

GREENSCARE™ BIODEGRADABLE HYDRAULIC FLUIDS

GREENSCARE™

GREENSCARE™ PLUS NEW



JACOBSEN®
A Textron Company

When Performance Matters.™

THE JACOBSEN DIFFERENCE

ABOUT GREENSCARE™ PRODUCTS

Jacobsen® leads the effort among turf maintenance equipment manufacturers in designing and producing more innovative, efficient equipment and products to meet increasing environmental demands.

GreensCare products are biodegradable hydraulic fluids designed for and used exclusively by Jacobsen, a Textron Inc. company. They outperform standard petroleum-based hydraulic fluids and eliminate the risk of long-term turf problems and environmental contamination that have long been associated with standard hydraulic fluids.

- **Improves equipment performance and saves money**
- **In case of a leak, it breaks down and allows for turf regeneration**
- **Non-hazardous – Environmentally safe**



THE JACOBSEN® GREENSCARE™ FAMILY

GREENSCARE™ – Original

- Developed in 1997; factory-filled since 2002
- Non-toxic, completely renewable, American grown seed oil-based product
- Available in 5-gallon pails and 55-gallon drums. 32 grade available in 5-gallon pails only
- Rated for 250 hours – Greens Mowers
- Rated for 500 hours – Fairway Mowers, Trucksters
- Available for almost all Jacobsen products



NEW GREENSCARE™ PLUS – High Performance

This product was developed to function the same as our current GreensCare oil when it comes to performance and biodegradability but extends the life even further.

- High performance, biodegradable, non-hazardous hydraulic fluid
- Fully synthetic oil
- Can directly replace petroleum oil based fluids with enhanced wear protection, cleanliness and longer life
- Available in 5-gallon pails
- Up to 3x the life of current GreensCare and petroleum-based oils
- Rated for 750 hours- this is 3x the life improvement in Greens Mowers and 50% improvement for Fairway mowers and other units.
- Its longer life means less downtime for maintenance and service costs
- Available for almost all Jacobsen products



NEW

Though specifically designed for optimal performance in Jacobsen equipment, GreensCare products excel as a biodegradable oil of choice in virtually all turf hydraulic applications.

WHY CHOOSE GREENSCARE™ PRODUCTS?

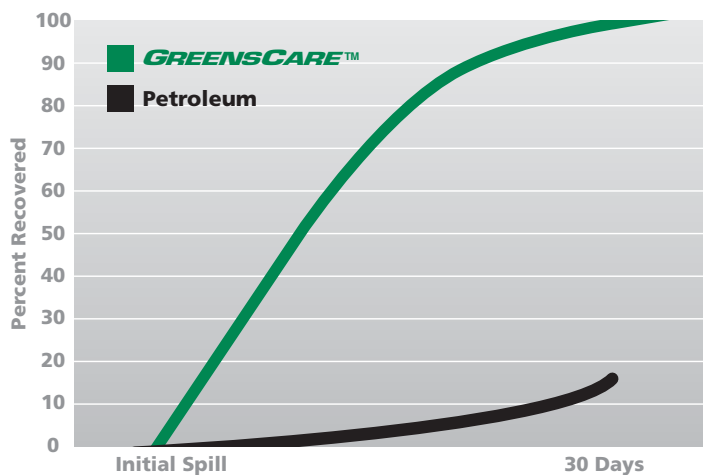
Better For Your Turf

When standard hydraulic fluid leaks or spills onto turf, it burns individual blades of grass on impact, soaks into soil and root systems, and causes lasting problems because it doesn't break down in the soil. While any hot liquid, even filtered water, will initially wilt grass upon impact, standard hydraulic fluids stay in the soil and linger in the environment – killing turf, inhibiting new growth and posing dangers to other plants and animals as well.

GreensCare has none of the negative implications associated with the leaks and spills of petroleum-based hydraulic products:

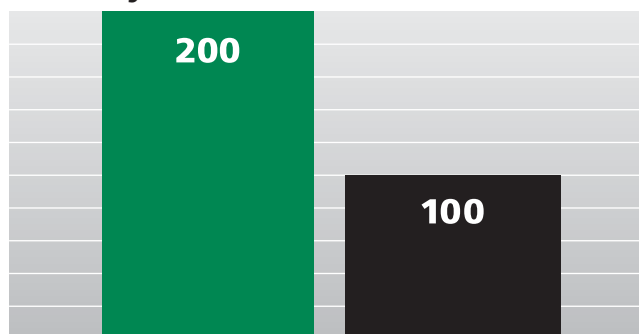
- When used in the same equipment under normal operation, GreensCare doesn't get as hot as standard products. Because of its lower operating temperature, initial heat-related contact problems with turf are kept to a minimum in the event of a seal failure or a broken hose.
- If a leak or a spill does occur, GreensCare rapidly breaks down into safe, natural components after the affected area is simply flushed with water. In a matter of days, GreensCare will disappear, allowing turf to fully recover without any effects on future growth.

GreensCare Turf Recovery*



*Actual results may differ based on environmental factors and other remediation variables.

Viscosity Index



Viscosity Index - the higher the number the more stability it provides for hydraulic systems of a broader operating temperature range.

Better For Your Equipment

GreensCare was engineered and formulated for better equipment performance in addition to its turf protection qualities. Because of its unique, natural, oil-based formulation, GreensCare offers:

- Improved oxidative stability- GreensCare causes less stress and fewer heat-related problems than other standard fluids because it is a more efficient lubricant.
- A higher kinematic viscosity- GreensCare is thicker than most hydraulic fluids which allows GreensCare to provide more stability for hydraulic systems over a broader temperature range during equipment operation.

As a result of better lubricity and higher viscosity, hydraulic systems using GreensCare experience a reduction in wear and scarring on moving parts, helping individual components and overall systems to last longer than those using standard, petroleum-based products.

GreensCare is formulated to be compatible with other standard hydraulic oils (10W-30 and ATFs) and will not deteriorate seals, create rust or cause any other damage to equipment as other synthetic products (PAGs) or standard fluids might, again helping hydraulic systems to last longer and perform better.



GREENSCARE™ PLUS TESTING

Better For Your Bottom Line

When it comes to golf course maintenance, hydraulic leaks and spills are inevitable. Depending on the severity of the incident, a hydraulic leak can leave minimal spot damage, or could cost several thousands of dollars in repair costs depending on how much turf is ultimately affected.

- GreensCare significantly reduces the damage done to turf when these events occur and saves courses, superintendents and maintenance managers both the time and the money required for a cleanup.
- Once a spill is flushed with water, GreensCare safely breaks down and is gone after a few short days of environmental exposure - allowing grass and turf to grow without the hassle and cost of replacing and reseeding areas tainted with oil contamination.

In addition to safer and smarter turf protection, GreensCare also offers better performance in hydraulic equipment when compared to standard hydraulic fluids. Because GreensCare is gentler on your equipment than petroleum-based products parts and components will last longer thus decreasing overall maintenance costs

WHAT TURF PROFESSIONALS ARE SAYING ABOUT GREENSCARE PLUS

"We have been using GreensCare biodegradable fluids in our GK IVs ever since Jacobsen introduced them," maintenance superintendent Terry Shrofe says. "I believe in sticking with OEM products, and we've had a good experience with these fluids. I like the fact that we've been able to extend the change intervals. If we have a leak or spill the turf heals more quickly than with traditional products, and that's a big plus for us. Environmental considerations are very important to us, too, and GreensCare fluids play a significant role in our commitment."

**Terry Shrofe, maintenance superintendent
Bella Vista Country Club, Bella Vista, AR**

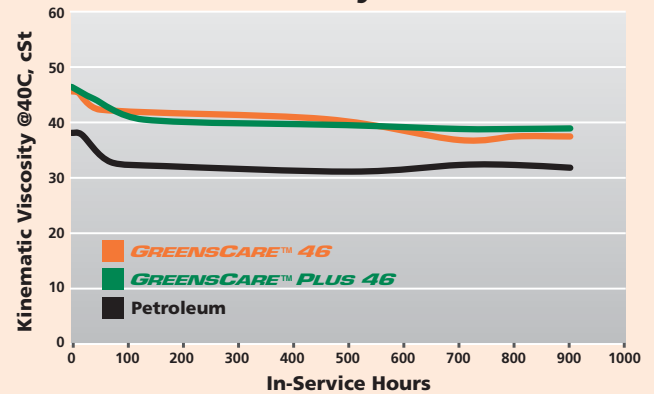
"We're a relatively new golf course and are very environmentally conscious," maintenance manager Michael Verguldi says. "We use Jacobsen's GreensCare biodegradable hydraulic fluids for that reason, and because turf damage is reduced if we have a leak or spill. With the new GreensCare Plus synthetic hydraulic fluids, we only had one leak in two years and it did not streak. With traditional transmission fluids we'd have to take out the soil if we blew a hose."

**Michael Verguldi, maintenance manager
Rivercrest Golf Club, Phoenixville, PA**

GreensCare fluids have other benefits too. Verguldi says that while the Jacobsen fluids are more expensive, he is willing to pay more for a quality product that allows him to increase the number of hours between change intervals. Rivercrest uses the new GreensCare fluids in LF-3400s and GK IVs.

GreensCare has been rigorously tested over a year in various conditions and climates. The purpose was to test our current GreensCare against standard petroleum oils. We also tested our new synthetic biodegradable oil, GreensCare Plus. Below are three of the most critical points for changing oil.

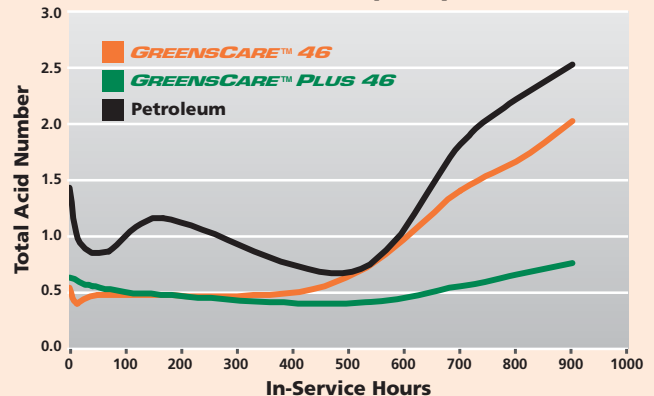
Kinematic Viscosity



What does Kinematic Viscosity show?

This test indicates the oil's ability to maintain its original viscosity over time. Not only does the competitive petroleum fluid not maintain the viscosity over time but it doesn't start off at the specified viscosity of 46.

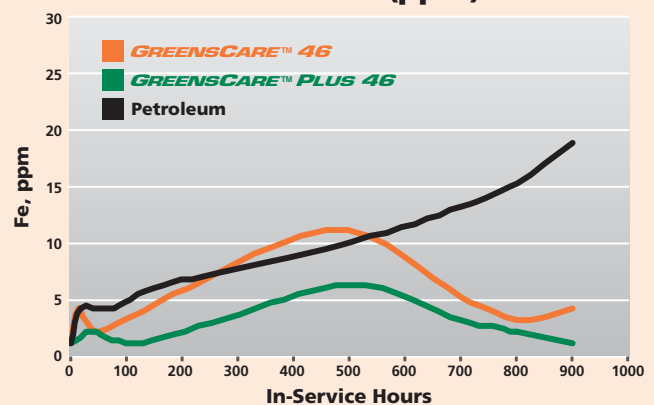
Total Acid Number (TAN)



What does TAN show?

A recommended change is at 2.0 at which the oil will start to break down. Petroleum reached this point at 750 hours, GreensCare reached it at 900 hours and GreensCare Plus is not even close at the 900 hour mark.

Iron Contamination (ppm)



What does Iron Contamination show?

Increasing levels of iron in the oil analysis indicates an increase in pump wear for the Petroleum versus GreensCare or GreensCare Plus.

FREQUENTLY ASKED QUESTIONS

General

What is the real benefit of GreensCare biodegradable hydraulic fluids?

We all realize that no matter how careful we are, hydraulic fluid leaks are a fact of life. GreensCare is designed to break down in the environment and protect your turf from long-term damage.

How does it protect the turf?

GreensCare will break down into safe natural components within a few weeks depending on conditions. This biodegradation prevents the oil from smothering the turf and allows the turf to regenerate after spills.

What is the main difference between GreensCare and GreensCare Plus?

GreensCare (original) is a vegetable-based hydraulic fluid while GreensCare Plus is a fully-synthetic oil. Both have the same characteristics in terms of biodegradability but GreensCare Plus provides a much longer life than GreensCare.

Jacobsen GreensCare oils are non-toxic.

What does this mean?

This means that Jacobsen GreensCare biodegradable hydraulic fluid will not kill fish or animals even at very high doses. Although it is non-toxic, the product is not approved for food use and must not be used either in direct or indirect contact with food.

Do I still have to change my filter?

When do I change my filters?

Filters should be changed per the Recommended Maintenance Schedules in your Operator's manual depending in the specific machine you have. Filters should also be changed when retrofitting a unit from petroleum oils to GreensCare / GreensCare Plus.

Jacobsen recommends storing GreensCare at temperatures above freezing. Does this mean that heated trucks and heated storage facilities are required?

No. The recommendation to store the material above freezing is a precautionary measure because the oil may

appear cloudy after exposure to low temperatures for extended periods of time. The cloudiness will disappear when the oil is warmed to at least 50° F and agitated. For best overall results, store this oil above freezing.

Compatibility

What happens to the equipment if GreensCare oils are accidentally mixed with standard hydraulic fluids, or if all of the standard fluid is not completely drained before adding GreensCare?

GreensCare is compatible with petroleum-based products and mixing the two will not significantly affect performance. However, petroleum-based products are not biodegradable, so the standard oil could damage your turf or the environment in the case of a leak or spill.

I have heard about other "non-burn" biodegradable fluids called PAGs. Can I use those safely in my equipment?

No. GreensCare is the only biodegradable fluid approved for Jacobsen equipment. Others, like certain PAGs, will deteriorate seals, create rust and will not protect turf as well as GreensCare.

If others can damage seals and other materials, how do I know GreensCare is safe to use?

GreensCare is approved by Jacobsen because it was developed and tested thoroughly to ensure its compatibility with the products from other Jacobsen suppliers. It is safe and has proven to be compatible with all seal and elastomer materials found on Jacobsen equipment as well as all other major manufacturers' hydraulic equipment.

Disposal

Since GreensCare is biodegradable, does this mean that we can dispose of new or used oil by pouring it down the drain?

No. Even though GreensCare is biodegradable and



These Jacobsen models use GreensCare and GreensCare Plus biodegradable hydraulic fluids.



HANDLING OF GREENSCARE™ AND GREENSCARE™ PLUS FLUIDS

Change Out

- Normal maintenance practice:
 - GreensCare: once a season – 250/500 hours (depending on product)
 - GreensCare Plus: every two seasons / 750 hours

NOTE: These products darken much faster than mineral oils with no effect on performance.

Flush

- Flush with GreensCare Bioflush is preferred but not necessary. GreensCare Products are compatible with petroleum oil.

NOTE: Biodegradability and turf protection will be reduced by amount of mineral oil remaining. Any contaminants will be carried over.

Disposal

- Although biodegradable, it must not be discarded indiscriminately into the environment. It should be handled as an oil. Inform the used oil collector.

Do not:

- Pour onto the ground.
- Pour into the water system.
- Pour down the drain.

Can:

- Recycle
- Approved waste disposal system
- Burn
- Sewage treatment

NOTE: If you are not sure of the proper way to dispose of your GreensCare oil, check with your local authorities.

Breakdown

- Will not biodegrade in equipment. Needs microbes and water.

Storage

- Shelf life: Two years
- Keep above freezing.
- Keep dry. A small amount of water will not affect the performance but it may promote additive deterioration.

Usage

- From: -25° F - 260° F (-30° C - 130° C)

better for the turf and the environment than standard hydraulic products, it should be disposed of in the manner recommended for conventional petroleum-based oils.

How do I dispose of GreensCare Plus?

GreensCare Plus would be handled the same as used GreensCare or standard petroleum oil and disposed of according to local oil disposal regulations.

Do I have to segregate used mineral (petroleum) oils from these vegetable-based and Synthetic oils for disposal or recycling?

Yes, if Jacobsen GreensCare is going to be recycled and reused as biodegradable and non-toxic fluid, it should be segregated. Jacobsen GreensCare is completely miscible with mineral oil and can be disposed of in the same manner as conventional mineral oils.

Spillage / Clean-Up

Spillage – is there any difference in the turf-regeneration on GC Plus. Is there at different oil stages?

GreensCare Plus matches GreensCare in regards to turf regeneration effect.

Are the clean-up procedures the same for GreensCare and GreensCare Plus?

Yes, they are the same for both oils.

Isn't it the heat that kills the grass?

Anything hot will wilt the grass, even water. The major turf damage occurs when petroleum covers the blade and prevents air respiration. Petroleum oil sterilizes the soil and prevents turf regeneration and extends damage. Biodegradable fluids will break down quickly upon entry in the turf, protecting it and allowing for rapid regeneration.



What should I do if I have a leak or spill?

Since heat is the primary enemy of the turf, it is recommended to flush with cool water as soon as possible. Continue flushing to disperse the heat and oil. Petroleum spills should not be flushed.



Product Selection Guide - GreensCare / GreensCare Plus

GreensCare is available in 5 gallon pails and 55 gallon drums and ISO Grades 32, 46 and 68 depending on the application. Also, if you are currently using Petroleum oil in your equipment, you can easily convert to GreensCare using the BioFlush oil.

	ISO Viscosity Grade Part No.	5 Gallon Pail Part No.	55 Gallon Drum Part No.	For Use With The Following Equipment
GreensCare 32	32	4115977	N/A	GK V, GK VI
GreensCare 46	46	5003104	5003105	GK IV, GK V, G-Plex III, AR-250, AR-2500, AR-3, TR-3
 GreensCare 46 PLUS		4219840	N/A	
GreensCare 68	68	5003103	5003102	G-Plex III, SLF-1880, LF-3400, LF-3407, LF-3800, LF-3810 (2 Wheel Drive), LF-4675, LF-4677, Tri-King 1800, Tri-King 1900, AR-5, AR-522, GA-24, GA-30, Groom Master II, TurfCat 600 series, Turf-Truckster
 GreensCare 68 PLUS		4219860	N/A	
GreensCare Bio-Flush	46	4114701	N/A	Flushing Oil. Lower cost alternative to retrofitting equipment containing petroleum over to GreensCare 32, 46, and 68. Can be used for any of the equipment listed above

Call **1.888.922.turf** or **www.jacobsen.com** to find out more.



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