Ultraseal Tire Life Extender/sealer ®

TECHNICAL SERVICE BULLETINS

- EXTENDING TIRE LIFE
- TIRE SIZES, APPLICATIONS & SITUATIONS TO AVOID
- TUBE-TYPE TIRES
- MOUNTING SOLUTIONS
- OUT-OF-ROUND CONDITION
- AVOIDING VALVE CORE PROBLEMS
- OUT-OF-BALANCE CONDITION
- VIBRATIONS
- RUST AND CORROSION
- AVOIDING POTENTIAL TREAD SEPARATIONS & ZIPPER RUPTURES
- QUALITY CONTROL
- PUNCTURE DOES NOT SEAL

Ultraseal Tire Life Extender/sealer®

TECHNICAL SERVICE BULLETIN

EXTEND TIRE LIFE

Many years ago, Ultraseal R&D developed an anti-aging additive and incorporated it into its manufacturing process to reduce the detrimental effects related to heat buildup in tire casings. In the past, the U.S. Military had experienced excessive dry-rotting in many tires, primarily in desert environments. After installing Ultraseal, careful monitoring showed that treated tires had significant reduction of incidencdes of dry rot as compared to untreated controls.

Ultraseal's proprietary ability to retard dry rot and maintain the casing's resilience is a remarkable achievement considering dry rot is typically caused by outside contaminants and UV radiation.

Ultraseal Tire Life Extender/sealer cannot restore an old tire that has lost elasticity, however, it will inhibit and retard subsequent casing degradation.

Retreading is a major cost savings for fleets. The more times a casing can be retreaded, the lower the cost per mile. This represents a substantial savings. Plus, retreading reduces the environment impact by reducing the number of casings being recycled.

Ultraseal Tire Life Extender/sealer will enhance the tire casing in many ways. In new tires, as well as retreads, Ultraseal virtually eliminates porosity and air migration, lowers heat and significantly reduces the occurance of tread, belt and zipper separations.

Tire industry magazines, trade associations, tire manufacturers and the Retread Industry all agree underinflation is the number one cause of premature tire failure. It is a proven fact that Ultraseal Tire Life Extender/sealer virtually eliminates underinflation caused by air migration, porosity and punctures.

Ultraseal Tire Life Extender/sealer®

TECHNICAL SERVICE BULLETIN

TIRE SIZES, APPLICATIONS & SITUATIONS TO AVOID

APPLICATIONS AND SITUATIONS NOT RECOMMENDED FOR ULTRASEAL APPLICATON

Ultraseal Tirelife Extender/sealer will provide its many benefits to the vast majority of tube and tubeless tires, however, there are a few applications or tire conditions where installation is not recommended.
Ultraseal Tirelife Extender/sealer is not recommended For:

1) Extreme high performance vehicles (sports cars, roadsters).

2) Low profile tires (50, 45, 40 series and lower).

3) Passenger vehicles (including sport utilities) fitted with oversized rims and tires. In many cases these void vehicle manufacturers' warrantees and contribute to harsh or nervous ride capable of damaging suspension components prematurely.

4) Heavy equipment tires containing water or calcium chloride.

5) Any tire or vehicle with previously known vibration issues that is to be operated at highway speed.

6) Any tire with badly worn tread, characterized by cupped, scalloped or saw-toothed distortions. This is a general indicator for shocks, struts, steering and/or suspension components in need of repair or replacement.

CAUTION: If you are intending to treat a tire that you suspect has been run flat, there is a high degree of probability tha it has sustained damage. While Ultraseal can often slow the rate of air loss, it cannot correct damage sustained to the tire's belts, cords and structure.

Ultraseal Tire Life Extender/sealer®

TECHNICAL SERVICE BULLETIN

TUBE-TYPE TIRES

Tubes can be found in almost every conceivable application, from personal mobility equipment, such as wheelchairs, bicycles and motorcycles, to giant mining machines. Tubes present particular and unique challenges not present in tubeless tires. Tubes tend to squirm inside a tire as the tire rotates, and the constant flexing caused by the roughness of the road surface will increase the chances of tube failure. As speed increases so does the squirming of the tube. This condition is magnified if the tube is underinflated. To minimize this, inflate the tire to the maximum recommended air pressure indicated on the tire's sidewall.

Installing Ultraseal Tire Life Extender/sealer in a tube will provide substantial puncture protection and enhanced air retention. Because Ultraseal is not coming in direct contact with the tire, it cannot enhance the casing or protect the internal structure of the tire.

When a tire sustains a puncture, the puncturing object penetrates the tire and tube and Ultraseal will seal around the puncturing object, holding the air within the tube. If the object rips the tube, or rocks as the tire rotates, Ultraseal can only slow the air loss. This is often the case when the object is of an irregular shape or the wound is too large.

At earliest opportunity, remove the puncturing object, then rotate the tire or drive the vehicle allowing Ultraseal to reenter the wound. This is best performed where and air source is available. If a large object has punctured the tire, leave it undisturbed and take the vehicle in for tire repair or replacement as required.

It is recommended that a tire inspection program be initiated for vehicles with tube tires travelling over public roads (over 35 mph).

Whenever possible, use radial tubes. Radial tubes are thicker, more durable and provide for better Ultraseal compatibility and performance.

Ultraseal is somewhat less effective in tube-type tires as compared to tubeless applications.

Ultraseal Tire Life Extender/sealer®

TECHNICAL SERVICE BULLETIN

MOUNTING SOLUTIONS

COMPATIBILITY WITH ULTRASEAL

The majority of mounting solutions are soap-based compounds, often derived from the combination of various oils, saponified with an alkaline material, usually sodium or potassium hydroxide and sometimes a lithium soap (possibly a stearate) mixed with carbon to further enhance lubricity.
Independent testing has established that the vast majority of chemicals used in mounting solutions are compatible with Ultraseal. Ultraseal's formulation can absorb a small amount of this material without degradation of performance. The amount of solution that is required to adequately lubricate a tire bead will not affect Ultraseal's balanced formulation.

POSSIBLE INTERACTIONS

When using a tire mounting solution with Ultraseal please note:

a) Some mounting solutions are in a concentrated form which must be mixed with water. If an excessive amount of water is used, it can promote rust and corrosion on the rim. Always follow manufacturer's recommendations.

b) Using an excessive amount of solution in the tire will degrade Ultraseal's balanced formula. This can also adversely affect tire balance.

c) Avoid using extreme amounts of mounting solution as it can migrate to the tread area where it can contaminate the Ultraseal. This can severely diminish Ultraseal's sealing capabilities. Additionally, it may form a wet and slippery film that can seep through pores or puncture sites and eventually into the belt package where it can cause corrosion and possible separations.

Note: Mounting solutions are a major source of moisture and sometimes contain incompatible substances. Whenever possible choose pre-mixed products. This helps avoid issues arising from poor quality water and improper mixing. Some water based products do not contain rust inhibitors. Insist on one that contains rust and corrosion inhibitors.

Ultraseal Tire Life Extender/sealer®

TECHNICAL SERVICE BULLETIN

OUT-OF-ROUND CONDITION

CHECKING FOR AN OUT-OF-ROUND CONDTION

To check for an out-of-round condition, secure a pointer tool so that it will be perfectly steady. Bring the tool to the object (tire or wheel) to be checked. As it touches the object, back off a slight amount. This will provide a uniform distance between the tool and the closest portion of the object being tested. If the distance between the two opens and closes visually, this indicates an out-of-round condition. The more the distance opens and closes, the more out of round the object is.

POINTER TOOL

You may utilize any object as a pointer tool. It is not necessary to use a sharp object. A sharp point may actually hinder visual inspection of the distance between the tool and the portion of the tire being checked.

Always spin the tire on a high speed spin balancer.

TIRE

The out-of-round condition is usually more pronounced in the tread area. Using the pointing tool as described above, check the outer edge of the tread, then the center of the tread and finally the inner edge of the tread.

WHEEL

A wheel can be bent or out of round and may cause one kind of problem or aggravate another kind of problem. Using the pointer tool as described above, check the wheel both on the front edge for in and out movement and again on the edge closest to the tire for up and down movement.

Ultraseal Tire Life Extender/sealer®

TECHNICAL SERVICE BULLETIN

AVOIDING VALVE CORE PROBLEMS

CLEARING VALVE AFTER ULTRASEAL INSTALLATION

After installing Ultraseal, blow a small amount of air through the valve to clear any remaining Ultraseal residue. This is the time to set correct air pressure according to manufacturer's specifications.

CHECKING AIR PRESSURE

If checking air pressure where an air source is available, momentarily connect air hose to allow a small blast of air to clear any sealant that may have traveled into the valve. Connect your gauge as normal to take reading. Reset air pressure if required.

If checking air pressure away from an air source, use a sharp object to momentarily depress the valve pin causing a small amount of air to be released, clearing any sealant from the valve. Connect your gauge as normal to take reading. Reset air pressure if required.

Following these procedures will avoid the possibility of clogging or impeding the proper function of your guage. If a valve core show signs of clogging, simply remove, inspect for damage and rinse in clean water. Reinstall and reset correct air pressure.

NOTE!
Occasionally, a valve core is clogged prior to performing an air pressure check or installing Ultraseal. This is often due to a missing valve cap allowing debris to become logded in the valve. Remove and clean or replace as required.

Ultraseal Tire Life Extender/sealer®

TECHNICAL SERVICE BULLETIN

OUT-OF-BALANCE SITUATION

REMEMBER! Always balance tires and check for out-of-round wheels and tires prior to installing Ultraseal Tire Life Extender

Tire balance is most critical in high speed passenger vehicles and light trucks. Small front wheel drive passenger vehicles and light trucks are known to transmit more road, wheel and tire vibrations into the passenger compartment.

A vehicle with good wheels and tires, when balanced should take an average of three quarters to one and one half ounces of weight per tire. The need for an excesive amount of weight indicates a problem. Perform any corrective proceedures prior to installing Ultraseal Tire Life Extender. In this case, Ultraseal cannot correct the problem and, in fact, may amplify and increase vibration.

Always visually inspect the tire for even and consistent tread as this is a common source of vibration. A simple method is to run the flat of your hand over the top of the tire tread (from front to back). If you feel an excessive amount of uneveness (saw tooth), then this tire is susceptible to vibration. This condition is often due to worn shocks and suspension causing the wheels to be out of alignment.

Older tires that appear weather checked can absorb a little more Ultraseal than the average tire. In rare cases, slightly more Ultraseal should be installed (no more than 10%). It is not uncommon to experience a slight vibration between 65 and 70 mph during the first five miles driven after Ultraseal installation. This is normal and will subside within a few miles.

Ultraseal's proprietary component "Thixogel" allows it to cling to the inner surface of a tire. Ultraseal resists adverse forces that attempt to pull it away and exaggerate any small vibration. Always balance tires PRIOR to installing Ultraseal.

Ultraseal Tire Life Extender/sealer ®

TECHNICAL SERVICE BULLETIN

VIBRATIONS

What to look for when vibration is a problem!

Installing the recommended amount of Ultraseal will not create a vibration or balance problem. Pre-existing balance or vibration problems should be corrected prior to the installation of Ultraseal, as they may be amplified.

Excessive wheel vibrations can pull Ultraseal off the inner tread surface and may actually increase the intensity of the vibration.

It is important to recognize that not all vehicle vibrations are related to tire balance. Many originate from other sources such as steering, suspension, shock absorbers and tire irregularities. Below are some causes for…

Excessive Vibration (Up-down movement)

Check for the following:
- Out-of-round tire or rim
- Excessive flat spots on tires
- Worn-out shock absorbers
- Shifted belts
- Tread separation

Excessive Lateral Movement (Side-to-side wobble)

Check for the following:
- Loose or worn out front-end components
- Improperly adjusted/loose or damaged wheel bearings
- Shifted belts
- Bent wheels/rims and axles

Ultraseal Tire Life Extender/sealer®

TECHNICAL SERVICE BULLETIN

RUST AND CORROSION

Rust and corrosion form when there is moisture present in the air within a tire/wheel. As the vehicle is driven, the tire gets hot and the moisture will vaporize. Some will migrate through the pores of the tire, while the majority will condense onto the wheel possibly forming rust and corrosion. This repeated vaporizing and condensation action will eventually concentrate on the wheel. Most people do not realize that moisture migrating through the tire will cause the steel belts to rust.

It is very important to drain water from all air sources (compressors and lines) as a daily routine procedure. These are the main sources of moisture in a tire. If possible, an air dryer should be attached to all air hoses. Make sure the tire is dry and free of debris prior to mounting.

Mounting solutions are a major source of moisture and often contain incompatible substances. Whenever possible choose pre-mixed mounting solutions. This helps avoid issues arising from poor quality water and improper mixing. Some water based products do not contain rust inhibitors. Insist on one that contains rust and corrosion inhibitors.

One of the most important attributes of Ultraseal Tire Life Extender is that it contains a highly effective and proven rust inhibiting formula to protect all types of alloys and steel found in wheels and steel belts. Ultraseal has the ability to prevent the formation of rust and will inhibit any existing rust and corrosion. Ultraseal protection begins on the inside and protects throughout. Additionally, Ultraseal prevents outside contaminants from entering a tire through a puncture site due to the sucking effect caused by tire flexing.

Note: Even a small amount of water in a tire can dilute and reduce the effictiveness of Ultraseal.

Ultraseal Tire Life Extender/sealer®

TECHNICAL SERVICE BULLETIN

AVOIDING POTENTIAL TREAD SEPARATIONS & ZIPPER RUPTURES

A Zipper rupture is a circumferential rupture in the mid-sidewall of a steel-corded radial truck tire. These are particularly dangerous as they are unpredictable and often occur with little or no warning to alert the driver or tire service provider. They are frequently accompanied by a deafening blast with the explosive force of a pound of dynamite leaving a 10" to 36" zipper rupture in the sidewall. If this occurs while the tire and wheel are removed from the vehicle, but not yet in a cage, it can be life threatening. Fortunately, it's avoidable.

How They Occur

Steel-belted radial truck tires utilize steel cord sidewall plies to maintain the strength and integrity of the tire structure. They support the chamber, containing the air that carries the load. A puncture, leaking valve or any source of air migration (slow leaks) can lead to substantial, though not always apparent air loss. Tires that are under-inflated or overloaded will experience increased flexing and heat buildup. This produces severe bending of the steel cords. Consider that a truck tire rotates hundreds of times per mile and thousands of times per hour under a heavy load. According to ITRA (International Tire and Rubber Assoc.), now TIA (Tire Industry Assoc.), any tire known to have run at less than 80% of recommended air pressure could possibly have permanent steel cord fatigue. Quite often a pressure check reveals that one or more tires are substantially below this 80% threshold and could legally be considered to have run flat. This is the major cause of tread separations and zipper ruptures.

New Tires

The ARA (American Retreader's Association), also now TIA (Tire Industry Association), claims there are as many tread separations in new tires as in retreads. This is again attributable to air loss and air migration beneath the tread. The incidence of manufacturing defects in new and retread tires having been found to be the cause is generally low.

Retread Tires

The repair, preparation and inspection of used casings are critical to the performance and longevity of the finished product. The smallest amount of air or improper adhesion between the cap and casing will expand as heat increases from deflection and road surface friction and can lead to delamination, tread separation and blowouts.

Prevention

The number one cause of tread separation is porosity and air migration. Ultraseal Tirelife Extender/sealer provides a uniform fluid/fiber coating that prevents air migration by sealing porosity and punctures as they occur. Additionally, Ultraseal draws heat from the tread and transfers it to the wheel and sidewall where it is more efficiently radiated to the outside air. Heat and centrifugal force developed within the rotating tire will not pull Ultraseal from the area beneath the tread or degrade its composition. This is a proprietary process, unique to this product. For maximum benefit, install Ultraseal Tire Life Extender/sealer into new or newly re-treaded tires prior to placing them into service.

Ultraseal Tire Life Extender/sealer ®

TECHNICAL SERVICE BULLETIN

QUALITY CONTROL

BATCH QUALITY CONTROL

Each master batch of Ultraseal is tested for quality, performance and reliability prior to being shipped from our manufacturing facility. A sample is analyzed for quality and consistency and undergoes 5,000 miles of factory dynomometer testing to ensure that the batch meets Ultraseal's stringent requirements for:

1) Extending air pressure retention within a tire and casing (must retain air pressure to within one p.s.i. of initial factory recommended setting).

2) Puncture sealing. Seal punctures up to 1/4" in diameter and up to 1/2" diameter with Extra Heavy Duty (XHD -- OTR applications only) formula. (Performed on dynomometer under simulated vehicle load with alternating periods of high speed rotation and rest).

3) Coating. Tire interior coating consistency within the tread area checked at 1,250 mile intervals, 5,000 miles total.

4) Chemical formulation. Test for consistency and stability.

Dynomometer/test wheel conforms to U.S. Government specifications. All master batch samples retained for five years.

MANUFACTURING FACILITY

Ultraseal International owns and operates its manufacturing facility and only produces a complete range of tire sealing and cooling products, thus eliminating the possibility of contamination.

Ultraseal Tire Life Extender/sealer®

TECHNICAL SERVICE BULLETIN

PUNCTURE DOES NOT SEAL

WHEN A PUNCTURE DOES NOT SEAL PROPERLY, CHECK FOR THE FOLLOWING:

a) Improper tube size for tire.

b) Lack of Ultraseal product in the tire.

c) Puncturing object has been in tire for over a month.

d) Puncturing object or puncture itself is larger than 1/4" (6.5mm) diameter.

e) Rips, tears or cord damage inside tire.

f) Shifted belts.

g) Sidewall puncture.

h) Stretched rubber, sometimes found in over-inflated tires.

i) Tread separation (inside tire).

j) Valve leaks.