

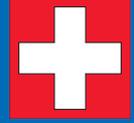
Swissmotor

Swissmotor

www.swissmotor.ch



Federation of Swiss Military Transport Associations



Special Edition



Reduces fuel consumption
Prolongs service life

How did Lubegard come about?

The History of Lubegard®

rb // The concept of “additives” or “supplements” in motor oils, lubricants, and fuels often evokes a slightly negative image in the mind of the consumer — first, because the user is not an expert in petrochemicals nor a specialist in combustion, and has little comprehension of that field’s infinitely complex materials, and second, because advertising would have us believe that nothing works nowadays without the right additives.

As a rule, additives provide a basic product with features that the product lacks for its basic functionality. As a consequence it used to be that you were not allowed to mix different types of oil (this still applies today to certain components), because the brand-specific additives would interfere with one another, either canceling their effect, or in the worst case scenario even reversing it. Older readers may still remember what used to happen to an engine that was accustomed only to single viscosity oil — when multiviscosity oil was suddenly used for topping up or an oil change. All too often, catastrophic engine damage was the result.

Magic formula: the LXE® molecule

Dr. Phillip S. Landis, who developed the Liquid Wax Ester (LXE) Technology was also intimately involved in the development of Mobil 1. LXE Technology optimizes existing brand name products with all of the additives that they already contain: it raises the resistance to both pressure and heat and achieves significantly better heat dissipation. Admittedly, “magic formulas” have existed since the beginning of the age of machine technology and some have even enjoyed some remarkable success...at least in the beginning. The drawbacks came to light only later, with many products silently disappearing from the market. As of today, thirty years after it



Lubegard is produced in reactors like these

first entered the market, no flaw has been found in Lubegard. Certain top vehicle manufacturers even prescribe Lubegard in their repair manuals, and most of the other manufacturers have long given their approval.

The wide-spread problems with automatic transmissions

Lubegard first made history in the US, the birthplace of automatic transmissions for passenger cars, when sperm whale derivatives were no longer available for use in lubricants and hydraulic oils for the engine industry due to the Convention on Endangered Species of 1972. Sperm oil had lent the petroleum-based oils the qualities they lacked in terms of resistance to both pressure and heat. This was not known, of course, to the general public. Transmission failures went from less than one million prior to 1972 to over eight million by 1975. The cause: overheating. 9 out of 10 transmissions fail due to heat! Like others, Philip Landis therefore directed his efforts at fundamentally optimizing hydraulic oil for automatic transmissions by developing a new compo-



Dr. Phillip Landis was involved in the development of Lubegard and Mobil 1.



Swissmotor

Dear Readers,

This special edition of Swissmotor reports on a petrochemical product with a unique mode of action: Lubegard. Known up to now only in the United States, this unique supplement has also begun to conquer the European market. And it is coming at just the right time. Apart from economical diesel engines, the motor vehicle industry has almost nothing to counteract skyrocketing gas prices. Beware of several various "alternative" fuel substitutes: the consequential costs could be far greater than the supposed savings. In its diverse areas of use, in our opinion, Lubegard appears to be the only way to save not only substantial amounts of fuel and oil, but also to extend the life of all mechanical components significantly. Lubegard is not an additive in the conventional sense of the word. It merely optimizes the existing lubricants. But it does so with truly sensational results, as scientific tests have confirmed. Moreover, Swissmotor has never endorsed a product that has not first been tested for years both in-house and in the field. You can put your complete faith in the reports and descriptions that follow, because our name stands behind them.

*Warmest regards,
Ruedi Baumann
Editor-in-Chief, Swissmotor*

ment. The heat resistance and heat conductivity of hydraulic oil first had to be improved radically. Landis had already created a motor oil additive from plant extracts called "Lubegard" which exhibited the aforementioned qualities; all that was needed was to adapt his product to hydraulic oils sufficiently to enable a "marriage." It took another five years, however, before Landis' genius developed, exhaustively tested, and patented such an additive so that he could bring it onto the market successfully. ■

Rapeseed instead of jojoba oil

Landis, an experienced petrochemical specialist, focused his research exclusively on oils and waxes of bo-

desired LXE molecule from the carbon chain of simple rapeseed oil is much more complicated; but meets the same quality standard. Moreover, it is biodegradable, which is an extremely important criterion today.

Liquid Wax Ester

Botanical, polar, high-tech mono-ester LXE® wax

- Temperature-resistant up to 300° C (572° F) (currently the most heat resistant lubricating ester on the market)
- Increases the heat stability and oxidation stability of every lubricant
- Lowers the elevated lubricant temperature (protecting it from overheating)
- Up to 50% less component wear
- Up to 30% less oxidation
- Up to 60% less pentane insolubles (sludge)

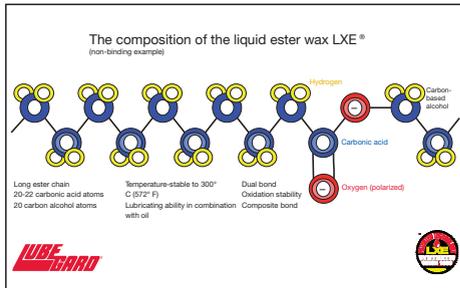
Conclusion

In all areas of application, Lubegard is not a lubricant substitute. In order to make use of its sensational properties, Lubegard always needs a base oil. Lubegard does not "repair" any mechanical damage, but it can successfully prevent it.

Sole agency for Europe

Importers for the whole range of Lubegard products:
Roten Trading AG
Keltenstrasse 13
CH-2563 Ipsach, Switzerland
Telephone: +41 (0)32 355 38 24
Fax: +41 (0)32 355 38 25
E-Mail: info@rotentrading.ch
Website: www.lubegard.ch

In Switzerland, Lubegard is sold at retail by Derendinger AG and Technomag AG.
For a location near you contact www.Lubegard.com.



tanical or biological origin, because the spermaceti derivative formerly mixed with lubricants had yielded the desired result. Landis found an ideal substitute in jojoba oil. Unfortunately, it turned out that jojoba oil (which is actually not oil at all, but liquid wax) was in extremely short supply, because the jojoba plant was difficult to cultivate in artificial settings. It preferred the habitat of the Sonora desert of Mexico, Arizona and California over all industrial farming methods. Moreover, the cosmetic industry had already long displayed an almost overwhelming interest in jojoba oil. Jojoba oil possesses the rather unique property of neither easily oxidizing nor forming sludge or varnish. But by then Landis had found a synthetic basis for Lubegard that was plentiful, and neither endangered nor burdened by any sort of ethnic (or other) legal restrictions. The reaction process for extracting and esterizing the

Significantly reduces fuel consumption and more!!

Lubegard Bio/Tech Engine Oil Protectant 30902

BIO/TECH ENGINE OIL PROTECTANT 30902

Swissmotor has been testing a wide range of products intensively for many years. Products, of course, that have to do with cars, engines and machines. These tests are only published after “indisputable” results have been obtained, and are guaranteed never to be PR reports. After we stumbled across the Lubegard transmission fluid additive at Automaten-Meyer, we discovered and tested other products from the same manufacturer – first the motor oil additive Lubegard Bio/Tech Engine Oil Protectant, then other additives.

We first used the Bio/Tech Engine Oil Protectant product, which is also based on the unique LXE technology, in diesel engines, somewhat by chance. This was in test vehicles, in which all “co-testers” objected to the obtrusive engine noise. Not when starting cold, because all diesel engines make an audible knocking sound then, but at driving speeds of about 80 kph (50 mph) and up. As with the automatic transmission, we mixed Lu-

begard into the motor oil according to the motto: even if it's of no use, it certainly can't hurt either. Because the oil level had to be checked again very precisely, we let the engine idle for a while.

Diesels no longer “diesel”

It took a couple of minutes until everyone standing around noticed that the engine suddenly was running perceptibly more quietly. The

earlier annoying diesel knocking had been replaced by a powerful, idling hum. We then had everyone who had objected to the noise earlier test drive the vehicle again. “Have you installed additional noise reduction mats under the hood since the last time?” everybody wanted to know. Since we were having Siberia-like temperatures at the time, we were pleasantly surprised by another feature: now the engine started right away even after having been turned off for long periods of time, which hadn't always been the case before. We immediately persuaded other “diesel owners” to add Lubegard. The result was the same in every case. And as a “bonus,” fuel consumption was down significantly.

Problems with the emergency power system

Because Lubegard engine protectant is described as having a wide array of “problem solutions” at its disposal, the author took on the



Bio/Tech Engine Oil Protectant not only reduces wear by up to 70 %, fuel consumption also drops correspondingly. Thanks to Lubegard, there is no longer a risk of insufficient lubrication in cold starts.

next problem child, a gasoline-powered emergency power system. The unit, which has to work for hours at just slightly greater than idle speed, tended toward disproportionately high plug fouling. Periodic visits to the shop after a ridiculously low number of operating hours were the rule. Only after a vigorous cleaning with compressed air and new spark plugs was the engine ready to start again. But lubricating oil consumption soon increased dramatically due to carbon deposits on the piston rings, causing the fouling to cripple the engine at even shorter intervals. Two tablespoons of Lubegard added to the oil were able to prevent the troublesome soot buildup only partially; but the engine now ran about an hour and a half longer per tankfull! We had precisely the same experience with a second engine of almost identical construction. This was clearly attributable to one of Lubegard's main features: the sensational reduction of friction losses. (A more permeable air filter then also ended the fouling of the spark plugs).

Not a cure-all after all?

The same sort of power increase or an equally striking decline in fuel production could not be expected in cars, however, where different factors determine fuel consumption. It is not by chance that top name oil manufacturers conduct representative fuel consumption and durability tests predominantly with big city transport systems, because the different driving styles of the individual drivers do not play a decisive role there. In the emergency power units the engine speed was always the same, and because of the rectifier the power demand was also always about the same. Thus identical results were likewise obtained in the "knocking" test with the second emergency power unit. It is relatively easy to explain why Lubegard could not stop the carbon deposits in the engine: soot buildup in the combustion chamber is a by-product of the constant low operating speed.



Old-timers present real challenges for their owners. They simply cannot handle new multiviscosity oils. Strange as it may sound, Lubegard fulfills the same purpose here as it does with highly tuned engines, because the supplement significantly optimizes the existing base oil.

Moreover, the engine does not have to deliver any significant amount of power during the entire operating period, which leads to unclean combustion.

A "must" for turbocharged engines

Turbo diesel engines that are insulated from structure-borne noise and therefore completely "packed in" are particularly susceptible to mechanical damage. The lack of cooling air leads to serious problems here. The oil gets too hot very quickly in the turbocharger and subsequently ruins the "healthy" oil in the engine. The better an engine is encased, the greater the heat blockage, especially in the vicinity of the turbocharger. Most affected are "chip-tuned" turbo engines. Oil that has become too hot behaves just like butter in a frying pan: when the butter gets too hot it first assumes the familiar brown color, and as the heat increases it carbonizes. Butter that has turned brown stays brown even when cooled, and as a result is unusable. The same thing happens with motor oil. Lubegard Engine Protection lends a significantly higher level of heat resistance to the base oil, thus preventing "burning" in the turbocharger and conse-

quently avoiding the gradual overacidification and oxidation of the motor oil.

Getting to the essence of gasoline waste

For the car test, Swissmotor intentionally and specifically selected well-known "gas guzzlers." Purely hypothetically, this is where one could expect the largest measurable difference. However, a consistent driving style through the various driving cycles would be required in order to determine the measurable differences before and after Lubegard in the shortest time possible. The results obtained were consistently positive, although the reports from the non-professional drivers about the amount of gas



With Lubegard in the motor oil, this generator runs about an hour and a half longer per tankfull (when used as an emergency power unit).

they saved were too vague. In the car used by our staff, however, we were able to keep precise track of driving behavior and style and the kilometers driven by means of the calibrated trip recorder.

Wow!

After 2000 kilometers (1243 miles) we couldn't deny it any longer: before, we could never manage to get the fuel consumption of the 3.2 liter engine below fifteen liters (four gallons) per 100 km (62 miles) (fifteen liters was already an economy record). With Lubegard in the motor oil and with the same driving style, the engine got by with only thirteen liters. A look into the engine with the help of a rod light revealed bright clean cylinder walls, where before there had been a hard, blackish-brown resinous coating. A slightly light-brown, but still minimal coating on the piston floor, the valves and the spark plugs testified to optimal combustion. In addition, all of the mechanics praised the extremely quiet running of the six-cylinder in-line engine.

Nails with heads

Due to the fact that our staff car with its full-time all-wheel drive had other gas guzzling impediments in the power train, it received a radical treatment: in brief, all its oil was removed, replaced, and the prescribed amount of Lubegard was added. Automatic Transmission Fluid Protectant was used for the automatic transmission and transfer case, and Gear Fluid Supplement for the differential. We even included the power steering protectant and the radiator treatment (particularly since the Lubegard product



Highly tuned engines are particularly susceptible. Here Lubegard has a significant effect on the life of the engine. Experienced car tuners have long known about the effect of the sensational LXE molecule.

named "KOOL-IT Supreme Coolant Treatment" promised significantly better heat transfer.)

The proof

We had already done as much as we could – short of mechanical interventions – to reduce mechanical friction loss by significant factors. The results obtained through this radical treatment were truly incredible: now the gas consumption for 100 kilometers (62 miles) was a laughable 10.1 liters (2.67 gallons)! Of course, the "super economy" driving style utilized in such tests was absolutely no fun, and may have annoyed other drivers on the road, but it was definitely worth the effort. A surprising side effect truly amazed all Lubegard users (most noticeable with all-wheel drive): the braking response of the entire drive train when taking the foot off the gas pedal was significantly lower. So it is necessary to step on the brake more often. There could hardly be better proof of reduced friction loss...

An ideal solution

Boat motors rarely overheat because the efficacy of water cooling is guaranteed; but oil still gets too hot in the turbocharger. And certainly nobody has any objections to saving fuel.

If one considers how many millions are invested in development projects by vehicle manufacturers to increase engine power and at the same reduce fuel consumption, and then compares that amount to the ridiculous costs of adding Lubegard, one can only shake one's head in disbelief. Especially since Lubegard also significantly prolongs the operating life of any mechanism. ■

Here's what Lubegard BIO/TECH ENGINE OIL PROTECTANT does:

- Reduces friction loss in the motor by up to 29% (saving fuel)
- Provides outstanding cold start properties through polar behavior
- Improves oxidation stability (the main factor in oil aging)
- Lowers oil consumption (especially with long-life oils)
- Reduces wear by up to 70%
- Lowers the oil temperature
- Improves oil's compressive strength
- Excellent for supercharged or high-performance engines (tuning)
- Audibly and significantly reduces the noises that arise through inner friction

Application Instructions:
Add one bottle per car engine (diesel or gasoline) with every oil change.

**LUBE
GARD®**

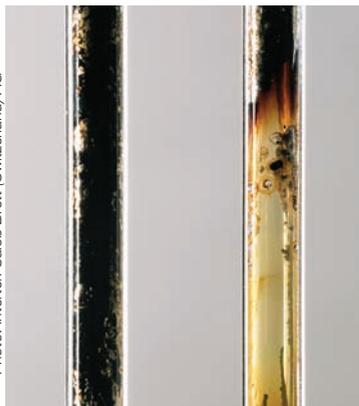
Swissmotor

Test Report No. 160275/06

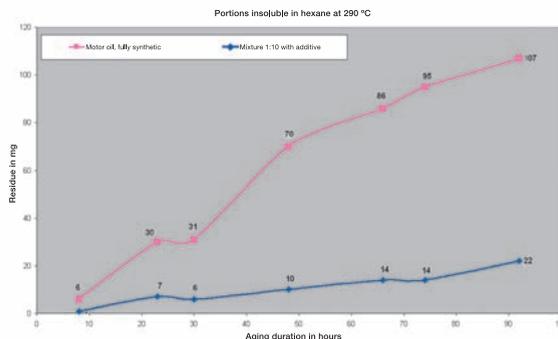
The temperature problems that occur in today's modern, small volume, maximally supercharged turbo engines and power plants (due to engine compartment encapsulation) may exceed the 250 degree Celsius (482° F) mark. Permissible oil temperatures are greatly exceeded, primarily at the bearing points of a turbo supercharger that require lubrication. But every normal oil molecule breaks down (cracks) into its component parts at temperatures greater than 250° C (482° F). The resulting residue may cause engine damage or total destruction of the components.

The current trend towards thrifter and at the same time higher performance engines inevitably leads to temperature-related problems, even with so-called high-performance oils. In a test of Lubegard Bio/Tech Engine Oil Protectant 30902 conducted by the testing institute Intertek Caleb Brett (Switzerland) AG, artificial aging processes were created in order to come as close as possible to "real conditions," given these prerequisites, and to obtain conclusive results. In order to simulate the oil's long-term behavior and aging process within the brief testing time available, oxygen and nitrogen (air) were carefully added to the test substance. The amount of residue from this process shows how long — that is to say, to what temperature — the oil can endure without marked decomposition. The greater the resi-

Brand name oil (left) after the tests and the same oil (right), this time however with Lubegard Bio/Tech Engine Oil Protectant 30902.



The test results speak for themselves. The red line shows the aging process of a brand name oil. The blue line shows the oil mixed with Lubegard 1/10. The graph depicts the amount of aging residue insoluble in hexane at 290° C (554° F).



due buildup, the lower the temperature stability. ■

Physical and chemical background

The hot tube test (HTT) accelerates the aging of the test substance through:

- the increased temperature
- the lesser coating thickness of the substance in the glass tube
- direct contact with the air.

Aging process

The aging process occurs in different stages that cannot be isolated from one another:

Thermal aging

Through thermally-induced decomposition of the oil sample (that is to say, through the application of heat) (e.g., "cracking" of the oil molecules), an unstoppable and in this case intentional destruction of the chemical structure takes place.

Oxidative aging

Through the influence of the oxygen (about 20% by volume) present in the pressurized air, the chemical bonds in the oil sample are oxidized. This process is dependent in part on the measured temperature ("the hotter, the faster").

Catalytic effects

One may assume that the aging products that arise through this process exert an influence on the (total) aging of the freshly introduced oil sample.

Total aging

Total aging is the sum of all the aging factors. These are influenced in turn by the measured parameters and technical equipment conditions.

Evaluation of the aging

The following points may be used as criteria for the aging :

- Visual evaluation of the glass tube (index based on the color scale)
- Quantitative measurement of the aging products (stated in mg)
- Temperature and/or time elapsed before the aging tube becomes blocked (block point)
- Chemical and physical examination of the aged test substance (for example, tribological properties)

Measurements were performed with the following parameters:

- Maximum of 92 hours of testing time or until the block point of the aging tube
- 0.2 ml/hr (3.33 l/min) of oil
- 10 ml/min of air
- Gravimetric determination after cleansing with hexane
- Gravimetric determination after cleansing with toluene and acetone

The fresh oil (brand name oil) became blocked after about 80 to 90 hours; in other words, so many aging products were produced that the glass tube became completely filled and no longer permeable (block point).

**Read the complete test report at www.lebert-alterung.ch
In German only**

A transmission fluid supplement that performs “miracles”

AUTOMATIC TRANSMISSION FLUID PROTECTANT 60902

rb // The service life of an automatic transmission is limited, regardless of whether it is in a car, a truck, or a construction machine. In manual transmissions the clutch wears out sooner or later, because this device has the task of gradually converting the engine's power into propulsion, just like an automatic transmission. Automatic transmissions also have clutches, sometimes even many of them. Although they run in oil, wear nevertheless occurs. Drivers can influence and reduce wear with their driving style, but the absolute mortal enemy of automatic transmissions is the oil temperature. When it gets too high, which happens very quickly, and not only when pulling a trailer, the automatic transmission quickly gives up the ghost. Then it costs you a small fortune.

Lubegard Automatic Transmission Fluid Protectant mixed with the transmission fluid prescribed by the manufacturer decisively increases the heat resistance of the base oil, among other things, and at the same time provides better heat dissipation, thus preventing the plastic parts in the transmission from “melting”. At the same time, Lubegard makes the valves, pistons and slide valves run more smoothly, which the driver comes to notice after a few kilometers of more precise, incisive and faster gear shifting. Interestingly enough, the individual gear shifts become gentler.

Transmission fluid changes, coolers — and Lubegard

Automaten-Meyer in Littau LU, Switzerland's number 1 automatic transmission specialist, unhesitatingly recommends two things for long “automatic transmission life”: first, a complete fluid change every 50,000 kilometers (31,068 miles), and second, the installation of a separate fluid cooler. The second point applies primarily to vehicles with trailers (including campers!). Also adding Lubegard to the automatic transmission fluid practically guarantees that there will be no

overheating nor resulting damage. During a fluid change performed by a top professional (which is highly recommended), the professional will immediately recognize any signs of wear and can offer a precise prognosis on the condition of the transmission. Consequently, your local professional transmission repair facility is also the best choice for a simple fluid change, all the more so because they have all of the special apparatus for changing the entire fluid content, even in torque converter transmissions without bleed screws (most cars today).

Lubegard instead of repairs

Swissmotor “stumbled” across Lubegard a few years ago, quite by chance. At the time, the author was driving an automatic Mercedes, which sometimes literally “lost” the corresponding gears when starting up from a stop into gears “D” and “R.” The kickdown was also no longer working right, most of the time there was only a rumbling in the transmission. At first, Automaten-Meyer found no wear particles in excess of allowable levels in the transmission fluid, and they claimed this was due to pressure valves, pistons, or valves that were stuck due to low tolerances and gum-



The founder of Automaten-Meyer, Werner Meyer, adds Lubegard to the automatic transmission fluid.



CEO Adrian Marty tests an overhauled automatic transmission on the test bench.

Photo: Ruedi Baumann



An automatic transmission with heat damage and melted plastic parts.



Lubegard (red) is designed for use with Dexron III automatic transmission fluid.

ming. Result: a partial overhaul or at least a replacement of the control unit. Here Adrian Marty, CEO of Automaten-Meyer, suddenly had an idea: instead of replacing the control unit, only fresh fluid was added and supplemented with the appropriate amount of Lubegard Automatic Transmission Fluid Protectant. Marty and the firm's founder, Werner Meyer, were rather skeptical, since the US-produced "miracle cure" Lubegard was still quite new to them. Both of them knew only the specifications, but they knew them in great detail. "If it's of no use, at least it won't cause any damage," both of them thought. "We can always still install a new control unit if the experiment goes awry. That would of course cost the price of a bottle of Lubegard many times over."

Even the expert was amazed

The miracle occurred: after just a few miles the gear shifting underwent a highly perceptible change, the kick-down kicked in powerfully, and the transmission no longer "lost" individual gears from then on, about another 150,000 kilometers (93,206 miles). For 2 years we conducted very thorough "field tests" with Lubegard, had numerous mechanics add it to transmissions, some of which

could hardly be shifted any more, or to automatic transmissions that vibrated and shook intolerably. The same surprising result everywhere: as long as there was no purely mechanical damage, broken converter blades, melted plastic parts due to overheating, or pipes or pistons clogged as a result, and so forth, all automatic transmissions suddenly functioned perfectly again!

A super investment

Automaten-Meyer, as well as mechanics less burdened with expert knowledge, have since sworn by Lubegard. The experience, knowledge, and results were continuously discussed and compared. Here we certainly must mention that many top auto names expressly recommend Lubegard, and written approval has been issued by multiple leading car manufacturers on its use. If we compare the price of a fluid change and adding Lubegard to an overhaul of the automatic transmission, we come to a price difference ranging between 4500 and 6000 Swiss Francs (\$3,600 and \$4,800 USD), depending on the type of transmission.

Unwanted sales branch

There are four different types of Lubegard automatic transmission fluid products available. The fourth type, Lubegard Platinum Universal Automatic Transmission Fluid Protectant eliminates all automatic transmission fluid confusion and the need for the other three Lubegard automatic transmission fluid products. Until now, Automaten-Meyer had to get all Lubegard products directly from the US, and since the stunning successes (including according to our publications) found itself having to ship Lubegard products halfway around the world. Of course, only after a detailed telephone consultation, which did not necessarily match the company's original intent in Littau. ■

Here's what Lubegard Automatic Transmission Fluid Protectant does:

- Provides smoother gear shifting
- Improves gear shifting performance
- Reduces the fluid temperature in the automatic transmission
- Extends the life of the fluid
- Loosens "gummed" valves
- Suppresses clutch and torque converter vibrations
- Optimizes oxidation stability (the main cause of fluid aging)
- Indispensable for vehicles that pull trailers
- Approved and recommended by manufacturers, and successfully employed for over 20 years.

Application Instructions:

Add 1 ounce (29.6mL) per quart (Liter) of ATF fluid being replaced with motor idling in park.

Important tip: If your not sure what type of fluid a transmissi-on takes contact your supplier to obtain your copy of the FREE Lubegard ATF Conversion & Refill Chart.



Lubegard Platinum is suitable for all types of automatic transmission fluids.

For standard transmissions and differentials

Gear Fluid Supplement 30903 and Limited Slip Supplement 31904

GEAR FLUID SUPPLEMENT 30903

- Optimizes the lubricating properties of all GL 5 and GL 4 oils
- Improves shifting performance
- Optimizes the transmission of power
- Reduces bearing and gear friction
- Improves temperature stability
- Prevents heat damage
- For standard transmission and rear axle/ drive shaft combinations

Gear Supplement application instructions: Add 3 ounces (88.7 mL) to each quart (Liter) of gear fluid.

Limited Slip Supplement application instructions: Avoid overflow. Add entire contents of supplement to differential.



A fluid change when adding Lubegard is not urgently necessary, but it can't hurt. Careful, though: use the special Limited Slip Supplement in rear axle differentials with automatic limited slip locks!



Power Steering Fluid with LXE for new power steering fill-ups or as a protectant

Power Steering Fluid 20902/20404

POWER STEERING FLUID 20902

- Meets specific manufacturer criteria (including Honda)
- Replaces all special fluids for power steering
- Reduces noise in power steering
- Cleans and loosens clogged nozzles and pumps
- Extends the life of components and fluid
- Loosens tight steering valves
- Provides you with a long-running and problem-free system

Power Steering Fluid application instructions: Fill per manufacturers instructions

Power Steering Fluid Protectant application instructions: Avoid overflow. For best results flush out old fluid. Refill with power steering fluid leaving 4 oz. short and add entire contents of protectant.



Power Steering Fluid 20902 for new power steering fluid fill-ups



Power Steering Fluid Protectant 20404 as an additive to existing power steering fluid



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Coolant additive with added benefits Lubegard KOOL-IT®

KOOL-IT Supreme Radiator Treatment 96001

rb // Our experiences up to now, as well as those of others, have shown us that all Lubegard products are full of pleasant surprises. Another additive, KOOL-IT, has been known much longer in this country than oil or fluid additives. It is designed for use with coolants.

The coolant does not necessarily need to be replaced or exchanged for a new fill-up to add KOOL-IT. Suctioning the approximate amount of the bottle contents of the additive from the expansion container and replacing it with the supplement fulfills the goal. The mix lasts a certain length of time, but the user will notice a markedly shorter warm up period for the engine as early as the next day, especially in the colder months. Clearly, the heater and the defroster will also deliver warm air faster than before as a result.

Interestingly enough, the cooling system is also less likely to overheat. This can be readily heard in the radiator fans, which do not come on as soon. This also results in considerable fuel savings, because the fans, regardless of whether they are electric or viscous-coupled fans powered by the fan belt, are energy guzzlers. KOOL-IT thus not only provides significantly better heat transfer in the cooling system, but also provides tangible fuel savings (like all other Lubegard products).

The Lubegard research and development team gave the additive one more additional feature: KOOL-IT contains a pH indicator. For use only in straight water applications this allows easy visual determination of straight water coolant pH conditions. Coolant within a safe range is pink, but changes to clear if the coolant pH falls dangerously low, indicating another pint should be added.

The mode of operation and the composition of KOOL-IT are very complex. Here is the technical description for those who would like more details:

KOOL-IT Supreme Coolant Treatment

Problems in a car's cooling system circuit and the mode of operation of KOOL-IT (KOOL-IT Supreme Radiator Treatment 96001)

Enemy number 1: cavitation

The coolant briefly exceeds boiling temperatures on the very hot outsides of the cylinder liners. The resulting air bubbles are then imploded by the vibrations of the cylinder liners. This process tears very small metal parts from the surfaces. This continuous process, building up small deposit cavities, is called cavitation erosion. The now unprotected areas are exposed to increasing corrosion.

Enemy number 2: electrolysis

Erosion of the metal surfaces takes place due to the additional electrolysis that occurs through water pump recirculation of the coolant (friction). This same electrolysis generates galvanic currents in the cooling system, which, among other things, causes gradual destruction of the nonferrous metal parts.

Enemy number 3: overheating

The air bubbles contained in the foam reduce the cooling surface and contact surface of the radiator by the area of their surface. This not only slows down heat transfer, but also significantly reduces the heat exchange between the engine, coolant, and radiator.

Enemy number 4: crystallization

Glycolic acid is generated by high operating temperatures, and it partially crystallizes and forms problematic deposits.

Substances and their mode of action

A variety of substances, some of them very expensive, are added to KOOL-IT Supreme Coolant Treatment in order to prevent or even eliminate these destructive processes.

(1) A special nitrate forms a protective coating on metal surfaces and serves as a very efficient means of protection against corrosion — as a shield, so to speak. Cavitation erosion is thus prevented.

(2) Molybdate works as an anode (an anode is a collector of electrons) which functions on a principle of “self-sacrifice.” Electrolysis is neutralized by molybdate, and corrosion due to electrolytic leakage current is thus prevented. In addition, molybdate forms a very thin (molecule-sized) coating on aluminum surfaces, which counteracts the transfer of electrons.

(3) Polymer dispersants prevent the foaming of the coolant that occurs due to water pump recirculation and they also lubricate the water pump for enhanced durability. Cooling performance is thus improved significantly (up to 30%).

(4) Sodium hydroxide breaks down glycolic acid. In addition, carbon-

LUBE GARD®

oxylate provides long-term protection against corrosion.

Additional properties

For use only in straight water applications, phenolphthalein is used as a pH indicator to indicate acid formation that can cause engine damage to head gaskets and intake manifold gaskets. When the pH is safe the coolant is pink and when the coolant is unsafe the coolant turns clear. For all applications the neon pink color also makes any possible leak sites visible (simplified diagnosis). Borate acts as a pH buffer.



Because borate is very expensive, it is often replaced with phosphates in coolant additives. Phosphates can cause problems by setting off dangerous reactions. Borate is an outstanding heat transfer enhancer, however. KOOL-IT Supreme Coolant Treatment contains the optimal mix of these components and, as a result, significantly increases the efficiency of any cooling circuit. At the same time, the entire system is superbly protected and its life is lengthened.

Application Instructions: Add 1 bottle every year or 30,000 miles, whichever comes first. After 5th consecutive year, drain, flush & refill cooling system including coolant. For complete instructions refer to product package. ■

- Suitable for every coolant
- Optimizes the cooling performance of the entire cooling system
- Increases heat transfer/ reduces the engine coolant temperature
- Prevents cooling system corrosion
- Prevents deposits that can lead to overheating
- Protects all metals from electrolysis
- Reduces the buildup of corrosion on the cylinder cooling walls
- Prevents heat damage (for example, of the head gasket)
- Extends the life of the coolant

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