combustion!

To complicate the picture, air contains tons of dirt per cubic mile. Dirt particles are sharp and capable of causing tremendous engine wear. To prevent rapid engine wear, the air filter must trap airborne dirt before it enters the engine. The air filter must balance airflow against dirt-trapping.

AMSOIL Ea Air Filters (EaA), Ea Motorcycle Air Filters (EaAM), Ea Air Induction Filters (EaAU), EaAR Air Filters (EaAR), EaAB Crankcase Breather Filters (EaAB), Ea Pre-Filters (EaPF)

AMSOIL Ea Air Filters, Ea Motorcycle Air Filters, Ea Air Induction Filters, EaAR Air Filters and EaAB Crankcase Breather Filters incorporate nanofiber technology. Nanofibers trap dirt and other airborne contaminants on the surface rather than dispersing them throughout the depth of the filter where there is less area for the air to flow. Ea Air Filters are more efficient and have greater capacity than paper, cellulose and wet gauze filters, effectively extending engine and filter life and reducing engine wear.

(1) Nanofiber refers to a fiber with a diameter of less than one micron. Cellulose fibers, on the other hand, are larger than nanofibers and have larger spaces between the fibers, causing contaminants to load in the depth of the media and plug the airflow path, resulting in higher restriction and less capacity. AMSOIL Ea Air Filters incorporate a specially constructed cellulose media with exclusive synthetic nanofibers applied to the surface. Dust and submicron particles are trapped on the nanofiber surface, preventing them from lodging in the filter depth media.

(2) AMSOIL Ea Air Filters are cleanable and reusable. Cleaning of Ea Air Filters is recommended every 25,000 miles or one year, and they have a total service life of 100,000 miles or four years. Cleaning of Ea Motorcycle Filters is recommended every year or according to operating conditions, and they have a total service life of four years. Cleaning of Ea Air Induction Filters, EaAR Air Filters and EaAB Crankcase Breather Filters is recommended when

designated by the restriction gauge or according to operating conditions. Filters can be cleaned by carefully vacuuming the filter media on the dirty side, or by holding the filter with one hand and carefully blowing the filter media at a 45 degree angle on the clean side of the filter using low-pressure shop air.

(3) AMSOIL Ea Pre-Filters are constructed of woven mesh and designed for racing and off-road applications. They fit over the top of EaAR and EaAU Filters, preventing large particles from sticking to them and blocking the flow of air. They are easily removed and shaken free of debris in seconds, and they are cleanable and remain serviceable for up to one year.

Features and Benefits

Feature Superior debris trapping capability – Less debris enters the engine.

Benefit Engines perform better, last longer and require fewer repairs.

Feature Superior air flow for better combustion.

Benefit Better combustion improves power, performance and fuel economy.

Feature Greater capacity – holds more debris.

Benefit Remains effective for extended intervals.

Feature Extended service life capability.

Benefit Last longer than conventional air filters, saving time and money.

Feature Reusability.

Benefit Cost savings and less generation of solid waste.

Application and Market

Ea Air Filters: For use with automotive and light truck applications.

Ea Motorcycle Air Filters: For use with motorcycle applications.

Ea Air Induction Filters: For use with automotive and light truck custom air induction systems.

EaAR Air Filters: For use with carbureted racing and street rod applications.

EaAB Crankcase Breather Filters: For use with street rod and racing applications.

Ea Pre-Filters: For use with EaAR and EaAU Filters in racing and off-road applications.

Availability

Packaged as single units. Please refer to the G3000 *Filter Applications and Cross Reference Guide* for specific application recommendations for Ea Air Filters, the G2135 *Power Sports Application Guide* for specific application recommendations for Ea Motorcycle Air Filters, the G2241 Ea Air Induction Filters Data Bulletin for specific application recommendations for Ea Air Induction Filters,

the G2430 EaAB Crankcase Breather Filters/EaAR Air Filters Data Bulletin for specific application recommendations for EaAB Crankcase Breather Filters and EaAR Air Filters and www.amsoil.com/storefront/eapf.aspx for specific application recommendations for Ea Pre-filters.

For More Information

G2175 *Ea Air Filters Data Bulletin*
G2235 *Ea Motorcycle Air and Oil Filters Data Bulletin*
G2241 *Ea Air Induction Filters Data Bulletin*
G2430 *EaAB Crankcase Breather Filters/EaAR Air Filters Data Bulletin*

How Do FULL-FLOW OIL FILTERS Work?

Engine oil filters remove solid foreign matter, such as soot, wear particles and dirt, from the engine oil. Full-flow oil filters are installed between the oil pump and the body of the engine. All the engine oil is routed through the full-flow filter before it circulates in the engine. Full-flow filters are fitted with an oil pressure relief valve to assure a continuous flow of oil to the engine in the event the filtering element becomes obstructed. To prevent oil starvation in such an event, unfiltered oil bypasses the obstructed oil filter and lubricates the engine.

Solid foreign matter circulating in the engine oil causes abrasive wear. Solid materials also "soak up" motor oil additives, promoting additive depletion, and when present in sufficient concentration, solid materials increase oil viscosity.

AMSOIL Ea Oil Filters (EaO) and Ea Motorcycle Oil Filters (EaOM)

AMSOIL Ea Oil Filters and Ea Motorcycle Oil Filters incorporate advanced full synthetic nanofiber technology. Synthetic media have submicron diameters (nanofibers) and small inter-fiber spaces which result in more contaminants being captured on the surface of the media and lower restriction. Ea Oil Filters provide greater efficiency, capacity and durability than cellulose or paper media filters, extending engine and filter life and reducing engine wear.

(1) Cellulose and blended medias found in most oil filters have larger fibers than the synthetic nanofibers found in AMSOIL Ea Oil Filters. They also have larger spaces between their fibers. This causes contaminants to load in the depth of the media and plug the oil-flow path, resulting in higher restriction and less capacity. The smaller fibers in synthetic media have a controlled size and shape. This results in greater efficiency, capacity and durability than cellulose filters.

(2) When used in conjunction with AMSOIL Synthetic Motor Oil in gasoline and diesel vehicles, Ea Oil Filters are recommended for 25,000 miles or one year, whichever comes first,

in normal service or 15,000 miles or one year, whichever comes first, in severe service. When used in conjunction with AMSOIL Synthetic Motorcycle Oil, Ea Motorcycle Oil Filters are recommended for use up to twice the motorcycle manufacturer change interval or one year, whichever comes first. This coincides with AMSOIL extended motor oil drain intervals, adding even more convenience for motorists by consolidating routine maintenance.

Features and Benefits

Feature Near-perfect absolute efficiency rating.
Benefit Engines perform better, last longer and require fewer repairs.
Feature Superior oil flow.
Benefit Improves cold-start performance and ensures proper levels of lubrication throughout the engine.
Feature Greater capacity – holds more contaminants.
Benefit Remains effective for extended intervals.
Feature Extended service life capability.
Benefit Last longer than conventional oil filters, saving time and money.

Application and Market

Ea Oil Filters: For use with cars and light trucks equipped with gasoline engines and some diesel pickups.
Ea Motorcycle Oil Filters: For use with motorcycle, ATV and four-stroke personal watercraft, snowmobile and outboard motor applications.

Availability

Packaged as single units. Please refer to the G3000 *Filter Applications and Cross Reference Guide* for specific application recommendations for Ea Oil Filters and G2135 *Power Sports Application Guide* for specific application recommendations for Ea Motorcycle Oil Filters.

For More Information

G2192 *Ea Oil Filters Data Bulletin*
G2235 *Ea Motorcycle Air and Oil Filters Data Bulletin*

How Do BY-PASS OIL FILTERS Work?

By-pass oil filters are supplementary to the full-flow oil filter system. By-pass oil filters are not included as standard equipment in passenger cars. They are rarely, if ever, included as standard equipment on commercial vehicles and heavy equipment.

By-pass oil filters are placed outside the main line of oil circulation. They draw roughly five to ten percent of the total volume of oil from the system, filter it slowly through dense media and usually send it to the crankcase rather than to the engine. Used in conjunction with

full-flow filters, by-pass filters require the addition of oil to the system.

Particles in the 5 to 20 micron size range may cause up to sixty percent of total engine wear. Full-flow filters remove particles sized 20 microns or larger. AMSOIL Ea By-Pass Oil Filters have an efficiency of 98.7 percent at two microns.

AMSOIL Ea By-Pass Oil Filters also remove 39 percent of soot contaminents less than one micron. Soot removal efficiency increases approximately 10 to 14 percent when used in conjunction with a standard full-flow filter.

Finally, the addition of oil to the system "spreads the workload" over a larger "workforce," which reduces stress and helps oil last longer than it would in a smaller volume system.

How Does the AMSOIL DUAL REMOTE OIL FILTER Work?

The patented AMSOIL Dual Remote Oil Filter puts an AMSOIL Full-Flow Oil Filter and an AMSOIL By-Pass Oil Filter together on a single mount which may be located anywhere in the engine, within size and safety constraints. The system directs oil through the by-pass filter element first. If the engine requires greater oil flow than the by-pass can provide, the system redirects oil as necessary through the full-flow filter. Finally, unlike other by-pass systems, the Dual Remote directs oil cleaned by the by-pass into the engine rather than into the crankcase.

AMSOIL By-Pass and AMSOIL Dual Remote Oil Filter Kits

By-Pass Single Mounting Kit (BMK11)
Dual Gard Mounting Kit (BMK12)
Dual Remote Mounting Kit (BMK13)
Single Remote Full Flow Mounting Kit (BMK14)
Dual Remote Filtration System (BMK15Ea)
Dual Remote Filtration System (BMK16Ea)
Dual Remote Filtration System (BMK17Ea)
Marine By-Pass Filtration System (BMK18)

Features and Benefits

Feature Removes particles smaller than 1 micron.
Benefit Fewer and smaller wear particles circulating in the oil reduce wear rate so engines last longer, perform better and require fewer repairs.
Feature Removes soot.
Benefit With less soot circulating in the oil, anti-wear additives are more effective, keeping engine wear to a minimum and helping engines last longer, perform better and require fewer repairs.

Feature Increased oil system capacity.

Benefit Increased oil in the system reduces oil temperature and oil stress, so oil protects better, helping engines last longer and require fewer repairs. Helps oil last longer, too.

Application and Market

BMK11: For use in passenger cars and light- and medium-duty trucks.

BMK12: For use in commercial vehicles and equipment.

BMK13: For use in passenger cars and light- and medium-duty trucks.

BMK14: For use in passenger cars and light- and medium-duty trucks.

BMK15Ea: For use on Cummins light truck diesel engines. Equipped with filters.

BMK16Ea: For use on International light truck diesel engines. Equipped with filters.

BMK17Ea: For use on Duramax light truck diesel engines. Equipped with filters.

BMK18: For use in marine applications.

Availability

Packaged as single units. Please refer to the G498 *Ea By-Pass Oil Filters Data Bulletin* and the G26 *Dealer and Preferred Customer Price List* for specific application recommendations.

For More Information

G498 *Ea By-Pass Oil Filters Data Bulletin*

G2050 *Marine Dual Remote Filtration System Data Bulletin*

How Do OIL PRECHARGERS Work?

An engine that has sat for even a short period of time will operate relatively dry upon starting before oil is able to fully lubricate the system. Engines prone to frequent starting and engines that sit idle for extended periods of time are both subject to increased engine wear from dry starts. A precharger system operates as an engine oil reservoir and provides instant lubrication upon turning the ignition key, significantly reducing wear and preventing metal-on-metal contact.

*How Does the **AMS-Oiler®** PRECHARGER Work?*

The ***AMS-Oiler®*** operates as an engine oil reservoir, charged under pressure directly from the oil pump output during normal engine operation. Upon turning the ignition key to the on position, up to 160 cc's (5.4 oz.) of oil are discharged from the reservoir to engine surfaces,

building oil pressure and providing vital lubrication. The ***AMS-Oiler®*** outperforms gas and air charge systems. With the turn of a key to the on position, an audible 95 db signal will sound for two seconds, while a 12-volt DC solenoid initiates the ***AMS-Oiler's®*** operation. When the oil delivery process is complete, the signal will cease and the operator can start the engine. The absence of a gas or air charge eliminates the possibility of cross-contamination of dirty gas or air with the engine oil, keeping the oil pure and performing optimally.

AMS-Oiler® Pre-Chargers

By-Pass Mounted ***AMS-Oiler®*** (AMK01)
Stand Alone ***AMS-Oiler®*** (AMK02)

Features and Benefits

Feature Eliminates dry engine starting.
Benefit Reduces wear rate so engines last longer, perform better and require fewer repairs.
Feature Rugged construction.
Benefit Reliable performance in severe operating conditions.
Feature No bulky moving parts.
Benefit No maintenance required, saving time and money.
Feature Small size.
Benefit Easy installation.
Feature Absence of gas or air charge.
Benefit Eliminates possible contamination, oil remains clean and performing optimally.

Application and Market

AMK01: For use with the AMSOIL BMK13 or 15 through 18 Dual Remote systems.
AMK02: For use with any engine application.

Availability

Packaged as single units. See your price list for more information.

For More Information
G2049 ***AMS-Oiler®*** *Oil Precharger Data Bulletin*

OIL ANALYSIS

How Does OIL ANALYSIS Work?

Trigard: A stand-alone in the industry, Trigard offers a program of used oil analysis for owners of passenger cars and light trucks in non-commercial use. With Trigard, AMSOIL customers may increase their oil drain intervals beyond the 25,000-mile or one-year intervals recommended by AMSOIL INC for AMSOIL synthetic motor oils. The Trigard program requires use of AMSOIL

synthetic motor oil, an AMSOIL air filter and an AMSOIL By-Pass Oil Filter and participation in the Trigard used oil analysis program.

OIL ANALYZERS INC. OIL ANALYZERS INC. offers a program of oil, coolant and diesel fuel analysis for vehicles and equipment in commercial and non-commercial service. Oil analysis services offered by OIL ANALYZERS INC. do not require the use of any AMSOIL products.

OIL ANALYZERS INC. services may be used to extend drain intervals and monitor the well-being of vehicles and equipment, which may lead to decreased downtime, increased production, longer equipment life, elimination of equipment failures, streamlined maintenance protocols and reduced capital expenditures.

Fuel contamination analysis reveals diesel fuel cleanliness and presence of bio-contaminants, fuel performance analysis reveals the overall quality and performance potential of diesel fuel, the Winter Fuel Package reveals the cloud point and pour point of diesel fuel and the Winter Fuel Package Plus provides its cloud point, pour point and cold filter-plugging point.

AMSOIL Oil Analysis Programs

Trigard Oil Analysis Program (ATG)

OIL ANALYZERS INC. Oil Analysis and Kits (OAI01, OAI02, OAI03, OAI04, OAI05, OAI06, OAI07, OAI08, OAI09, OAI10, OAI11, OAI12, OAI13)

Features and Benefits

Feature Extended oil and coolant service life.

Benefit Longer lasting lubricants and coolants save motorists and commercial operators money and reduce environmental impact of disposal.

Feature Monitor equipment serviceability.

Benefit Problems are caught in early stages, saving motorists the cost of major repair or a new engine.

Application and Market

ATG01, 02 may be used by passenger car and light truck operators who do not use the vehicles for commercial purposes.

OAI01 through OAI13 kits may be used by commercial vehicle and equipment operators and non-commercial vehicle and equipment operators.

Availability

Trigard participants receive a personal Trigard identification number and an oil sample kit, which includes sample bottles and sample identification forms.

ATG01 For first-time Trigard users.
ATG02 For ongoing Trigard users.

OIL ANALYZERS INC.
OAI01 postage-paid sampling kit
OAI02 UPS-paid sampling kit
OAI03 UPS-paid sampling kit (Canada)
OAI04 50 postage-paid sampling kits
OAI05 100 postage-paid sampling kits
OAI06 sampling kit
OAI07 50 sampling kits
OAI08 100 sampling kits
OAI09 postage-paid coolant sampling kit
OAI10 UPS-paid fuel contamination sampling kit
OAI11 UPS-paid fuel performance sampling kit
OAI12 UPS-paid Winter Fuel Package
OAI13 UPS-paid Winter Fuel Package Plus

For More Information
G254 *Trigard Sales Brochure*
G2047 *Oil Analyzers Inc. Brochure*

FUEL ADDITIVES

How Do FUEL ADDITIVES Work?

Gasoline and diesel fuel are refined crude oil products. They contain materials which function as contaminants, fouling the fuel system as they burn. Fuel system deposits interfere with the combustion process and lead to performance problems, excessive exhaust emissions and poor fuel economy. Deposits also accelerate fuel system component wear. Finally, diesel engines face fuel-related performance and durability issues involving their cold temperature performance, overall power and the durability of their fuel system components.

Fuel additives are substances that may be added to a vehicle's fuel, via the fuel tank, on a regular basis to prevent or correct the problems caused by gasoline and diesel fuel.

Gasoline – Partially burned or unburned gasoline may leave carbon and varnish deposits at various sites along the fuel delivery and combustion system. Fuel injector deposits interfere with the fine atomization of fuel necessary for complete combustion and efficient fuel usage. Hesitation, poor fuel economy and excessive exhaust emissions may result. Intake valve deposits interfere with valve seating, which results in poor power, an opportunity for the intake valves to be burned by hot exhaust gases and, sometimes, vehicle backfiring. Combustion chamber deposits can cause engine knock, an uncontrolled, explosive form of combustion. Knock explosions damage combustion chamber surfaces by dislodging material from

them. Engines with severe engine knock perform roughly and consume excessive fuel. Finally, gasoline may contain water, which promotes rust and corrosion.

Diesel – Partially burned or unburned diesel fuel products may cause carbon and varnish deposits at various sites along the fuel delivery and combustion system, leading to poor fuel economy, excessive exhaust emissions and a need for regular injector maintenance.

Diesel fuel also contains wax, which crystallizes at temperatures commonly observed in northern tier states during winter months. Wax crystallization causes filter plugging or fuel line blockage, which results in a loss of ability to start the engine or a loss of ability to keep the engine running.

A 2007 federal mandate requires the use of Ultra Low Sulfur Diesel fuel (ULSD) in modern diesel engines. Lower sulfur levels equate to lower lubricity. ULSD's low lubricity accelerates injector pump wear and sometimes causes pump failures.

Cetane number is a measure of the ignition quality of diesel fuel. Fuels with high cetane numbers ignite after a short delay from the time they are injected into the combustion chamber. Fuels with low cetane number ignite after a long delay. Diesel engines require fuels whose cetane number falls within a narrow range of values. Most North American diesel fuel have lower cetane numbers than are recommended for most diesel engines operating in the region. To provide optimal performance, North American diesel fuel requires additives to boost their cetane.

Operating a diesel engine on fuel with insufficient cetane causes difficulty in cold temperature starting, diesel knock, rough operation, poor power, excessive white smoke emissions and carbon deposits on various fuel system components.

AMSOIL Series 2000 Octane Boost (AOB)

AMSOIL Series 2000 Octane Boost maximizes power and improves performance in all two-cycle and four-cycle gasoline engines. It increases octane numbers up to seven points. It reduces engine knock, improves ignition and engine response, helps fuel burn cleaner and removes carbon deposits. Recommended for off-road and racing use. Also excellent as a lead substitute at same treat rates in collector automobiles, older off-road equipment and pleasure vehicles.

PI Performance Improver Gasoline Additive (API)

PI Performance Improver is the most potent gasoline additive available today. As a concentrated detergent, it is unsurpassed in cleaning combustion chamber deposits, intake valve deposits and port fuel injector deposits, eliminating the need for expensive fuel injector cleaning procedures. It is ideal for use prior to emissions inspections, and it helps maintain peak engine efficiency, fuel economy, power and drivability in newer low mileage engines. In engines with accumulated deposits, PI provides improved fuel mileage up to 5.7%, reduced emissions, restored power and performance, reduced need for higher octane fuel, reduced carbon rap and pre-ignition, better drivability and smoother operation after only one tank of gasoline. Treat one full tank of gas every 4,000 miles or 100 hours of service.

AMSOIL Gasoline Stabilizer (AST)

AMSOIL Gasoline Stabilizer reduces the oxidation process that occurs when fuel is stored for extended periods. It prevents the formation of varnish and sludge which can clog injectors, stick floats and cause poor engine performance. It is ideal for stored seasonal equipment, such as snowmobiles, lawnmowers and boats.

Diesel Concentrate (ADF)

AMSOIL Diesel Concentrate is a total system cleaner and lubricity improver for all types of heavy- and light-duty diesel engines. Designed with Ultra Low Sulfur Diesel fuel (ULSD) in mind, it controls the problems created by EGR systems by neutralizing acids during combustion, minimizing acidic cylinder wear, reducing the rate of TBN depletion and maintaining oil quality. Cleans fuel injectors and combustion chamber for improved efficiency and better sealing and minimizes soot loading. Improves the oxidation and thermal stability of diesel fuel, improves fuel economy by up to five percent, restores horsepower and protects against water contamination. Compatible with all types of exhaust emission systems, including diesel particulate filters (DPF's). Also recommended in heating oil furnace applications.

Diesel Cold Flow Improver (ACF)

AMSOIL Diesel Cold Flow Improver is recommended for low temperature applications below 40°F. Effectively modifies wax crystal formation at low temperatures to depress diesel fuel pour point and improve cold flow filtration properties. Lowers the cold filter plugging point by as much as 20°F and decreases the need for #1 diesel

fuel diluted with kerosene. Contains jet fuel-type deicer to help prevent ice formation in fuels contaminated with water. Compatible with diesel particulate filters (DPF's).

Cetane Boost (ACB)

AMSOIL Cetane Boost improves combustion efficiency to increase power in diesel engines. Raises Cetane three to seven numbers. Also improves low-temperature starting, fuel ignition quality and reliability. Treats up to 160 gallons.

Features and Benefits

Feature Increases octane up to 7 points

Benefit Reduces engine knock, improves performance (AOB).

Feature Inhibits deposit formation (AOB, API, ADF).

Benefit Clean engines last longer, perform better and require fewer repairs.

Feature Rust and corrosion inhibition (API, ADF).

Benefit Rust- and corrosion-free equipment lasts longer and requires fewer repairs.

Feature Improved fuel efficiency (AOB, API, ADF).

Benefit Savings on fuel costs.

Feature Lubricity aid (ADF).

Benefit Lubricity reduces wear. Lower wear rates help engines last longer, perform better and require fewer repairs.

Feature Low temperature fuel fluidity (ACF).

Benefit Low temperature fluidity helps engines start and run dependably in cold temperatures and increases their cold temperature fuel efficiency.

Feature Fuel stabilization (AST, ADF).

Benefit Helps stored fuels "keep."

Feature Improved fuel ignition quality (ACB).

Benefit Helps diesels start dependably in cold temperatures; helps them run powerfully and smoothly; reduces their smoke and emissions.

Application and market

AOB and AST: For use in gasoline-fueled two-cycle or four-cycle engines, or in gasoline destined for use in such engines.

API: For use in gasoline-fueled four-cycle engines. Passenger car owners comprise the largest market. Those living in areas subject to mandated vehicle inspection and maintenance programs may be interested in the product's ability to help their car pass emissions tests.

ADF and ACF: For use in light and heavy duty diesel fueled two- and four-cycle engines and oil-burning home furnaces.

ACB: For use in all diesel fueled engines. ACB is fully compatible for use with ADF; however, ACB and ADF should not be pre-mixed. The products may be added individually to the vehicle's fuel tank while the vehicle is refueled.

Availability

AMSOIL fuel additives are available in 12-oz, 16-oz, 5-gallon and 55-gallon containers. See your price list for more information.

For More Information

G1135 *PI Data Bulletin*
G1431 *Series 2000 Octane Boost flyer*
G2215 *Engine Fogging Oil/Gasoline Stabilizer Flyer*
G2236 *Diesel Concentrate Data Bulletin*
G2243 *Cetane Boost/Cold Flow Improver Data Bulletin*

Cleaning and Protecting Products

How Do CLEANING and PROTECTING Products Work?

Metal surfaces exposed to water, combustion processes or conventional lubricants may become deposit-ridden and worn with use. Cleaning products, usually through the actions of solvents, restore them to performance at or near their original level. Protectants, usually through the actions of rust inhibitors, water displacers and lubricants, help components retain their optimal performance characteristics.

Metal Protector (AMP)

Metal Protector is a greaseless all-purpose metal protectant, rust preventive and water displacing agent. May be used to loosen rusted fasteners such as nuts and bolts, dry wet ignition systems and protect metal components. Metal Protector is ideal for use on firearms and small sensitive componentry.

Heavy Duty Metal Protector (AMH)

Heavy Duty Metal Protector is a heavy duty spray lubricant fortified with special rust and corrosion inhibitors. It penetrates and adheres to metal surfaces, leaving a long-lasting protective dry wax-like film. Heavy Duty Metal Protector is ideal for lubricating hinges, wire ropes and springs, chains, nuts and bolts.

Power Foam Engine Cleaner and Degreaser (APF)

Power Foam cleans the combustion intake system and exterior engine surfaces. Use of APF improves fuel efficiency and engine power, reduces or eliminates engine knock, removes rust and grease and frees stuck chokes. Power Foam is a spray-on, rinse-off product. It will not harm fuel injectors, catalytic converters or emission control devices.

Silicone Lubricant Spray (ALS)

Silicone Lubricant Spray is formulated for use anywhere a light-duty or silicone lubricant is recommended. It is ideal for lubricating metal-to-nonmetal or nonmetal-to-nonmetal materials. Applied as an aerosol, Silicone Lubricant Spray leaves a dry lubricating film on surfaces. It may be used in food processing or packaging applications in which incidental food contact may occur.

Engine Flush (AEF)

Engine Flush cleans the crankcase, cylinder walls, pistons and piston rings of gasoline-fueled four-cycle engines and diesel-fueled two- and four-cycle engines. Removing sludge and deposits increases fuel economy and power and enhances component durability.

Engine Fogging Oil (FOG)

Engine Fogging Oil provides stored equipment with long-term protection against corrosion and dry starts, extending engine life and reducing operating expenses. Its aerosol spray formulation offers easy and clean applications, while reaching more components and offering complete distribution of the oil, something especially beneficial in applications with horizontal cylinder orientation, such as outboard motors.

Features and Benefits

Feature Cleans and protects (all).

Benefit Clean engines and equipment run better, last longer and require fewer repairs.

Feature Rust and corrosion prevention (AMP, AMH, APF, FOG).

Benefit Rust- and corrosion-free engines and equipment run better, last longer and require fewer repairs.

Feature Improved fuel efficiency (APF, AEF).

Benefit Savings on fuel costs.

Feature Displaces water (AMP, AMH).

Benefit Ignitions, electrical contacts and metal components work properly when kept water-free. Water displacement restores original performance and helps components last longer and require fewer repairs.

Application and Market

AMP: For use on small geared equipment, chains, hinges, electrical contacts and more.

AMH: For use on hinges, wire ropes and springs, chains, nuts and bolts. Also works well as an undercoat.

APF: For use on two- and four-cycle gasoline-fueled engine combustion intake systems and exteriors.

ALS: For use lubricating non-metallic surfaces that come into contact with metal, nylon, cardboard, fiberglass, wood or plastic surfaces.

AEF: For use in gasoline four-cycle and diesel two- and four-cycle engines. Removes the sludge and deposits frequently left by conventional oils. The Engine Flush treatment eliminates or reduces the temporary increase in oil consumption that commonly accompanies a conversion to AMSOIL synthetic motor oils.

Because AMSOIL synthetic motor oils contain powerful cleaning agents, they remove sludge and deposits, carrying materials to the oil filter. The deposit-laden filter allows dirty oil to by-pass the filter. The circulation of dirty oil impedes the tight piston ring-cylinder wall seal, which increases oil consumption by allowing oil to enter the combustion chamber, where it is burned, or by pushing it out the positive crankcase valve, via the action of the higher pressure combustion gases pushing on the lower pressure air in the crankcase.

Using Engine Flush before installing AMSOIL synthetic motor oil reduces the sludge and deposit load in the engine, which, in turn, keeps oil consumption after conversion at or close to normal levels.

FOG: For use in all two- and four-cycle engines.

Availability

AMSOIL cleaning and protecting products are available in 8¾-oz. spray cans, 10-oz. spray cans, 12-oz. spray cans, 18-oz. spray cans, 16-oz. spray cans and 16-oz., 5-gallon, 30-gallon and 55-gallon containers. See your price list for more information.

For More Information

G172 *Engine Flush Brochure*

G1136 *Metal Protector/Heavy Duty Metal Protector/Power Foam Flyer*

G1247 *Silicone Lubricant Spray Flyer*
G2215 *Engine Fogging Oil/Gasoline Stabilizer Flyer*

Engine Coolant

How Does ANTIFREEZE/COOLANT Work?

Coolant keeps the temperature of the top sixty percent of the engine below the critical range at which the engine undergoes heat-related failure. Virtually all coolants contain water. To prevent the water from freezing, expanding and damaging the engine during periods of freezing temperatures, coolants contain anti-freeze, chemicals that physically combine with water and lower the temperature at which the coolant freezes. Those chemicals also prevent water from boiling off during high temperature engine operations, so they are also important as cooling agents. Anti-freeze/coolant products also contain additives to prevent radiator corrosion and erosion. Corrosion is a chemical process in which surface material is removed from metal surfaces. Erosion is a mechanical process in which the explosive force of bubbles bursting in the coolant "blast" materials from metal surfaces; it is also called "pitting." Diesel engines are particularly subject to corrosive and erosive damage.

Conventional anti-freeze contains ethylene glycol, a product with good ability to moderate engine temperature and prevent coolant freeze-up. However, ethylene glycol, a poisonous product, smells and tastes sweet and causes injury or death to many small children, pets and wild animals every year.

AMSOIL Propylene Glycol Antifreeze and Coolant (ANT)

Propylene glycol may also be used in anti-freeze coolant mixtures and provides good high and low temperature radiator protection. Propylene glycol, which smells and tastes bland, is significantly less toxic than ethylene glycol is. In fact, propylene glycol is available in food and pharmaceutical grades for use in human foods and medications and in grades appropriate for use in pet foods.

Compared to ethylene glycol products, propylene glycol products appear to provide equal, or in some instances, superior protection against corrosion and erosion in diesel engines, which are more prone to both types of damage than are gasoline engines.

When crankcase oil is contaminated by coolant, bearing damage occurs at a lower concentration with ethylene glycol than it does with propylene glycol; one percent ethylene glycol in the engine oil may lead

to bearing damage. Bearings treated to eight percent propylene glycol contamination of the engine oil remained undamaged.

Finally, while both ethylene glycol and propylene glycol biodegrade at about the same rate, propylene glycol's lower toxicity makes it environmentally less hazardous during the biodegradation process.

AMSOIL ANT is formulated for use in gasoline engines, light duty diesel engines and heavy duty diesel engines. Some other propylene glycol products do not contain an additive system appropriate for use in heavy duty diesel engines.

Features and Benefits

Feature Low toxicity.
Benefit Safer than EG coolants for humans and animals in case of ingestion.
Feature Formulated for gasoline and diesel engines.
Benefit May be used by more customers than some propylene glycol antifreezes can, due to their formulation for gasoline engines only.
Feature Superior erosion and corrosion protection in diesel engines.
Benefit Radiators last longer and require fewer repairs.
Feature Increased bearing safety in case of coolant contamination of engine oil.
Benefit May prevent catastrophic bearing failure.
Feature Extended service life capability.
Benefit Saves motorists money.
Feature Adheres to metal.
Benefit Self-seals hairline cracks in welds and seams, preventing leaks.

Application and Market

For use in the radiators of gasoline-fueled four-cycle engines, diesel-fueled light and heavy duty engines.

Availability

AMSOIL Propylene Glycol Antifreeze and Coolant is available in 1-gallon and 55-gallon containers. See your price list for more information.

For More Information
G1156 *Antifreeze and Coolant Data Bulletin*

BRAKE FLUID

How Does BRAKE FLUID Work?

Brake fluid is non-compressible, meaning it won't compress into a smaller volume when pressure is applied. In a brake system, fluid pressure is multiplied by the master cylinder and can reach more than 1,000 pounds per square inch (psi) in the lines. Like any other hydraulic fluid, brake fluid must be non-compressible at the expected pressures to transmit force from one end of the system to the other while simultaneously lubricating the pistons and rubber parts as they move through their bores. If the fluid were to compress, all braking power would be lost. In addition, in order to ensure maximum fluid life and reliable braking power, brake fluids must keep water in suspension and avoid vaporization.

AMSOIL High Performance Brake Fluids (BF3 & BF4)

Series 500 High Performance DOT 3 Brake Fluid (BF3)
Series 600 High Performance Racing DOT 4 Brake Fluid (BF4)

Features and Benefits

Feature Non-compressible at high pressures.
Benefit Ensures reliable braking power.
Feature High boiling temperatures.
Benefit Maximum fluid life, reliable braking power.
Feature Keep water in suspension.
Benefit Protects against brake system damage.

Application and Market

Series 500 High Performance DOT 3 Brake Fluid (BF3): For use in auto/light truck, high performance and powersports applications calling for a DOT 3 brake fluid.

Series 600 High Performance Racing DOT 4 Brake Fluid (BF4): For use in auto/light truck, high performance, racing and powersports applications calling for a DOT 4 brake fluid.

Availability

AMSOIL High Performance Brake Fluids are available in 12-oz. bottles. See your price list for more information.

For More Information
G2476 *Brake Fluids Data Bulletin*

How Do CAR APPEARANCE PRODUCTS Work?

Automobile interior and exterior surfaces are subject to sun damage and the accumulation of dirt. To maintain their appearance, they must be cleaned, and to further protect their appearance and integrity, protectants may be applied.

BriteSide™ Miracle Wash (AMW)

Miracle Wash is a waterless car wash which sprays on, lifts dirt and wipes off easily, leaving a brilliant shine and tough protection from the sun's harmful ultraviolet rays.

Features and Benefits

Feature Aerosol spray formulation.
Benefit Quick and easy application.
Feature Holds dirt and other particles in suspension.
Benefit Protects vehicle surface from abrasion.
Feature Repels dust and light dirt.
Benefit Maintains vehicle's shine.

Application and Market

For automotive applications.

Availability

BriteSide™ Miracle Wash is available in 13-oz spray cans and 1-quart bottles. See your price list for more information.

For More Information
G1277 *Miracle Wash Flyer*

Mothers® Appearance Products

AMSOIL offers a full line of Mothers car care and marine appearance products. See the G2288 Mothers Car Care Appearance Products Brochure and G2408 Mothers Marine Product Handout for more information.

How Do WINDSHIELD PROTECTANTS Work?

Windshield protectants contain chemicals which cause water to bead up and run off the windshield to improve the driver's ability to see through the windshield during heavy rain, an important safety feature. They also form a coating on the windshield which makes dirt and ice adhere loosely, making cleaning and scraping the windshield easy.

BriteSide™ Rain Clear Windshield Protectant (ARS)

BriteSide™ Rain Clear may be applied with a soft cloth and provides excellent water, dirt and ice repellancy for superior visibility and cleanability. Rain Clear leaves a highly durable protective film and needs only occasional reapplication.

Application and Market

For use on all glass surfaces, particularly those in automobile windshields.

Availability

AMSOIL Rain Clear is available in 4-oz containers. See your price list for more information.

AMSOIL products and Dealership information are available from your local AMSOIL Dealer.

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