

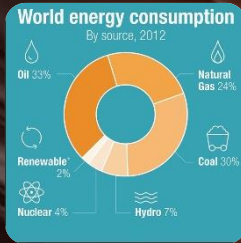


Steel Shield Technologies

Serving the Industry since 1985

ABF Technology Enlightens the World of Lubrication

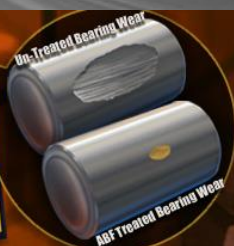
Seeing is Believing !



100% Made In USA



Industrial Application



World's 1st Ionic-Maglev Lubrication Technology

MAKING A DIFFERENCE IN LUBRICATION

*"It is our conviction that to be the best is not sufficient,
we are here to make a new World Standard in Lubrication."*

Company Vision & Commitment



- Steel Shield Technologies sole purpose is to manufacture premier quality metal treatments, additives, greases and lubricant oils that have been tested to exceed the normal parameters of extreme pressure and anti-wear products in the aftermarket, hereby offering matchless performance and unsurpassed protection against wear **while saving maintenance costs, downtime, energy and improving overall functionality of your machineries.**
- Steel Shield, Not Just Oil, It's Technology which makes a difference to the World of Lubrication.
- Steel Shield aims at helping customers to achieve the **highest return on investment (ROI)**. Steel Shield is committed to strengthening business and global commerce through manufacturing and distributing, World-wide, the full line of ABF Technology products made in the USA, Singapore and Hong Kong.

TABLE of Contents

1. The Corporation and Facilities
2. Inventor – Dr. George C Fennell
3. The Birth of Steel Shield Technology
4. About ABF Technology
5. How ABF Works
6. ABF Treats the Metal Not The Oil
7. Major Breakthroughs in Lubrication Technologies
8. Advantages and Targeted Industries
9. Specialty Product Lines
10. Products
11. Steel Shield EPA
12. Rail Equipment Shield
13. Marine Shield
14. Tool Shield
15. Lithi-Shield (NLGI #2)
16. Reel Shield Grease (NLGI #1)
17. Lithi Shield & Reel Shield Grease Compatibility Chart
18. Strike Shield
19. Spray Shield
20. Drill & Tap Shield

Steel Shield – The Only Magnetic Levitated Lubrication Technology in the World



**Steel Shield Industrial
Application Recommendations**

TABLE of Contents

21. STEEL SHIELD Product Compatibility
22. STEEL SHIELD EPA Compatibility
23. Tunnel Boring Machines
24. Grease Applications Of Bearings
25. Southwest Research Institute Report
26. Dyno Test (Engine Output Power Improvement)
27. Global Product Liability Insurance Coverage
28. Major Corporate Clients
29. Super Car Users
30. Compliments from the US Armed Forces
31. Letter from Siemens USA
32. Compliments from Union Pacific Railroad USA
33. Union Pacific Railroad Reports
34. Letter from Volvo China
35. Macau Grand Prix & Events
36. Steel Shield Video Demonstration
37. Contact Us



1. THE CORPORATION & FACILITIES

Steel Shield Technologies Inc. (SST) with its history traced back to 1985 when in USA, Pennsylvania the scientist Dr. George C Fennell in the research and development of high-end specialty lubricants for motor racing and industrial applications invented the unique ABF Formula – a New Technology in lubrications. Since then Dr. Fennell has been quickly earning his fame in the lubricants society and the product has become a must for the combat units of the US Armed Forces. SST is the only lubricant product in the World to guarantee firearms of any kind free from clogging barrels, feeds and magazines.

The Company's blending and manufacturing capabilities are state of the art and the ability to produce limitless volume of product is unsurpassed as well as the product quality. The equipment is all stainless steel including the flow lines, pipes and couplers. All pumps and gauges are digitally interpreted and of the highest quality and accuracy to ensure production of the most superior quality lubricants.

Steel Shield Technologies was incorporated in 2012 in Hong Kong and is the official representative of Steel Shield Technologies (USA) to provide distribution and technical support for the entire Asia-Pacific Rim.



2. INVENTOR SCIENTIST – Dr. George C Fennell



Father of ABF Technology

Doctor of Astronomy and Astrophysics

Accreditation:

SAE (Society of Automotive and Aerospace Engineers) Member

ASNE (American Society of Naval Engineers) Member

NCMA (National Contract Management Association) Member

STLE (Society of Tribologists and Lubricant Engineers) Member



In 1985, Dr. George C Fennell, a former scientist in Astronomy and Astrophysics doing consulting and contract work in advanced lubrication and surface Tribology, formulated a revolutionary metal treatment oil additive which can activate “ABF” (Advanced Boundary Film) through a proprietary and unique “electro-chemical ionization” (ECI) process. He has been known in the industry as the “Father of ABF Lubrication”.

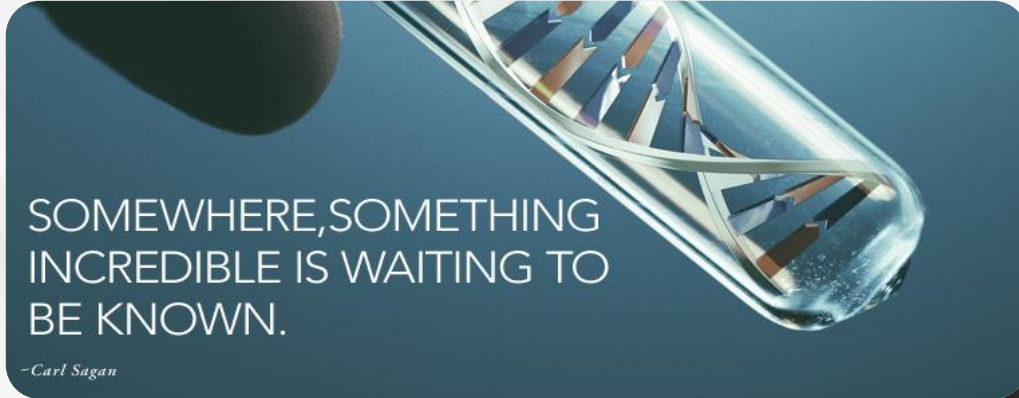
On the basis of ABF technology, a series of specialty lubricants have been developed to meet the stringent requirements of various purposes and working conditions, as to date is still the most advanced formula in lubrication.

Over the years, there have been countless people trying to resemble Dr. Fennell’s unique formula and advanced chemistries, none was found even remotely close. To this date, Dr. Fennell is still the leader in tribology and lubrication.



3. THE BIRTH OF STEEL SHIELD TECHNOLOGY

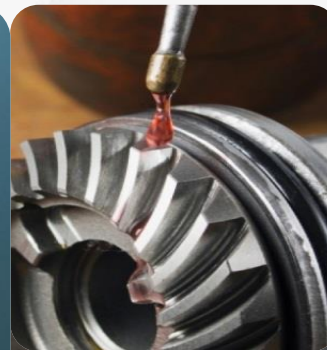
- During World War II, the German Science and Technology Research Institute was commissioned to develop a new lubricant technology in meeting the stringent demand for heavy duty military application such as artillery, armored vehicles, tanks, battleships and fighter-aircrafts to avail them in performing their maximum fighting capacity with minimal maintenance.
- The scientists proposed the concept of Zero friction, i.e. Farady's Law Like-Charge-Repel.
- Shortly after WW II, a great number of intelligent scientists migrated to the United States from Europe. One of them was the grandfather of Dr. George Fennell, who came to USA along with him a large volume of research data and material about Zero friction. The old scientist continued to pursue his scientific research and eventually in 1986 his grandson Dr. George Fennell came with a breakthrough in the technology. Through Electro Chemical Ionization (also known as Reactive Chemical Bonding) Dr. Fennell was able to realize Maglev between two metallic surfaces and to achieve a close to Zero Friction Coefficients.
- The great accomplishment was the result of relentless efforts of 3 generations scientists over half a century. In recognition of the excellent contribution of Fennell's family to the country, the US Government has named the street outside their old factory Fennell Avenue as a compliment.



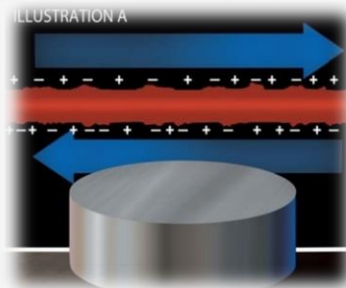
SOMEWHERE, SOMETHING
INCREDIBLE IS WAITING TO
BE KNOWN.

-Carl Sagan

Steel Shield —
Bio-Organic Lubrication Technology



TREATED
ABF Technology
Protects from Wear



4. ABOUT ABF TECHNOLOGY

Steel Shield Technologies' mechanism of operation is based upon Tribology methods that improve lubricity and load carrying capacity by improving surface characteristics and creating a stable chemical, corrosion controlled halide-based boundary film. Steel Shield's active components react with each other and the contacting asperities of the metallic surfaces to provide five mechanisms of improvement.

1. Advanced chemical boundary film formation through reactive chemical bonding.
2. Ring opening, oxirane acid scavenging and advanced corrosion inhibition.
3. Organo-metallic substitution of surface metal and free radical reactionaries.
4. Improved surface smoothness and rolling out of irregular contacting asperities.
5. Re-conditioning and molecular reconstruction of the original contacting metal surfaces.

The process of advanced boundary film formation is accomplished with an advanced combination of halogens that are controlled and rendered non-corrosive to the base metals of the system and pose no threat to the ozone layer or waste oil recovery systems due to their origins and long chain molecular lengths. These halogens initially react under thermal conditions with the organo-metallic reagents to form surface attaching compounds, thereby limiting and controlling the formation of halides from the base metals themselves. These surface attaching reagents or "electro-negative compounds" seek out and affix themselves to the lower surface areas referred to as micro-pores and fissures, as all metals are crystalline in structure and exhibit a lattice type matrix. This complex process also incorporates Van der Waal forces and dipole-dipole surface reactions. During this process, surface lapping and asperity (irregular microscopic contacting and opposing surfaces) roll-out is also achieved, yielding improved spread characteristics of the surfaces themselves. Due to the increase of film strength by the filling of the micro-pores and fissures, along with thermal modification of the asperities, the resulting effect is a gradual rolling out or flattening of the metal asperities rather than a breaking off or chip-away process, which would create metallic debris in the lubricant leading to abrasive wear from wear metal particles. The resulting improvement in the opposing metal surfaces further increases the fluid film strength, which is dependent on the degree of surface roughness and viscosity.

Viscosity, however, is a lesser consideration when incorporating boundary additives or halogenation techniques.

In general, boundary friction and wear consists of two components, a shear or adhesion component and a plowing or deformation component. Considering the following equation:

$$F_s = S \cdot A_r$$

Where F_s is the shear component, which predominates except when asperities sink too deeply into a boundary lubricant film or a soft opposing surface. When movement or sliding occurs, the shear friction force depends on the shear resistance per unit area, S , of any "boundary film" in the real load-supporting area between asperities. Dividing by the load, W gives the shear contribution to the friction coefficient, becoming independent of total load and apparent area of contact:

$$f_s = S \cdot A_r / W = S / P_p \text{ or } S / P_e$$

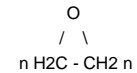
The boundary film shear resistance, S , is assumed equal to the plastic flow shear stress, T_p , of an ideal elastic, plastic solid. Such a solid gives shear stress independent of strain and strain rate at strains sufficiently large enough to cause plastic flow. The conditions that produce the "glass transition" from liquid to plastic-like behavior are dependent on the viscosity of the material at normal temperatures and pressures and the variation of viscosity with temperature and pressure. In other words, glass transition depends strongly on chemical composition.

These results show that liquid lubricants act like plastic solids in the films between asperities. Therefore, $S=T_p$ in the previous equation and the friction coefficient is T_p/P_p or T_p/P_e . Since T_p is a weak function of temperature and pressure, and P_p or P_e are independent of apparent contact load, the frictional coefficient for a given combination of lubricant and sliding surfaces tends to be independent of operating conditions.

Elasto-hydrodynamic lubrication (ELH) on an asperity scale deposits film material between sliding surfaces in "micro-rheodynamic" (micro-RHD) lubrication. As one surface slides, each asperity carries with it an aggregation of SST additive. Sufficient pressure and temperature is developed within the film to elastically deform the asperity and to force the extreme pressure reagent between the surfaces or into the micro-pores and fissures. During this time, high thermal conditions involving pressure and asperity contacts initiate a re-conditioning of the surfaces utilizing the existing oil to quench and cool the surfaces in the same process. A thermal restructuring of these asperity contact areas creates a deviation from the normal crystalline structure of the metal, expanding it into an austenitic crystalline pattern, which is more evenly structured and allows the SST additive to bond to the actual lattice of the metal, endowing it with new and unique properties upon cooling.

Organo-metallic substitution is a technique developed and designed to inhibit the process of halide formation from the base metals of the system under reaction. For example, instead of the halogen reacting with the iron in the system to form iron halides, a boundary surface salt, it reacts with a reagent having very similar properties to the iron atom itself, thereby forming a organo-metallic complex without scavenging the target metal surface itself, and depleting the metal in a chemically corrosive wear syndrome.

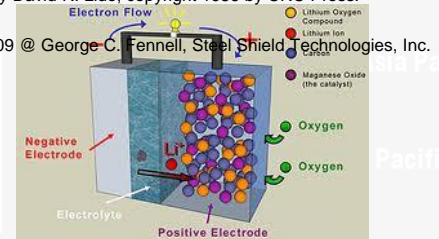
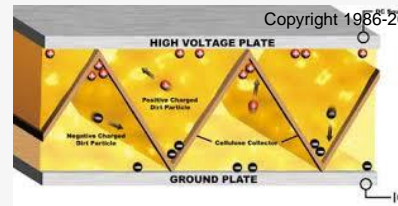
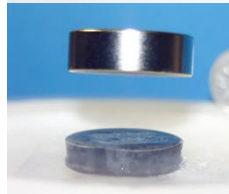
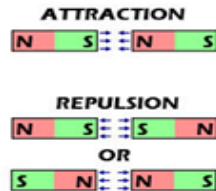
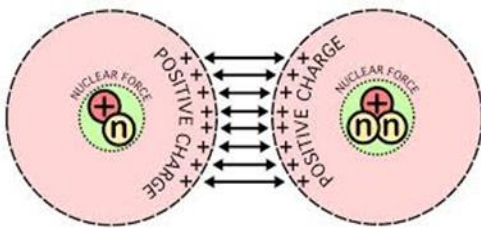
The process is very similar or analogous to the saponification of organo-metallic compounds in the manufacturing of greases. During this reaction or saponification, compounds react at a certain catalytic temperature and exchange characteristic components to form new compounds. These new chemical compounds are then used to aid in a boundary regime by providing an added protection to the actual surfaces being lubricated. Ring opening oxirane acid scavenging and corrosion inhibition is another chemical technique used to neutralize acids and inhibit oxidation and corrosion. This technique involves the use of specifically engineered complex ethylene oxide; oxirane rings, that possess reactive reagents which will cause a cleavage of the ring when encountering acids or strong alkaline. These reactions occur in the presence of both anionic- and cationic-type catalysts. Anionic catalysts can include alkoxide ions, hydroxides, metal oxides, and some organo-metallic derivatives while Lewis acids and protonic reagents initiate cationic reactions.



The lubricity, load carrying capacity, surface improvement, and wear reduction are greatly improved while corrosive aspects of halogenation are virtually eliminated.

References:

1. CRC "Handbook Of Lubrication, Theory And Practice", Volumes 1 & 2, by E. Richard Booser, Ph.D., Society of Tribologists and Lubrication Engineers (STLE), copyright 1992, Eighth Printing.
2. "Organic Chemistry" 4th Edition, by Robert Morrison, Ph.D. and Robert Boyd, Ph.D., copyright 1983 by Allen & Bacon.
3. "Lubrication - A Tribology Handbook", edited by M.J. Neale OBE, BSc(Eng), published by Society of Automotive Engineers (SAE), copyright 1993, Butterworth-Heinemann, Ltd.
4. CRC "Handbook Of Chemistry and Physics", 1986 Edition, by CRC Press, edited by David R. Lide, copyright 1986 by CRC Press.



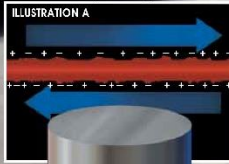
5. HOW ABF WORKS

Steel Shield Technologies Has Redefined Lubrication.

Webster's Dictionary defines lubricants as substances capable of reducing friction, heat and wear when introduced between two solid surfaces. From the initial development and use of lubricants, chemical technology has constantly advanced to make them more effective. From changes in refinement processes to the development of additives, the concentration has always been to increase the ability of the lubricant to reduce the friction, heat and wear. **Steel Shield Technologies** has changed the approach to lubrication and, in essence, given new definition to the term. First, there are a few points to consider.

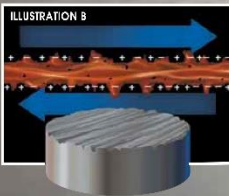
Metal Against Metal

The structure of all metals creates a surface characterized by a series of sharp peaks and valleys, some microscopic and some larger. As two metal surfaces contact each other and move in opposite directions, friction is caused, producing heat and metal deterioration. This friction-causing physical dynamic is heightened by the electromagnetic field created on the surfaces of each metal. The sharp peaks, known as asperities, and valleys, referred to as micro-pores and fissures, have opposite electro-magnetic charges. **Illustration A** shows a new metal with positive-charged asperities and negative-charged micro-pores and fissures. The constant interaction of these opposite-charged features works to weaken the structure of the metal, causing eventual deterioration of the surface of the part.



Normal Lubricants Help

All lubricants help to slow this process to different degrees. **Illustration B** shows the results after a period of time of use of a typical oil lubricant. The constant friction and electro-magnetic interaction has caused the weakened metal to break off or chip away creating metallic debris in the lubricant leading to abrasive wear from wear metal particles. This fact is evidenced in the need to change the engine oil of automobiles frequently as the lubricant "breaks down" due to the heat and metallic debris.

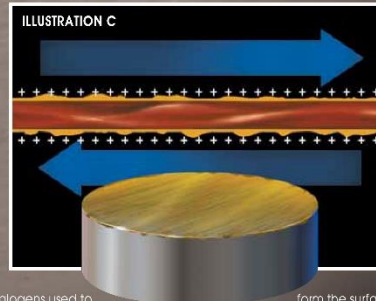


Advanced Boundary Film Technology- There Is No Better Protection Against Wear.

Steel Shield Technologies has redefined lubrication by breaking away from the standard approach to making the lubricant more effective through adjusting the refinement process or through the use of additives. Instead, **Steel Shield Technologies** approaches lubrication by improving the surface characteristics of the metal through the process of **Advanced Boundary Film** formation. This technological breakthrough is accomplished by addressing the naturally formed asperities, micro-pores and fissures and the electro-magnetic charges they create.

Steel Shield products consist of an advanced combination of halogens which react under thermal (heated) conditions to form electro-negative surface attaching compounds. They seek out and affix themselves to the lower surface areas, filling the micro-pores and fissures. As this process is working, the thermal conditions are effecting the asperities. Instead of breaking off because of a weakened metal state, the asperities gradually roll out or flatten. So while the micro-pores and fissures are filling up, the asperities are flattening for an end result of a metal surface that is greatly improved. Created in this process is a total positive state of polarity. When the metal surface polarity becomes uniform in charge, there is a reduction in friction due to the Faraday reaction of like-charges. This electrochemical process continues at the molecular level to form an **Advanced Boundary Film** on the surface of the metal. **Illustration C** shows the end result of the production of the **Advanced Boundary Film** and the resulting uniform positive polarity.

Another aspect of this advanced technology is the organo-metallic substitution which is the chemical process designed to inhibit halide formation. Here, the



halogens used to attaching compounds react with reagents having similar properties to the iron atom. The halogens, therefore, do not scavenge the target metal surface to find iron with which to react, forming halides and creating a chemically corrosive wear syndrome. Instead, an organo-metallic complex is formed as the basis of the **Advanced Boundary Film**.

Industrial Success Comes To The Consumer

Steel Shield Technologies is now bringing this breakthrough technology to the consumer after great success on the industrial level. The level of commitment to the **Steel Shield** product in the railroad industry is an indication of its performance in the most extreme conditions imaginable. This same technology is now available to you.

UNTREATED
Wear On Unprotected Bearing

TREATED
ABF Technology Protects From Wear

See Extreme Condition Lubrication Test At www.steelshieldtech.com

As has been explained, the **Advanced Boundary Film Technology** is a redefining approach to lubrication which provides outstanding benefits to the user.

Practical Elimination Of Metal-To-Metal Wear

Steel Shield Technologies addresses the three areas that cause the weakening and deterioration of the metal surfaces:

- The physical friction of rough surfaces
- The opposite electro-magnetic charges that exist on the metal surface
- The chemical reactions that produce corrosive agents.

Advanced Boundary Film Technology instead strengthens the metal and practically puts an end to metallic debris in the lubricant.

Reduced Operating Temperatures

Friction is reduced so significantly that the operating temperature in treated mechanisms is notably reduced. The end result is a stronger metal that maintains its original specifications and performance level. An example of the reduction of operating temperatures is found in the independent tests that show a drop of an average of 30 Fahrenheit degrees in treated automobile engines.

Increased Effectiveness Of The Lubricant

Whatever lubricant is used as the carrier of the **Steel Shield Technologies** additive, that lubricant is allowed to perform at its maximum efficiency. Lubricant flow will be enhanced with the elimination of rough metal surfaces; the reduction of heat and elimination of metal debris will protect the lubricant from "break down."



6. ABF TREATS THE METAL NOT THE OIL

STEEL SHIELD TECHNOLOGIES

Metal Surfaces

- Surfaces characterized by series of peaks and valleys
- Peaks (known as "asperities") are positive charged
- Valleys (referred to as "micro-pores" and "fissures") are negative charged

ILLUSTRATION A

STEEL SHIELD TECHNOLOGIES

Surfaces Treated With... Advanced Boundary Film

- Forms electro-negative surface attaching compounds to seek out & affix themselves to lower surface areas filling the micro-pores & fissures
- Asperities roll out or flatten creating greatly improved metal surfaces
- Created in this process is a total positive state of polarity
- When metal surfaces become uniform in charge, there is a reduction in friction due to Faraday reaction of like-charges

ILLUSTRATION C

STEEL SHIELD TECHNOLOGIES

Metal Surfaces & Lubricants

- Most lubricants help slow the process of heat & friction to some degree
- When two metal surfaces contact each other & move in opposite directions, friction is caused, producing heat & metal deterioration
- Constant friction & electro-magnetic interaction causes the weakened metal to break off creating metallic debris & particles in the lubricant

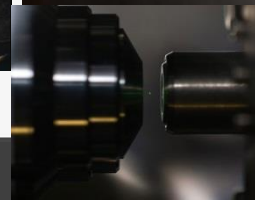
ILLUSTRATION B

STEEL SHIELD TECHNOLOGIES

Advanced Boundary Film

NOT JUST OIL... IT'S TECHNOLOGY

- Advanced methods of tribology that improve lubricity and load carrying capacity
- Reacts chemically under thermal conditions with the contacting metal surfaces to form a complex surface-attaching film of protection
- Surface smoothing is accomplished resulting in improved spread characteristics of the surfaces themselves
- Increases fluid film strength resulting in greatly reduced wear while imparting extreme pressure properties (EP)



7. MAJOR BREAKTHROUGHS IN LUBRICATION TECHNOLOGY

1. Virtual Zero Friction - RCB Ionic levitation

Faraday's Law like-charges Repel & Dipole-Dipole Reaction

2. Dynamic Heat Transfer

Lubricant accumulates at the hot spot automatically

3. Non Corrosive Cleansing

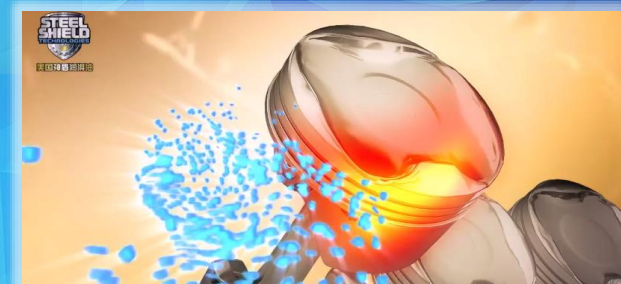
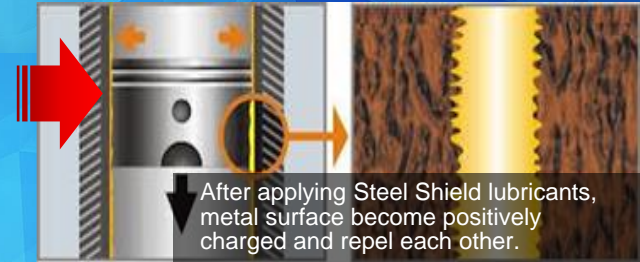
Metal sludge repelled via induction and removed

4. Metal Surface Re-hardening

From Shear Friction to Surface Lapping

5. Eliminate System Dysfunction

Not Just Oil, It's Technology



8. ADVANTAGES & TARGETED INDUSTRIES

CONCEPT

- Van der Waals Forces
- Dipole-Dipole Surface Reactions

- Reduces Friction and Wear
- Provides Smoother Operation
- Improves Lubrication
- Non-Toxic and Helps Build Green Environment
- Improves Machinery Functionality
- Improves Fuel Economy

ADVANTAGES

- Reduces Operating Temperatures
- Protects Moving Metal Parts

- Eliminates Cold Start Problems
- Reduces Maintenance & Downtime
- Extends Component Reliability & Parts Life

TARGETED INDUSTRIES:

- Automotive & Racing, Airlines & Ground Equipment, Rail & Mass Transit, Shipping
- Gas, Oil & Energy Industries, Mining & Drilling
- Lifts, Air Conditioning & Cold Storage Systems
- Industrial, Agriculture, Construction & Naval Engineering

- Military & Law Enforcement units



9. SPECIALTY PRODUCT LINES



www.steelshieldtech.com.hk
www.facebook.com/steelshieldtech



10. PRODUCTS

Marine Shield



Lithi Shield



Rail Shield



Steel Shield EPA



Strike Shield



Spray Shield

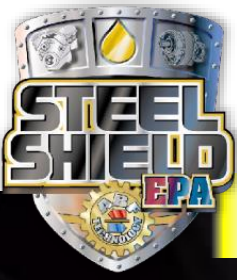


Tool Shield



Drill & Tap Shield





11. STEEL SHIELD - EPA



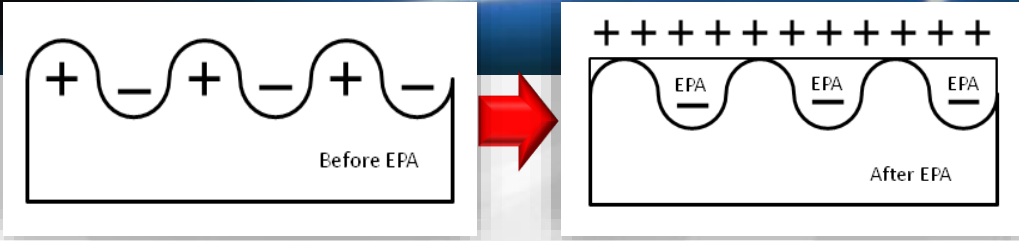
Ionize metal surface

Re-harden metal surfaces & charged with positive ions

Farady's Law Like-Charge repel causing ionic levitation

Eject dirt, metallic debris, etc.

Greatly reduce friction; improve productivity



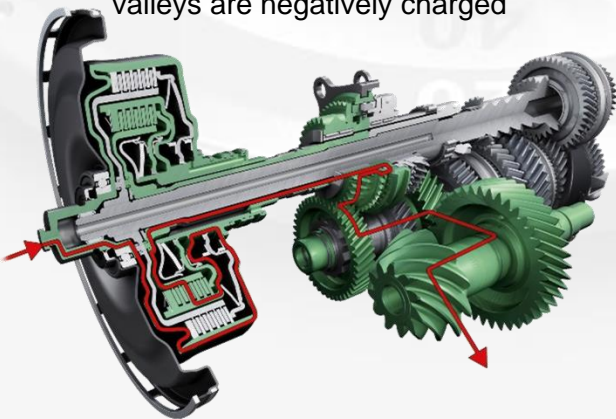
A series of sharp peaks and valleys of metal surface: Peaks are positively charged while the valleys are negatively charged

Applying EPA will effect a change of cation when the metal surface will be positively polarized:

STEEL SHIELD Extreme Pressure Anti-Wear (EPA)TM is made by the latest and the most innovative technology which **does not contain any solid additives**. Utilizing the most Advanced Boundary Film (ABF) Technology, it protects moving metal parts from heat, friction and wear in engines, transmissions, differentials, transfer cases, hydraulic pumps and motors, gear boxes, and other enclosed lubrication systems, due to boundary conditions of frictional abrasion, extreme pressure torque, dry startup and shutdown.

Enhanced performance will greatly reduce maintenance and downtime, and effect significant energy savings through ABF Technology by lowering the operating temperatures, extending the life of component parts and increasing reliability and efficiency.

- ▶ Surface lapping instead of chip-away endowing new hardness to the metal surface
- ▶ Ring opening, oxirane acid scavenging and corrosion inhibition
- ▶ Improved surface smoothness and rolling out of asperities





12. RAIL EQUIPMENT SHIELD

MSDS DATA

- Flash Point: 226°C
- Non-hazardous
- Non-flammable
- Synthetic Hydrocarbons

PHYSICAL DATA

- Boiling Point: 238°C
- Insoluble in water
- Evaporation rate: < 0.01
- Vapor pressure: < 1 @25°C
- Specific gravity: 1.07
- Medium to dark amber

PERFORMANCE DATA

- Reduce Wear
- Improves oil flow
- Increases horsepower
- Reduces maintenance & downtime
- Reduces costly repairs
- Increases parts life
- Smoother operations
- Reduces metal debris in oil
- Reduces operating temperatures
- Reduces chain & roller stretching
- Increased train velocity
- Reduces friction

APPLICATION DIRECTIONS

- Vehicle engines like natural gas, diesels: Add 16:1 Rail Equipment Shield
- Large or old vehicle engines: Add 32:1 Rail Equipment Shield
- Automatic transmission: Add 32:1 Rail Equipment Shield
- Manual transmission, differential system: Add 10 ~ 16:1 Rail Equipment Shield

ITEM NO.

ITEM DESCRIPTIONS

CASE PACK

RES-MT-16	Rail Equipment Shield – 16 Oz (473 ml)	12 / Case
RES-MT-128	Rail Equipment Shield – 1 Gallon (3.785 L)	4 / Case
RES-MT-5G	Rail Equipment Shield – 5 Gallon (18.93 L)	
RES-MT-55G	Rail Equipment Shield – 55 Gallon (208 L)	
RES-MT-300G	Rail Equipment Shield – 300 Gallon (1135 L)	

Rail Shield being transported to operating parts



Reduce friction, lower temperature and prevent oxidation of metal

Reduce operation and maintenance costs; Increase train speed and minimize delays

Achieve highly smooth, durable and reduced noise operations

RAIL EQUIPMENT SHIELD™ is the ultimate protection for the moving metal parts in light rail transit and heavy railroad equipment. Utilizing the most Advanced Boundary Film (ABF) Technology, it protects moving metal parts from heat, friction and wear in engines, transmissions, differentials, transfer cases, hydraulic pumps and motors, gear boxes, and other enclosed lubrication systems, due to boundary conditions of frictional abrasion, extreme pressure torque, dry startup and shutdown. **It lowers operating temperature, reduces coefficient of friction over 90% and prevent metal disintegrates.**

Increased train velocity and on time train performance are the results when costly setouts, maintenance repairs and downtime are reduced. These performance goals are achieved through ABF Technology by lowering the operating temperatures and **extending the life of component parts and reliability.**





13. MARINE SHIELD

MSDS DATA

- Flash Point: 226°C
- Non-flammable
- Non-hazardous
- Synthetic Hydrocarbons

PHYSICAL DATA

- Boiling point: 238°C
- Evaporation rate: < 0.01
- Specific gravity: 1.07
- Insoluble in water
- Vapor pressure: < 1 @25°C
- Medium to dark amber

PERFORMANCE DATA

- Reduced wear
- Increased horsepower
- Reduces costly repairs
- Reduces operating temperature
- Increases fuel savings
- Reduces friction
- Improves oil flow
- Reduces maintenance
- Increased engine and transmission life
- Reduces metal debris in oil
- Smoother shifting

APPLICATION DIRECTIONS

- Turn off the engine. Remove the oil filler and add 16:1 Marine Shield. Use at every oil change for maximum performance.
- Add 32:1 Marine Shield to the transmission system.
- Contains NO volatiles or solvents.
- Contains synthetic hydrocarbons and advanced chemical additive technology. Non-toxic and environmentally friendly.

Greatly increase the metal surface hardness

Reduce friction, lower temperature, prevent oxidation of metal

Reduce operation and maintenance costs; Increase power and save energy

Achieve highly smooth, durable and silence operations



MARINE SHIELD™ is the ultimate protection for the moving metal parts in engines, turbines, compressors, transmission etc on naval & seagoing ships.

Fuel saves due to 70% reduction of frictions and damages in cold starts, high pressure and high torque applications. Maintenance, downtime reduced, increase oil flow and efficiency, extended engine parts longevity and reduced operating temperatures on average by 30 ~ 50°F.

ITEM NO.	ITEM UPC#	ITEM DESCRIPTIONS	CASE PACK	CASE DIMENSIONS (W x H x D)	CASE CUBE	CASE WEIGHT	TI / HI
MS-MT-8	8-94630-00121-2	Marine Shield – 8 oz. (236 mL)	12	8.75"X 8"X 8"	0.33 inch ³	7.5 lb	25 / 7
MS-MT-32	8-94630-00122-9	Marine Shield – 32 oz. (946 mL)	12	9"X 9.5"X 14.375"	0.71 inch ³	28.8 lb	12 / 5
MS-MT-128	8-94630-00123-6	Marine Shield – 1 Gallon (3.785 L)	4	9.5"X 12.5"X 14.5"	0.99 inch ³	33.6 lb	12 / 4





14. TOOL SHIELD

MSDS DATA

- Flash Point: 226°C
- Non-hazardous
- Non-flammable
- Synthetic Hydrocarbons

PHYSICAL DATA

- Boiling point: 238°C
- Insoluble in water
- Evaporation rate: < 0.01
- Vapor pressure: < 1 @25°C
- Specific gravity: 1.07
- Medium to dark amber

RECOMMENDED USES

- Rotary-type air tools
- Air cutting tools
- Piston-types air tools
- Air grinders
- Impact wrenches
- Air nailers
- Air ratchets
- Air staplers
- Air sanders
- Automatic oilers
- Air drills
- Hand tools

APPLICATION DIRECTIONS

- Use in accordance with tool manufacturers' instructions.
- Tools may need to be lubricated daily, or several times a day, depending on the frequency and prolonged use of the tool.
- Contains NO volatiles or solvents.
- Contains synthetic hydrocarbons and advanced chemical additive technology. Non-toxic and environmentally friendly.

Greatly increase the metal surface hardness

Reduce friction, lower temperature, prevent oxidation of metal

Increase efficiencies of tools;
Reduced maintenance cost

Achieve highly smooth, durable and silence operations



TOOL SHIELD™ is the ultimate protection for the moving metal parts for automotive and industrial tools. It protects moving metal parts from heat, friction and wear due to boundary conditions of frictional abrasion, extreme pressure torque, air line moisture and internal dirt. **It works in all piston and rotary type air tools, stationary and hand-held power tools and many hand tools.**

Increased power and performance and greatly reduced wear while removing dirt from tool are the results.

ITEM NO.	ITEM UPC#	ITEM DESCRIPTIONS	CASE PACK	CASE DIMENSIONS (W x H x D)	CASE CUBE	CASE WEIGHT	TI / HI
TS-1	8-94630-00141-0	Tool Shield – 1 oz. (29.5 mL)	24	6.875"X 3.875"X 4.625"	0.07 inch ³	2.5 lb	48 / 12
TS-4	8-94630-00143-4	Tool Shield – 4 oz. (118 mL)	12	5.5"X 6.5"X 7.125"	0.16 inch ³	3.8 lb	40 / 8
TS-16	8-94630-00144-1	Tool Shield – 16 oz. (473 mL)	12	10.75 X 10.75 X 8	0.54 inch ³	15 lb	20 / 5
TS-128	8-94630-00145-8	Tool Shield – 1 Gallon (3.785 L)	4	9.25 X 12.5 X 14.5	0.97 inch ³	34 lb	12 / 4
TS-5G	8-94630-00126-7	Tool Shield – 5 Gallon (18.93 L)	1			42 lb	
TS-15G	8-94630-00127-4	Tool Shield – 1 Gallon (56.78 L)	1			125 lb	
TS-55G	8-94630-00128-1	Tool Shield – 1 Gallon (208 L)	1			455 lb	



PRODUCT SPECIFICATIONS

- NLGI Grade: No. 2
- Anti-wear metal treatment: Steel Shield



15. LITHI-SHIELD (NLGI #2)

ASTM TESTS

• D-217	Penetration, Worked, 60s	265 - 295
• D-217	Penetration, Unworked	265 - 295
	Thickener Type	Lithium Complex
• D128	Thickener, %	8 - 11
	Color	Light Amber
	Texture	Smooth
• D-2265	Dropping point	500°F
• D-445	Viscosity @ 40°F, cst	220
• D-445	Viscosity @ 100°F, cst	19
• D-2270	Viscosity Index	95
• D-92	Flash Point, °F	464
• D-92	Fire Point, °F	550
• D-2509	Timken OK load (lbs.)	60
• D-1743	Rust	Pass
• D-4048	Copper Corrosion	1B
• D-2266	4-Ball Wear Test, mm	0.68
• D-2596	4-Ball EP Weld Test, Kg Min.	800 / Pass
• D-5483	Oxidation Induction time @210°C, min	11.47
• D-1264	Water washout @ 79°C	2.7 %
	Mobility at 77°F, g/min	576
• US Steel	Mobility at 60°F, g/min	275.4
Mobility	Mobility at 40°F, g/min	86.6
Test	Mobility at 20°F, g/min	15.3
	Mobility at 0°F, g/min	1.6

RECOMMENDED USED

- All extreme pressure applications
- Universal joints
- Rotating machinery
- Heavy equipment
- Conveyors
- Bearings
- Chassis fittings
- Pumps

Greatly increase the metal surface hardness

Reduce friction, temperature, prevent oxidation of metal

Reduce operation and maintenance costs

Achieve highly smooth, durable and silence operations



LITHI-SHIELD™ is the ultimate in extreme pressure anti-wear lithium complex grease. It exceeds all other lithium complex greases due to the addition of Advanced Boundary Film (ABF) Technology, extreme pressure and antifriction additives added to its formula.

LITHI-SHIELD™ treats, seals and smooths metal surfaces to dramatically reduce friction, and as well as friction related heat and wear, and prevents oxidations. It's unique formulation allows it to exceed the performance of other greases while using smaller quantities.

ITEM NO.	ITEM UPC#	ITEM DESCRIPTIONS	CASE PACK	CASE DIMENSIONS (W x H x D)	CASE CUBE	CASE WEIGHT	TI / HI
LS-T	8-94630-00181-6	Lithi-Shield Lithium Complex Grease – 59.14 mL/Case	24	9.25"X 6.5"X 4.75"	0.16 inch ³	1.9 lb	40 / 8
LS-C	8-94630-00182-3	Lithi-Shield Lithium Complex Grease – 414 mL/Case	40	12"X 10.75"X 19.5"	1.45 inch ³	42 lb	6 / 5
LS-LB	8-94630-00183-0	Lithi-Shield Lithium Complex Grease – 473 mL/Case	12	13.5"X 6.25"X 3.5"	0.17 inch ³	15.2 lb	36 / 8
LS-5LB	8-94630-00184-7	Lithi-Shield Lithium Complex Grease – 2.365 L/Case	4	14.125"X 6.75"X 9.5"	0.53 inch ³	23.4 lb	12 / 8
LS-P	8-94630-00185-4	Lithi-Shield Lithium Complex Grease – 16.5 L/Case	1			38 lb	
LS-K	8-94630-00186-1	Lithi-Shield Lithium Complex Grease – 56.8 L/Case	1			132 lb	
LS-D	8-94630-00187-8	Lithi-Shield Lithium Complex Grease – 189 L/Case	1			437 lb	

PRODUCT SPECIFICATIONS

- NLGI Grade: No. 1
- Anti-wear metal treatment: Steel Shield

ASTM TESTS

• D-217	Penetration, Worked, 60s	310 - 340
• D-217	Penetration, Unworked	310 - 340
	Thickener Type	Lithium Comple
• D128	Thickener, %	6 - 8
	Color	Light Amber
	Texture	Smooth
• D-2265	Dropping point	500°F
• D-445	Viscosity @ 40°F, cst	220
• D-445	Viscosity @ 100°F, cst	19
• D-2270	Viscosity Index	95
• D-92	Flash Point, °F	464
• D-92	Fire Point, °F	550
• D-2509	Timken OK load (lbs.)	60+
• D-1743	Rust	Pass
• D-4048	Copper Corrosion	1B
• D-2266	4-Ball Wear Test, mm	0.7
• D-2596	4-Ball EP Weld Test, Kg Min.	800 / Pass
• D-5483	Oxidation Induction time @180°C,	95
	min	
• D-1264	Water washout @ 79°C	2.7 %
• US	Mobility at 77°F, g/min	
Steel	Mobility at 60°F, g/min	515
Mobility	Mobility at 40°F, g/min	257.1
Test	Mobility at 20°F, g/min	78.9
	Mobility at 0°F, g/min	5.4

RECOMMENDED USED

- Smoother Reel Operation
- Extends Reel Life
- Protects Against Corrosion
- Longer Conventional Casts
- Extends Life Of Fishing Pliers, Tools
- And Equipment



16. Reel Shield Grease (NLGI #1)



Reel Shield™ is the ultimate lubricant, cleaner, penetrant, and saltwater protectant which has been aggressively designed and formulated for the heavy Industry. Reel Shield™ lubricates and protects against extreme pressure and wear in all moving metal-to-metal parts, in all types of reel and drag systems. Reel Shield™ penetrates to the internal moving parts and shields against corrosion in extreme environments better than any other product to date. This distinguishes Reel Shield™ as the ultimate tool in the total care and maintenance of all tough tackle in both on shore and seawater equipments. Reel Shield™ has been especially tested in harsh saltwater conditions and proved to be superior in its performance.

ITEM NO.	ITEM UPC#	ITEM DESCRIPTIONS	CASE PACK	CASE DIMENSIONS (W x H x D)	CASE CUBE	CASE WEIGHT	TI / HI
LS-T		Reel Shield Lithium Complex Grease – 59.14 mL/Case	24	9.25"X 6.5"X 4.75"	0.16 inch ³	1.9 lb	40 / 8
LS-C		Reel Shield Lithium Complex Grease – 414 mL/Case	40	12"X 10.75"X 19.5"	1.45 inch ³	42 lb	6 / 5
LS-LB		Reel Shield Lithium Complex Grease – 473 mL/Case	12	13.5"X 6.25"X 3.5"	0.17 inch ³	15.2 lb	36 / 8
LS-5LB		Reel Shield Lithium Complex Grease – 2.365 L/Case	4	14.125"X 6.75"X 9.5"	0.53 inch ³	23.4 lb	12 / 8
LS-P		Reel Shield Lithium Complex Grease – 16.5 L/Case	1			38 lb	
LS-K		Reel Shield Lithium Complex Grease – 56.8 L/Case	1			132 lb	
LS-D		Reel Shield Lithium Complex Grease – 189 L/Case	1			437 lb	

17. Lithi Shield & Reel Shield Grease Compatibility Chart

	Aluminum Complex	Barium Complex	Calcium Stearate	Calcium 12-Hydroxy	Calcium Complex	Calcium Sulfonate Complex	Clay (Non-Soap)	Lithium Stearate	Lithium 12-Hydroxy	Lithium Complex	Polyurea (Conventional)	Polyurea Shear (Stable)
Aluminum Complex	-	I	I	C	I	B	I	I	I	C	I	C
Barium Complex	I	-	I	C	I	C	I	I	I	I	I	B
Calcium Stearate	I	I	-	C	I	C	C	C	B	C	I	C
Calcium 12-Hydroxy	C	C	C	-	B	B	C	C	C	C	I	C
Calcium Complex	I	I	I	B	-	I	I	I	I	C	C	C
Calcium Sulfonate Complex	B	C	C	B	I	-	I	B	B	C	I	C
Clay (Non-Soap)	I	I	C	C	I	I	-	I	I	I	I	B
Lithium Stearate	I	I	C	C	I	B	I	-	C	C	I	C
Lithium 12-Hydroxy	I	I	B	C	I	B	I	C	-	C	I	C
Lithium Complex	C	I	C	C	C	C	I	C	C	-	I	C
Polyurea (Conventional)	I	I	I	I	C	I	I	I	I	I	-	C
Polyurea (Shear Stable)	C	B	C	C	C	C	B	C	C	C	C	-

Relative Compatibility Rating

B = Borderline C = Compatible I = Incompatible

Note: This chart is a general guide to compatibility. Specific properties of greases can dictate compatibility. Testing should be done to determine if greases are compatible.





18. STRIKE SHIELD

MSDS DATA

- Flash point: 61°C PMCC (Pensky –Martens closed-cup test)
- Non-hazardous
- Combustible
- Synthetic hydrocarbons
- Do not store or expose above 61°C
- Do not spray near sparks or open flames
- If swallowed, do not induce vomiting and call a physician immediately
- In case of contact with eyes, flush thoroughly with water for 15 minutes
- Avoid breathing of vapor and prolonged contact with skin
- Contains petroleum aliphatic hydrocarbons

PHYSICAL DATA

- Boiling point: 186 - 201°C
- Evaporation rate: < 0.01
- Specific gravity: 1.02
- Insoluble in water
- Vapor pressure: < 1 @25°C
- Light to dark amber

RECOMMENDED USED

- Frozen or scaled nuts and bolts
- Sticky locks
- Squeaky hinges
- Sliding doors
- Linkages
- Shafts
- Bushings
- Sliding parts and mechanisms

APPLICATION DIRECTIONS

- Apply Strike Shield on surfaces that require penetrating and lubricating oil. Reapplication may be necessary on extremely rusted and corroded conditions.



STRIKE SHIELD™ is the ultimate penetrant to rapidly pierce rusted and corroded metal surfaces using a distinctive spreading action to break loose frozen mechanisms while at the same time applying an advanced lubricating film to the surfaces of the metal delivering the highest quality lubrication available in penetrating oil.

It leaves a unique layer of film on surfaces that prevents rust and corrosion along with **driving out and dispersing moisture** on ignition wires, electrical contacts, circuit boards and other electrical connections to **provide protection against future corrosion in extremely tough conditions**

ITEM NO.	ITEM UPC#	ITEM DESCRIPTIONS	CASE PACK	CASE DIMENSIONS (W x H x D)	CASE CUBE	CASE WEIGHT	TI/HI
STKS-4WS	8-94630-00104-5	Strike Shield – 4 oz. (118 mL)	12	6.625"X 7"X 5"	4 inch ³	0.13 lb	56 / 7
STKS-16WS	8-94630-00105-2	Strike Shield – 16 oz. (473 mL)	12	10.125"X 10"X 7.625"	14 inch ³	0.44 lb	20 / 5
STKS-128	8-94630-00109-0	Strike Shield – 1 Gallon (3.785 mL)	4	15.625"X 11.875"X 8.125"	33.5 inch ³	0.17 lb	12 / 4
STKS-5G		Strike Shield – 5 Gallon (18.93 L)	1		42.5 inch ³		
STKS-15G		Strike Shield – 15 Gallon (56.78 L)	1		126.5 inch ³		
STKS-55G		Strike Shield – 55 Gallon (208 L)	1		461 inch ³		



19. SPRAY SHIELD

MSDS DATA

- Flash Point: 226°C
- Non-hazardous
- Non-flammable
- Synthetic Hydrocarbons

PHYSICAL DATA

- Boiling point: 238°C
- Insoluble in water
- Evaporation rate: < 0.01
- Vapor pressure: < 1 @25°C
- Specific gravity: 1.07
- Medium to dark amber

RECOMMENDED USES

- Metal mechanisms
- Steel cables
- Metal-to-metal surfaces
- Couplings
- Chain drives
- Linkages
- Drag lines
- Wheels
- Bushings
- Augers
- Pulleys
- Rusty nuts & bolts
- Hinges
- Any automotive, industrial or commercial areas of lubrication that require an external heavy-duty spray lubricant for accessible and hard-to-reach areas
- Tools
- Sleeve bearings
- Open gears

APPLICATION DIRECTIONS

- Apply Spray Shield to surfaces requiring lubrication. Reapplication may be necessary for extremely rusted or corroded situations.
- Contains NO volatiles or solvents.
- Contains synthetic hydrocarbons and advanced chemical additive technology.
- Non-toxic and environmentally friendly.

Lubricating, dispersing moisture, dedusting

Protect components, fully terminate rusting



Reduce operation and maintenance costs

SPRAY SHIELD™ is the ultimate multi-purpose lubricant that also penetrates metal surfaces while maintaining highest qualities in corrosive and extreme humidity environments. It penetrates into remote areas and delivers long-lasting lubrication in many different applications.

SPRAY SHIELD™ works quickly to provide excellent protection and long-lasting lubrication.

ITEM NO.	ITEM UPC#	ITEM DESCRIPTIONS	CASE PACK	CASE DIMENSIONS (W x H x D)	CASE CUBE	CASE WEIGHT	T/H I
SS-1	8-94630-00146-5	Spray Shield – 1 oz. (29.5 mL)	24	6.875" X 3.875" X 4.625"	0.07 inch ³	2.5 lb	48 / 12
SS-4	8-94630-00148-9	Spray Shield – 4 oz. (118 mL)	12	5.5" X 7" X 7.125"	0.16 inch ³	3.8 lb	40 / 8
SS-16	8-94630-00149-6	Spray Shield – 16 oz. (473 mL)	12	10.75" X 10.75" X 8"	0.54 inch ³	15 lb	20 / 5
SS-128	8-94630-00150-2	Spray Shield – 1 Gallon (3.785 L)	4	9.25" X 12.5" X 14.5"	0.97 inch ³	34 lb	12 / 4
SS-5G	8-94630-00129-8	Spray Shield – 5 Gallon (18.93 L)	1			42 lb	
SS-15G	8-94630-00130-4	Spray Shield – 15 Gallon (56.78 L)	1			125 lb	
SS-55G	8-94630-00150-2	Spray Shield – 55 Gallon (208 L)	1			455 lb	



20. DRILL & TAP SHIELD

◀ Click this icon to open the product webpage

MSDS DATA

- Flash Point: 226°C
- Non-hazardous
- Non-flammable
- Synthetic Hydrocarbons

PHYSICAL DATA

- Boiling point: 238°C
- Insoluble in water
- Evaporation rate: < 0.01
- Vapor pressure: < 1 @25°C
- Specific gravity: 1.07
- Medium to dark amber

RECOMMENDED USES

- Direct cutting lube / coolant
- Milling
- Additive to improve performance of insoluble oils
- CNC
- Drilling
- Broaching
- Taping
- Sharpening
- Machining
- Wet grinding
- Cutting

APPLICATION DIRECTIONS

- Drill & Tap Shield™ can be used as a direct replacement for currently used cutting fluids and lubrication / coolants in a 100% undiluted application.

NOTE: Drill & Tap Shield™ is not compatible with water glycol compounds or triphenol butylated phosphate oils.

- Contains NO volatiles or solvents.
- Contains synthetic hydrocarbons and advanced chemical additive technology. Non-toxic and environmentally friendly.



DRILL & TAP SHIELD™ is the ultimate protection for metal working tools. Utilizing the most Advanced Boundary Film (ABF) Technology, it protects cutting tools from heat, friction and wear. It works by the application of multiple metal working technologies that include ionic bonding agents, metal film strength reducers and lubricity enhancement agents.

Along with unique extreme-pressure additives and the addition of ABF Technology, it produces proven results that surpass all other products in the marketplace.

ITEM NO.	ITEM UPC#	ITEM DESCRIPTIONS	CASE PACK	CASE DIMENSIONS (W x H x D)	CASE CUBE	CASE WEIGHT	TI/HI
DTS-1	8-94630-00171-7	Drill & Tap Shield – 1 oz. (29.5 mL)	24	6.875"X 3.875"X 4.625"	0.07 inch ³	2.5 lb	48 / 12
DTS-4	8-94630-00172-4	Drill & Tap Shield – 4 oz. (118 mL)	12	5.5"X 7"X 7.125"	0.16 inch ³	3.8 lb	40 / 8
DTS-16	8-94630-00173-1	Drill & Tap Shield – 16 oz. (473 mL)	12	10.75"X 10.75"X 8"	0.54 inch ³	15 lb	20 / 5
DTS-128	8-94630-00174-8	Drill & Tap Shield – 1 Gallon (3.785 L)	4	9.25"X 12.5"X 14.5"	0.97 inch ³	34 lb	12 / 4
DTS-5G	8-94630-00175-5	Drill & Tap Shield – 5 Gallon (18.93 L)	1			42 lb	
DTS-15G	8-94630-00176-2	Drill & Tap Shield – 15 Gallon (56.78 L)	1			125 lb	
DTS-55G	8-94630-00177-9	Drill & Tap Shield – 55 Gallon (208 L)	1			455 lb	

21. STEEL SHIELD PRODUCT COMPATIBILITY

- ▶ In order to help you further understand and determine compatibility issues, we are publishing this three-part test to assist you in determining if oils or fluids are compatible with Steel Shield EPA (SST EPA) and other Steel Shield (SST) products while in the field. Doing these three steps can identify a compatibility issue within 95% accuracy.
- ▶ First: Examine the material safety data sheet for the oil to which the SST EPA is to be added. Look for key words in Section 2, Hazardous Ingredients/Identity Information, which may indicate either product compatibility or incompatibility. Standard petroleum oils are usually referred to as “severely hydrotreated naphthenes” or “paraffinic base stocks”. Other key words are “contains mineral oil” or “synthetic hydrocarbons”. All of these oils have the characteristics of petroleum oil and are compatible with SST products.
- ▶ Key words such as “alky-(compound), alkynol, glycol, alkanolamine, esters, mono esters, polyol or amines” are direct indications of additives and base fluids that are NOT compatible with SST products. For these chemicals, we will provide special SST products that is compatible but only upon request.
- ▶ Second: A good test for compatibility is to mix equal amounts of the base oil in question and SST products. After both are thoroughly blended, allow the mixture to stand for 10 to 15 minutes. If no separation occurs, the likelihood of compatibility is very good. An occurrence of a radical separation indicates the oils are incompatible, and do not mix properly because of chemical differences.
- ▶ Third: After the test above is completed to your satisfaction, the final phase is to perform a lubricity test. Run the base oil in question first to determine its lubricity and load carrying characteristics. Then, mix a proper ratio of SST product with the base oil and run the mixture on the Falex machine. Note the result. If a full-scale reading can be achieved without grinding or damaging the bearing, then you can safely assume the oil and SST product are compatible. However, if only a slight to moderate increase in lubricity can be achieved over the base oil by itself, it must be assumed that there is something present that is inhibiting the formation of the boundary film, which would indicate the base oil and SST product are NOT compatible.
- ▶ When these steps are followed, compatibility issues can be solved in nearly every situation. However, if you have followed through with these steps and still are not able to make a definite decision on compatibility, please do not hesitate to contact our Technical Department to research and verify compatibility issues.

22. STEEL SHIELD EPA COMPATIBILITY

Item	Base Oil	Compatible with SST-EPA ?	SST Product to Use
1	Petroleum, Mineral Oil	• Yes	• SST-EPA
2	SHC (Synthetic Hydrocarbon) A. Alkylated Aromatics B. Olefin Oligomers e.g. Amsoil, Mobil 1, Castrol Syntec	• Yes	• SST-EPA
3	Halogenated Hydrocarbons A. Chlorotrifluoroethylene, Polytetrafluoroethylene, (PTFE). e.g. Insoluble cutting oil, radiation resistant oil, some heavy duty gear oil, load carrying oils.	• Yes	• SST-EPA
4	Glycol Synthetic Esters A. Alkanolamines B. Polyol Glycols e.g. Fire proof hydraulic fluids, cutting fluids, R-134A Refrigerant Oils, etc.	• No	• On Request
5	Organic Ester Synthetics A. VME - Vegetable Methyl Ester e.g. Some food grade oils, specialty biodegradable oils	• No	• On Request
6	Phosphate Esters A. Triphenol Butylated Phosphate B. Trisecyl Phosphate C. Tricresyl Phosphate e.g. Turbine Oils	• No	• On Request
7	Silicone Oils A. Methyl Silicone B. Phenyl Methyl Silicone C. Silicate Ester/Disiloxane	• No	• None
8	Synthetic Ether A. Polyphenyl Ether B. Chlorinated Diphenyl Ether C. Perfluorinated polyether	• No	• On Request

Keywords to look for on MSDS or Product Description/Technical Sheets

"Glycol" "Alkanolamine"
"Ether" "Ester"
"Phosphate" "VME" "Phenyl/Phenol"
"Silicate"
"Boron Oxide **"

• Boron Oxide is a common additive to Alkanolamine cutting fluids.

Copyright 1986-2015.SST



23. TUNNEL BORE ENGINEERING

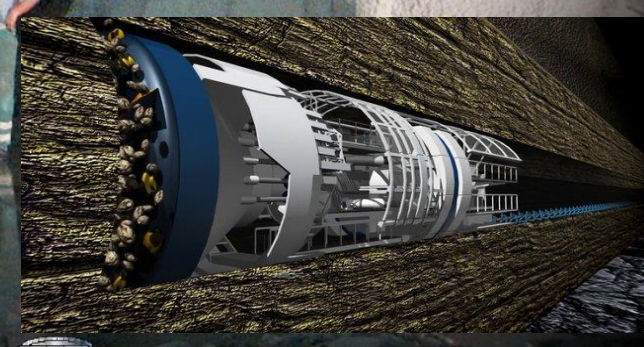
Tunnel Boring Machine (TBM) is used to excavate tunnels with a circular cross section through a variety of soil and rock strata. It can finish the entire boring of tunnel 5 times faster than traditional methods. But, TBMs may cost billions to construct, and can be difficult to transport.

STEEL SHIELD applies to all tunnel bore engineering machines to ensure less downtime :

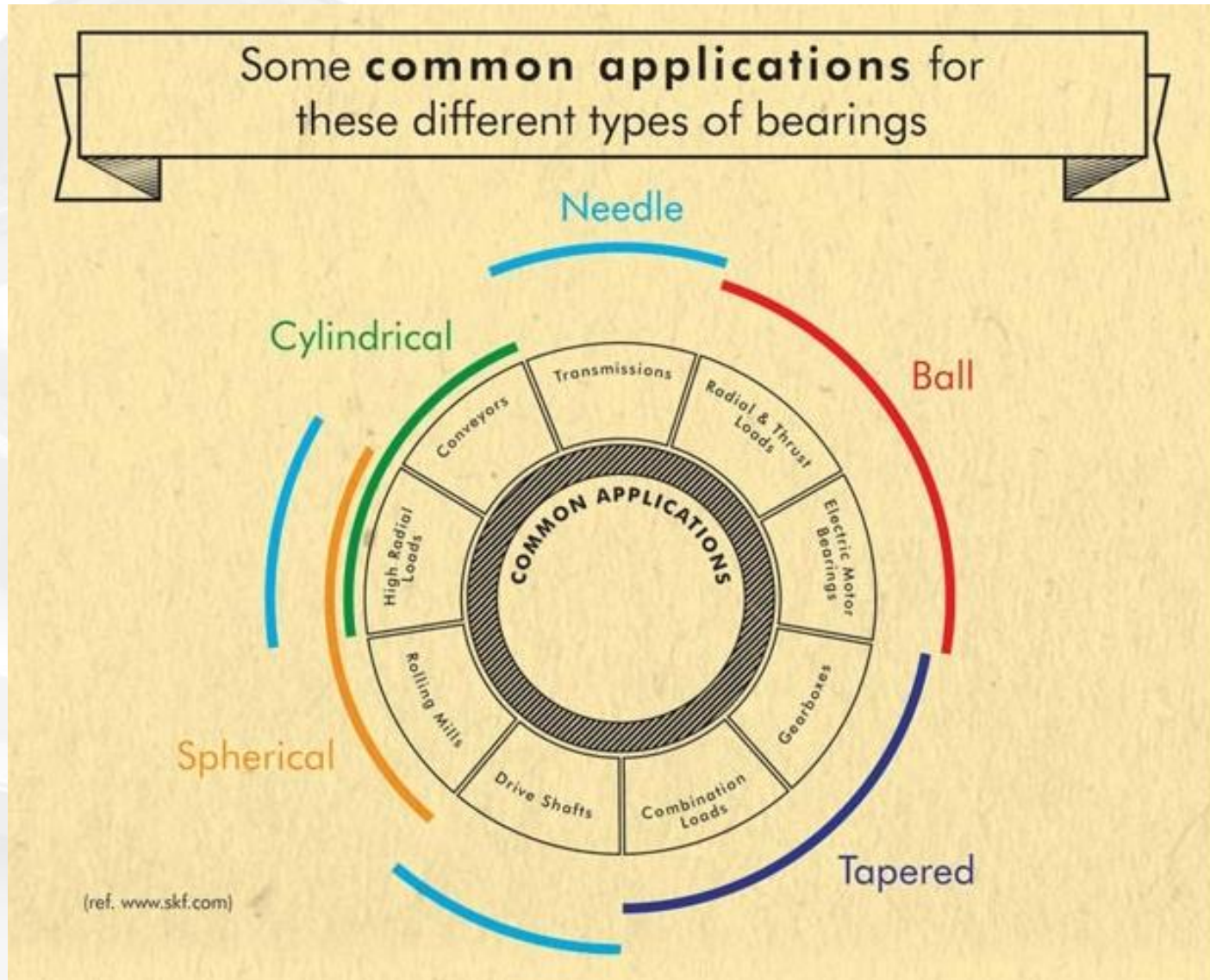
- Engines, power systems
- Hydraulic, pneumatic systems
- All types of gear systems
- All railways, transportation systems



Steel Shield applies to all tunnel bore engineering



24. GREASE APPLICATIONS OF BEARINGS



24. GREASE APPLICATIONS OF BEARINGS

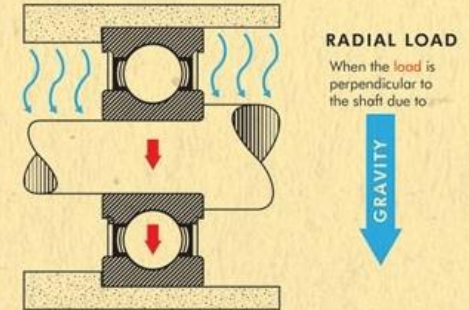
Remember, bearing type affects **grease life**.

Larger bearings and high-speed bearings translate to short grease life. High DN grease is required.

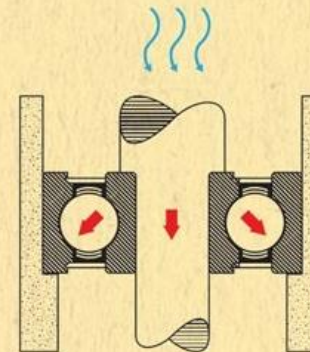
BEARING TYPE	RELATIVE TYPE OF GREASE
Deep-groove, single-row ball bearing	1
Angular contact, single-row ball bearing	0.625
Self-aligning ball bearing	0.77 - 0.625
Thrust ball bearing	0.2 - 0.17
Cylindrical, single-row roller bearing	0.625 - 0.43
Needle roller bearing	0.3
Tapered roller bearing	0.25
Spherical roller bearing	0.14 - 0.08

(ref. Booser, Bloch, ML)

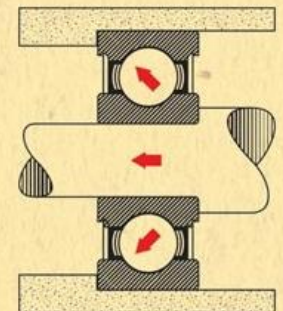
Bearings also work under different kinds of **loads**.



..... AXIAL OR THRUST LOAD (When the load is parallel to the shaft)



Axial load in a vertical pump or electric motor due to gravity



Axial load in a horizontal pump

(ref. www.skf.com)

24. GREASE APPLICATIONS OF BEARINGS

HOW TO CHOOSE THE RIGHT GREASE?

A common OEM grease specification might be to use an NLGI No. 2 lithium grease of good quality. Using this information alone, one could select the right consistency and thickener type. Other considerations include thickener concentration, consistency, dropping point and operating temperature range, worked stability, oxidation stability, wear resistance, etc.

Base Oil Viscosity

A common mistake when selecting a grease is to confuse the grease consistency with the base oil viscosity. Because the majority of grease-lubricated applications are element bearings, one should consider viscosity selection for those applications. While most would not use an EP 220 gear oil for an oil-lubricated electric motor bearing, many people will use a grease containing that same oil for an identical grease-lubricated bearing. To determine minimum and optimum viscosity requirements for element bearings, one may use speed factors, commonly denoted as DN or NDm. Speed factors account for the surface speed of the bearing elements and are determined by the following formulas:

$$DN = (\text{rpm}) \times (\text{bearing bore})$$

$$NDm = \text{rpm} \times ((\text{bearing bore} + \text{outside diameter}) / 2)$$

The NDm value uses pitch diameter rather than bore diameter because not all bearings of a given bore have the same element diameter, and thus have different surface speeds. Knowing the speed factor value and likely operating temperature, the minimum viscosity requirement can be read directly from charts like Figure 1.

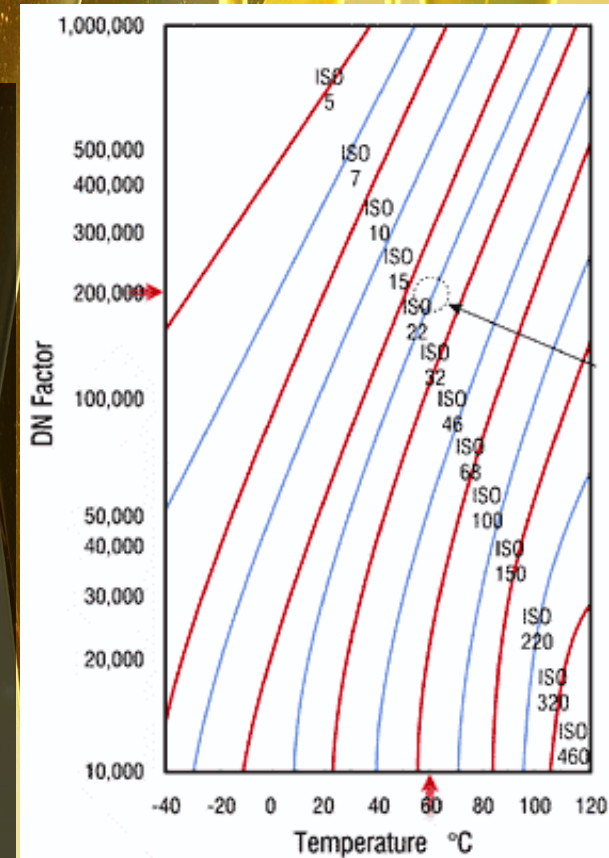


Figure 1

24. GREASE APPLICATIONS OF BEARINGS

HOW TO CHOOSE THE RIGHT GREASE?

Figure 1 assumes the base oils' viscosity index. To be more precise, one would need to use a chart that identifies the viscosity at operating temperature, then determine the viscosity grade from a viscosity / temperature chart for a given lubricant.

Additives and Base Oil Type

Figure 2 shows some common additive requirements by application. Most greases are formulated using API Group I and II mineral oil base stocks, which are appropriate for most applications. However, there are applications that might benefit from the use of a synthetic base oil. Such applications include high or low operating temperatures, a wide ambient temperature range, or any application where extended re-lubrication intervals are desired.

Additive	Journal Bearings	Ball Bearings	Thrust Bearings	Roller Bearings	Needle Bearings
Antioxidants	•	•	•	•	•
Antifoam Agents	•	•	•	•	•
Antiwear/EP		•	•	•	•
Rust Inhibitors	•	•	•	•	-
Extreme Pressure			-	-	
Demulsibility	•	•	•	•	-
VI Improvers	-	-	-	-	•
Corrosion Inhibitors	•	•	•	•	•

• Required, - Depends on application

Figure 2

24. GREASE APPLICATIONS OF BEARINGS

HOW TO CHOOSE THE RIGHT GREASE?

Grease Consistency and Thickener Type

The NLGI has established a scale to indicate grease consistency which ranges from grades 000 (semifluid) to 6 (block grease). The most common NLGI grade is two and is recommended for most applications.

For bearings, speed factor and operating temperature can be used to determine the best consistency or NLGI grade for a given application. It may seem counterintuitive, but higher speed factors require higher consistency greases. Table 1 provides a general guide to selecting NLGI grade based on speed factor and operating temperature.

Numerous types of grease thickeners are currently in use, the most common types are simple lithium soaps, lithium complex and polyurea. Simple lithium soaps are often used in general-purpose greases and perform relatively well in most performance categories at moderate temperatures. Complex greases such as lithium complex provide improved performance particularly at higher operating temperatures. A common upper operating temperature limit for a simple lithium grease might be 250°F, while that for a lithium complex grease might be 350°F. Another thickener type that is becoming more popular is polyurea. Like lithium complex, polyurea has good high-temperature performance as well as high oxidation stability and bleed resistance. Thickener type should be selected based on performance requirements as well as compatibility when considering changing product types.

Operating Temperature	DN (Speed Factor)	NLGI No.*
-30 to 100°F	0 - 75,000	1
	75,00 - 150,000	2
	150,000 - 300,000	2
0 to 150°F	0 - 75,000	2
	75,00 - 150,000	2
	150,000 - 300,000	3
100 to 275°F	0 - 75,000	2
	75,00 - 150,000	3
	150,000 - 300,000	3

*Depends on other factors as well, including bearing type, thickener type, base oil viscosity and base oil type

24. GREASE APPLICATIONS OF BEARINGS

HOW TO CHOOSE THE RIGHT GREASE?

Performance Properties

If an application operates continuously at room temperature, properties like dropping and upper operating temperature limits are not as important. If an application operates under heavy loads at low speeds, load carrying tests such as four-ball EP or Timken OK load should be considered. It is also important to review these specifications on a periodic basis to guard against specification creep. While improving a lubrication program can be a tough job, lubricant specification is relatively easy. Armed with a little bit of knowledge and a few widely available tools, it is possible to rest easier knowing that the right grease is being used.

With Steel Shield ABF Technology, the performance in stability, lubricity and interval of grease can be enhanced and improved to a much higher level.



25. SOUTHWEST RESEARCH INSTITUTE TEST REPORTS

STEEL SHIELD LARGELY OUTPERFORMS REPUTED GREASES MADE BY YAMAMOTO AND ATLAS

Report 1

Petroleum Products Research Department
 Test Summary Report
 Steel Shield Technologies
 Purchase Order # 114
 October 25, 2013



STEEL SHIELD LITHI

SwRI	Sample ID:	20003	20004
Code:	Sample Identification: SHIELD	Litho Shield	Yamamoto EP grease
D1264	Water Washout of Grease		
	Avg. Grease Washed Out	Wt % 1.32	0.66
	Test Temp.	°C 79	79
	Dry Temp.	°C 77	77
D1742	Oil Separation from Lubricating Grease	mass % 2.04	* Note
D2265	Dropping Point	°C 258	307
	Oven Temp.	°C 288	316
D2266	Wear Characteristics (Four-Ball Method)		
	Scar Diameter	kgf 0.75	0.47
D2596	Four-Ball Extreme Pressure Properties		
	Corrected Load	kgf 851.1	501.68
	Load-Wear Index	kgf 92.27	66.73
	Weld Point	kgf 800	315
	LNSL	kgf 80	63

* No oil separation occurred for grease sample "Yamamoto EP grease", therefore, sample is considered "outside the scope of the method".

WIN

Petroleum Products Research Department
 Test Summary Report
 Steel Shield Technologies
 Purchase Order # 114
 October 25, 2013



SwRI	Sample ID:	20005
Code:	Sample Identification:	Atlas Chisel lube
D1264	Water Washout of Grease	
	Avg. Grease Washed Out	Wt % 1.11
	Test Temp.	°C 79
	Dry Temp.	°C 77
D1742	Oil Separation from Lubricating Grease	mass % ** Note
D2265	Dropping Point	°C 302
	Oven Temp.	°C 316
D2266	Wear Characteristics (Four-Ball Method)	
	Scar Diameter	kgf 0.71
D2596	Four-Ball Extreme Pressure Properties	
	Corrected Load	kgf 302.79
	Load-Wear Index	kgf 41.23
	Weld Point	kgf 315
	LNSL	kgf 50

** No oil separation occurred for grease sample "Atlas Chisel Lube", therefore, sample is outside the scope of the method".

Steel Shield Lithi Shield

TEST ITEMS	Four-Ball Extreme Pressure Properties	Steel Shield Lithi Shield	Yamamoto EP Grease	Atlas Chisel Lube
Loading Ability	Corrected Load	851.1	501.68	302.79
Anti-Wear Ability	Load Wear Index	92.27	66.73	41.23
High Temperature Loading	Weld Point	800	315	315
High Pressure Loading	LNSL	80	63	50

intained in this document is legally privileged and/or proprietary. If the reader of this document is not the intended recipient, disclosure of this information is strictly prohibited. If you have received this document, please return the original document to the sender at the return address via the United States Postal Service.

ublish or make known to others the subject matter or results of this report, in whole or in part, without the written approval of Steel Shield Technologies. Any such disclosure, either directly or by implication, shall be made use of by Client or any other party without the written approval of Steel Shield Technologies. This report is any report issued by Institute on this Project outside its own organization or for distribution.

benefiting government, industry and the public through innovation.



25. SOUTHWEST RESEARCH INSTITUTE TEST REPORTS

TEST REPORT SUMMARY – STEEL SHIELD OUTPERFORMS SHELL AND MOBIL ONE LUBRICANTS

Report 2

The test reports from the Southwest Research Institute have clearly stated that Steel Shield Technologies products are the winners.

Timken Test is designed to test the performance of lubricants with viscosities lower than 5000 cSt@40°C. Temperature reflects the coefficients of friction of lubricants. By testing the maximum loading of lubricants within a specific temperature range (38 ~ 39°C), the degree of Load-Wear Index can be obtained. The results are compared as follows:

Steel Shield Super-XL 5W30 and Mobil 5W30 have scored 45 and 12 pound respectively in the Okay Load, and scored 50 and 15 pound respectively in the Score Load. Therefore, **Steel Shield is superior to Mobil by 350% in loading and anti-wear abilities.**

Steel Shield XHD-7 15W40 and Shell R-3T 15W40 scored 35 and 21 pound respectively in the OK Load, and scored 40 and 24 pound respectively in the Score Load. Therefore, **Steel Shield is superior to Shell by 170% in loading and anti-wear abilities.**

These results proved that Steel Shield products have excellent performance in heavy loading conditions and have outstanding anti-wear abilities. Steel Shield can greatly improve the efficiencies of mechanical systems.

The 4-Ball Test tests high viscosities lubricants, and anti-wear additives. The 4-Ball Tests have proven that the anti-wear and high loading performance of Steel Shield products without high viscosities can be as excellent as greases. The most important indexes of 4-Balls Test are LWI and Weld Point which the majority of people believe indexes with larger numbers are better. But traditional lubricant formulas achieve anti-wear abilities by high viscosity. The higher the viscosity, the lower the efficiency. The Corrected Loads of Steel Shield Super-XL 5W30 and XHD-7 15W40 are 228Kgf and 139Kgf respectively. They are much higher than Mobil One (53Kgf) and Shell (55Kgf). The LWI are 47Kgf verse 42Kgf, and 40Kgf verse 42Kgf which appear similar. However, the Weld Point of Steel Shield are 315Kgf and 250Kgf which are higher than 200Kgf (Mobil One and Shell). This tells us the truth. Steel Shield Technologies have demonstrated its ultimate performance.

By Leading Authority

Steel Shield is proved superior to Mobil and Shell products of the same classes in Timken Tests

Steel Shield is proved superior to Mobil and Shell products of the same classes in the 4-Ball Tests

SOUTHWEST RESEARCH INSTITUTE

4401 FULBRIGHT ROAD • FORT WORTH, TEXAS 76101 • SAN ANTONIO, TEXAS, USA • 817-356-6111 • WWW.SRI.COM

美国西南研究院

美国德克萨斯州乔治敦
测试规格: 美国 ASTM 标准

 Benefiting government, industry and the public through innovative science and technology

25. SOUTHWEST RESEARCH INSTITUTE TEST REPORTS

ASTM D2782 TIMKEN METHOD

THE TEST REPORT FROM SOUTHWEST RESEARCH INSTITUTE – Timken ASTM

Report 2

Test Report
15th May, 2013
Steel Shield Technologies

Test Report No.: 17274 \ 17276

ASTM D2782 Standard Test Method for Measurement of Extreme-Pressure Properties of Lubricating Fluids (Timken Method)	Steel Shield 5W-30 Standard: 1 Gallon	Mobil 1 5W-30 Standard: 1 Gallon
Okay Load, lbs	45	12
Score Load, lbs	50	15
Temperature, °C	39	38

STEEL SHIELD VICTORY:

The anti-wear and high loading abilities of Steel Shield are greater than Mobil ONE by 350% ;
Greater than Shell by 170%



Test Report No.: 17275 \ 17277

ASTM D2782 Standard Test Method for Measurement of Extreme-Pressure Properties of Lubricating Fluids (Timken Method)	Steel Shield SAE 15W-40 Standard: 1 Gallon	Shell SAE 15W-40 Standard: 1 Gallon
Okay Load, lbs	35	21
Score Load, lbs	40	24
Temperature, °C	38	38



By
Leading
Authority

Steel Shield is proved superior to Mobil and Shell products of the same classes in Timken Tests

THE SOUTHWEST RESEARCH INSTITUTE
www.swri.org



25. SOUTHWEST RESEARCH INSTITUTE TEST REPORTS

ASTM D2783 FOUR-BALL METHOD

THE TEST REPORT FROM SOUTHWEST RESEARCH INSTITUTE – 4-Ball ASTM

Report 2

Test Report
1st July, 2013
Steel Shield Technologies

Test Report No.: 18051 \ 18049

ASTM D2783 Standard Test Method for Measurement of Extreme-Pressure Properties of Lubricating Fluids (4-Ball Method)	Steel Shield 5W-30 Standard: 1 Gallon	Mobil 1 5W-30 Standard: 1 Gallon
Corrected Load, kgf	228	53
Load Wear Index, kgf	47	42
Weld Point, kg	315	200
Last Non Seizure Load, kg	80	100



Test Report No.: 18502 \ 18050

ASTM D2783 Standard Test Method for Measurement of Extreme-Pressure Properties of Lubricating Fluids (4-Ball Method)	Steel Shield 5W-30 Standard: 1 Gallon	Mobil 1 5W-30 Standard: 1 Gallon
Corrected Load, kgf	139	55
Load Wear Index, kgf	40	42
Weld Point, kg	250	200
Last Non Seizure Load, kg	80	100



By Leading
Authority

Steel Shield is
proved superior to
Mobil and Shell
products of the
same classes in
4-Ball Tests

THE SOUTHWEST RESEARCH INSTITUTE
www.swri.org



25. SOUTHWEST RESEARCH INSTITUTE TEST REPORTS

ASTM D2782 TIMKEN METHOD TEST REPORTS - ORIGINAL DOCUMENTS

Report 2

SOUTHWEST RESEARCH INSTITUTE*

6229 CULBERA ROAD 78238-5166 • P.O. DRAWER 28510 78228-0510 • SAN ANTONIO, TEXAS, USA • (210) 684-5111 • WWW.SWRI.ORG

May 15, 2013

George Fennell
Steel Shield Technologies
3351 Industrial Blvd
Bethel Park, PA 15102-2543
Phone: 1-800-390-1535
Email:

Re: Fuel Analysis Results
Project L08.05.11.11831.01.001
SwRI WO# 68291
PO# 102

Dear Mr. Fennell:

Analyses have been completed on your samples in accordance with the tests requested. Five samples were received in good condition on May 1st, 2013 in good condition. Four samples were received in one gallon plastic containers and one sample was received in a one quart plastic bottle. No testing was requested on the sample received in the one quart bottle. Testing took place between May 6th and May 10th 2013. Test results and sample identifications are shown in the table attached.

Analyses were performed according to the listed ASTM test procedures with no modifications or deviations. Precision should be consistent with those stated in the ASTM test procedures. Sample aliquots were taken in accordance with the various ASTM test procedures. The analyses above pertain only to the sample received by Southwest Research Institute and represent only that sampling lot. This report shall not be reproduced except in full without the express written permission of Southwest Research Institute.

If there are any questions concerning these analyses, or if you need any additional testing on the samples, please contact me at (210) 522-2071. We appreciate the opportunity to be of service to your firm.

Sincerely,

Robert R. Legg
Fuels Laboratory Manager
Fuels & Lubricants Research Department
Office of Automotive Engineering



Benefiting government, industry and the public through innovative science and technology



Test Summary Report May 15th, 2013

Steel Shield Technologies

SwRI Lab# 17274

Steel Shield Super Synthetic
5W-30
1 Gallon Plastic Jug

ASTM D2782 Measurement of Extreme-Pressure Properties of Lubricating Fluids (Timken Method)	
Okay Load, lbs	45
Score Load, lbs	50
Temperature, °C	39

SwRI Lab# 17275

Steel Shield XHD-7
SAE 15W-40
1 Gallon Plastic Jug

ASTM D2782 Measurement of Extreme-Pressure Properties of Lubricating Fluids (Timken Method)	
Okay Load, lbs	35
Score Load, lbs	40
Temperature, °C	38

ORRLBEO3 Steel Shield (a).docx
Page 2 of 3



Test Summary Report May 15th, 2013

Steel Shield Technologies

SwRI Lab# 17276

Shell Rotella T
SAE 15W-40
1 Gallon Plastic Jug

ASTM D2782 Measurement of Extreme-Pressure Properties of Lubricating Fluids (Timken Method)	
Okay Load, lbs	21
Score Load, lbs	24
Temperature, °C	38

SwRI Lab# 17277

Mobil 1
5W-30
1 Gallon Plastic Jug

ASTM D2782 Measurement of Extreme-Pressure Properties of Lubricating Fluids (Timken Method)	
Okay Load, lbs	12
Score Load, lbs	15
Temperature, °C	38

Note 1: The information contained in this document is legally privileged and/or proprietary business information intended only for the use of the individual or the entity named above. If the reader of this document is not the intended recipient, you are hereby notified that any dissemination, distribution, or copy of this document is strictly prohibited. If you have received this document in error, please immediately notify us by telephone at 210-522-2064 and return the original document to the sender at the return address via the United States Postal Service.

Note 2: Institute shall not publish or make known to others the subject matter or results of the Project or any information obtained in connection therewith which is proprietary and confidential to Client without Client's written approval. No advertising or publicity containing any reference to Institute or any of its employees, either directly or by implication, shall be made use of by Client or on Client's behalf without Institute's written approval. In the event Client distributes any report issued by Institute on this Project outside its own organization, such report shall be used in its entirety, unless Institute approves a summary or abridgement for distribution.

ORRLBEO3 Steel Shield (a).docx
Page 3 of 3



25. SOUTHWEST RESEARCH INSTITUTE TEST REPORTS

ASTM D2783 FOUR-BALL METHOD TEST REPORTS - ORIGINAL DOCUMENTS

Report 2

SOUTHWEST RESEARCH INSTITUTE®

6220 CULEBRA ROAD 78238-5166 • P.O. DRAWER 28510 78228-0510 • SAN ANTONIO, TEXAS, USA • (210) 684-5111 • WWW.SWRI.ORG

July 1, 2013

George Fennell
Steel Shield Technologies
3351 Industrial Blvd
Bethel Park, PA 15102-2543
Phone: 1-800-390-1535
Email: gcfennell@steelshieldtech.com

Re: Fuel Analysis Results
Purchase Order# 103
SwRI WO# 68584


Dear Mr. Fennell:

Analyses have been completed on your samples in accordance with the tests requested. Four samples were received in good condition on June 17, 2013 in good condition. The samples were received in one gallon plastic containers. Testing took place by June 29, 2013. Test results and sample identifications are shown in the table attached.

Analyses were performed according to the listed ASTM test procedures with no modifications or deviations. Precision should be consistent with those stated in the ASTM test procedures. Sample aliquots were taken in accordance with the various ASTM test procedures. The analyses above pertain only to the sample received by Southwest Research Institute and represent only that sampling lot. This report shall not be reproduced except in full without the express written permission of Southwest Research Institute.

If there are any questions concerning these analyses, or if you need any additional testing on the samples, please contact me at (210) 522-2071. We appreciate the opportunity to be of service to your firm.

Sincerely,



Robert R. Legg
Fuels Laboratory Manager
Fuels & Lubricants Research Department
Office of Automotive Engineering

OMRRAGA13 68584
Page 2 of 2



Benefiting government, industry and the public through innovative science and technology



Test Summary Report
Steel Shield Technologies
Purchase Order # 103
July 1, 2013

	LabNum		18049	18050	18051	18052
	Sample Code		Mobil 1	Shell Rotella	Steel Shield	Steel Shield
					5W30 gasoline	15W-40 diesel
	LabNum		18049	18050	18051	18052
D2783	CorrLoad	Kgf	53	55	228	139
	WearIdx	Kgf	42	42	47	40
	WeldPt	kg	200	200	315	250
	LNSL	kg	100	100	80	80

Note 1: The information contained in this document is legally privileged and/or proprietary business information intended only for the use of the individual or the entity named above. If the reader of this document is not the intended recipient, you are hereby notified that any dissemination, distribution, or copy of this document is strictly prohibited. If you have received this document in error, please immediately notify us by telephone at 210/522-2964 and return the original document to the sender at the return address via the United States Postal Service.

Note 2: Institute shall not publish or make known to others the subject matter or results of the Project or any information obtained in connection therewith which is proprietary and confidential to Client without Client's written approval. No advertising or publicity containing any reference to Institute or any of its employees, either directly or by implication, shall be made use of by Client or on Client's behalf without Institute's written approval. In the event Client distributes any report issued by Institute on this Project outside its own organization, such report shall be used in its entirety, unless Institute approves a summary or abridgement for distribution.

OMRRAGA13 68584
Page 2 of 2



25. SOUTHWEST RESEARCH INSTITUTE TEST REPORTS

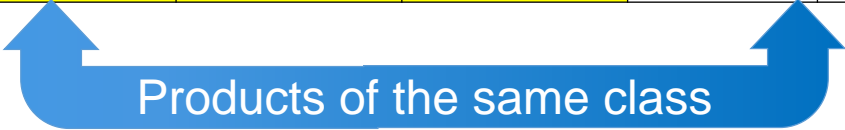
STEEL SHIELD GAS ENGINE OILS AND COMPRESSOR OILS ASTM D2782 TIMKEN

THE TEST REPORT FROM SOUTHWEST RESEARCH INSTITUTE – Timken ASTM D2782

Test Report
2014 / 11 / 20
Steel Shield Technologies

Report 3

SwRI Lab No.	24564	23728	25252	23727	25250	25251
ASTM D2782 Measurement of Extreme-Pressure Properties of Lubricating Fluids (Timken Method)	SST Gas Engine Oil SAE 40 Ashless Without EPA	Steel Shield Gas Engine Oil GECAT SAE40 Low Ash With EPA	Steel Shield EPA	Steel Shield Compressor Oil ISO #100 / 150	Mobil Pegasus 805 SAE 40 Gas Engine Oil	Mobil Pegasus 801 SAE 40 Gas Engine Oil
Volume (Gallon)	1	1	1	1	1	1
OK Load (lbs)	40	40	75	55	9	9
Score Load (lbs)	45	45	80	60	12	12
Temperature (°C)	38	38	38	38	38	38



SOUTHWEST RESEARCH INSTITUTE website: www.swri.org

Results

Steel Shield Wins :
Steel Shield outperforms Mobil in OK LOAD parameter by 444 % and in SCORE LOAD by 375 %.

The SwRI Timken Test report clearly testified Steel Shield products are FAR Superior than Mobil products of the same classes



25. SOUTHWEST RESEARCH INSTITUTE TEST REPORTS

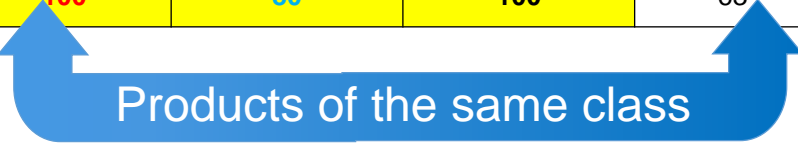
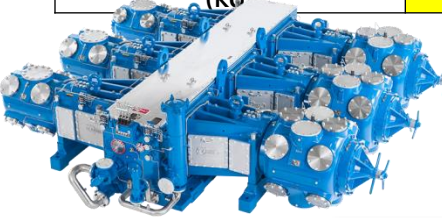
STEEL SHIELD GAS ENGINE OILS AND COMPRESSOR OILS ASTM D2783 FOUR BALLS TESTS

THE TEST REPORT FROM SOUTHWEST RESEARCH INSTITUTE – 4-Ball ASTM D2783

Report 3

Test Report
2014 / 11 / 20
Steel Shield Technologies

SwRI Lab No.	24564	23728	25252	23727	25250	25251
ASTM D2783 Measurement of Extreme-Pressure Properties of Lubricating Fluids (4-Ball Method)	SST Gas Engine Oil SAE 40 Ashless Without EPA	Steel Shield Gas Engine Oil GECAT SAE 40 Low Ash With EPA	Steel Shield EPA	Steel Shield Compressor Oil ISO #100 / 150	Mobil Pegasus 805 SAE 40 Gas Engine Oil	Mobil Pegasus 801 SAE 40 Gas Engine Oil
Volume (Gallon)	1	1	1	1	1	1
Corrected Load (kgf)	70	109	NA	1	136	74
Load Wear Index (kgf)	35	46	NA	48	34	35
Weld Point (kg)	200	250	>800	250	200	200
Last Non Seizure Load (kg)	80	100	80	100	63	80



Results

Steel Shield Wins :
Steel Shield outperforms Mobil in the Weld Point (oil strength in resistant to EP) parameter by 129 % and in the Last Non Seizure Load (wear performance in respect to load) by 159 %.
***Remarks: 4-ball test is normally for heavy weight oil and grease.

The SwRI 4-Balls Test testified Steel Shield products are superior than Mobil products of the same classes

SOUTHWEST RESEARCH INSTITUTE website:
www.swri.org



25. SOUTHWEST RESEARCH INSTITUTE TEST REPORTS

STEEL SHIELD GAS ENGINE OILS AND COMPRESSOR OILS ASTM D2782 Timken, D2783 4-Ball & D6352 GC — Original Documents

Report 3

SOUTHWEST RESEARCH INSTITUTE®

8220 CULEBRA ROAD 78238-5166 • P.O. DRAWER 28510 78228-0510 • SAN ANTONIO, TEXAS, USA • (210) 584-6111 • WWW.SWRI.ORG

November 20th, 2014

George Fennell
Steel Shield Technologies
3351 Industrial Blvd
Bethel Park, PA 15102-2543
Phone: 1-800-390-1535
Email:

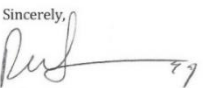
Re: Fuel Analysis Results
SwRI WO# 71111
PO# 120

Dear Mr. Fennell:

Analyses have been completed on your samples in accordance with the tests requested. Twelve samples were received in good condition between July 21st, 2014 and October 7th 2014 in good condition. Eleven samples were received in one gallon plastic containers and one sample was received in a one quart plastic bottle. Sample Identification and testing requesting is shown in the table on the following page. Testing took place between October 13th and November 11th 2014. Test results and sample identifications are shown in the table attached.

Analyses were performed according to the listed ASTM test procedures with no modifications or deviations. Precision should be consistent with those stated in the ASTM test procedures. Sample aliquots were taken in accordance with the various ASTM test procedures. The analyses above pertain only to the sample received by Southwest Research Institute and represent only that sampling lot. This report shall not be reproduced except in full without the express written permission of Southwest Research Institute.

If there are any questions concerning these analyses, or if you need any additional testing on the samples, please contact me at (210) 522-2071. We appreciate the opportunity to be of service to your firm.

Sincerely,


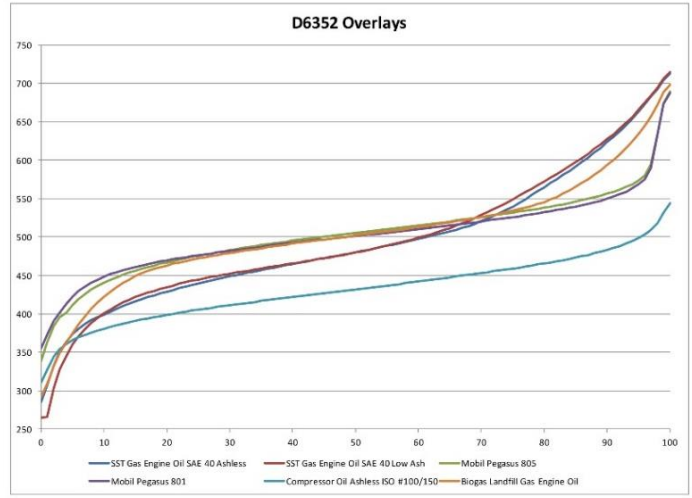
Robert R. Legg
Fuels Laboratory Manager
Fuels & Lubricants Research Department
Office of Automotive Engineering



Benefiting government, industry and the public through innovative science and technology



Test Summary Report
November 20th, 2014
Steel Shield Technologies



In comparing the curves and D6352 chromatography, it is observed that samples SST Gas Engine Oil SAE 40 Ashless and SST Gas Engine Oil SAE 40 Low Ash are very similar with the exception that the Low Ash oil appears to have an added component that is somewhat lighter than the rest of the oil. The bulk of this oil is lighter than the others; however it does have a larger proportion of heavier compounds. In general it has broader array of hydrocarbons than the other oils. The Mobil Pegasus 801 and Mobil Pegasus 805 are essentially the same oil with the same boiling distribution. They both are a narrower cut reducing the amount of lighter and heavier hydrocarbon species. The Biogas Landfill Gas Engine Oil has a distribution in between the SST Gas Engine Oils and the Mobil Pegasus Oils. The Ashless Compressor oil is a significantly lighter oil than the rest of the samples.



25. SOUTHWEST RESEARCH INSTITUTE TEST REPORTS

STEEL SHIELD GAS ENGINE OILS AND COMPRESSOR OILS ASTM D2782 Timken,

D2783 4-Ball & D6352 GC — Original Documents

Report 3



Test Summary Report
November 20th, 2014
Steel Shield Technologies

SwRI Lab# 24564

SST Gas Engine Oil
SAE 40 Ashless
1 Gallon Plastic Jug

ASTM D2782 Measurement of Extreme-Pressure Properties of Lubricating Fluids (Timken Method)

Okay Load, lbs	40
Score Load, lbs	45
Temperature, °C	38

ASTM D2783 Measurement of Extreme-Pressure Properties of Lubricating Fluids (4-Ball Method)

Corrected Load, kgf	70
Load Wear Index, kgf	35
Weld Point, kg	200
Last Non Seizure Load, kg	80

ASTM D6352 Boiling Range Distribution of Petroleum Distillates from 174 to 700 °C by GC

IBP	285.3	20%	428.8	40%	464.8	60%	497.5	80%	564.9
1%	306.2	21%	431.1	41%	466.4	61%	499.2	81%	570.0
2%	333.2	22%	433.3	42%	467.9	62%	501.1	82%	575.1
3%	351.6	23%	435.4	43%	469.4	63%	503.0	83%	580.6
4%	364.1	24%	437.2	44%	470.9	64%	505.0	84%	586.2
5%	373.5	25%	439.2	45%	472.4	65%	507.1	85%	591.8
6%	380.5	26%	441.2	46%	474.0	66%	509.3	86%	597.5
7%	386.7	27%	443.1	47%	475.6	67%	511.8	87%	603.5
8%	391.9	28%	444.9	48%	477.1	68%	514.5	88%	609.8
9%	396.0	29%	446.7	49%	478.6	69%	517.3	89%	616.3
10%	399.1	30%	448.6	50%	480.2	70%	520.4	90%	623.3
11%	403.0	31%	450.5	51%	481.8	71%	523.7	91%	630.3
12%	406.6	32%	452.1	52%	483.4	72%	527.3	92%	637.6
13%	410.2	33%	453.7	53%	485.1	73%	531.2	93%	645.6
14%	413.5	34%	455.2	54%	486.8	74%	535.3	94%	653.8
15%	416.5	35%	456.9	55%	488.5	75%	539.6	95%	662.7
16%	419.1	36%	458.5	56%	490.2	76%	544.2	96%	672.9
17%	421.8	37%	460.1	57%	492.0	77%	549.2	97%	682.4
18%	424.3	38%	461.7	58%	493.8	78%	554.5	98%	692.4
19%	426.5	39%	463.2	59%	495.7	79%	559.7	99%	704.3
								FBP	713.1



Test Summary Report
November 20th, 2014
Steel Shield Technologies

SwRI Lab# 23728

Biogas Landfill Gas Engine Oil
SAE 40 (Gecat SAE 40 Low Ash)
1 Gallon Plastic Jug

ASTM D2782 Measurement of Extreme-Pressure Properties of Lubricating Fluids (Timken Method)

Okay Load, lbs	40
Score Load, lbs	45
Temperature, °C	38

ASTM D2783 Measurement of Extreme-Pressure Properties of Lubricating Fluids (4-Ball Method)

Corrected Load, kgf	109
Load Wear Index, kgf	46
Weld Point, kg	250
Last Non Seizure Load, kg	100

ASTM D6352 Boiling Range Distribution of Petroleum Distillates from 174 to 700 °C by GC

IBP	291.8	20%	462.9	40%	491.3	60%	512.8	80%	545.5
1%	308.9	21%	465.1	41%	492.4	61%	514.0	81%	548.7
2%	331.8	22%	467.0	42%	493.5	62%	515.2	82%	552.3
3%	349.1	23%	468.8	43%	494.7	63%	516.5	83%	556.3
4%	362.7	24%	470.4	44%	495.8	64%	517.8	84%	560.5
5%	374.7	25%	472.0	45%	496.9	65%	519.1	85%	565.1
6%	385.9	26%	473.6	46%	497.9	66%	520.4	86%	569.9
7%	396.5	27%	475.1	47%	498.9	67%	521.8	87%	575.0
8%	406.2	28%	476.5	48%	499.9	68%	523.1	88%	580.8
9%	415.0	29%	477.8	49%	500.9	69%	524.5	89%	586.8
10%	422.4	30%	479.1	50%	502.0	70%	526.0	90%	593.2
11%	429.0	31%	480.4	51%	503.0	71%	527.5	91%	599.9
12%	434.9	32%	481.6	52%	504.0	72%	529.0	92%	607.5
13%	440.2	33%	482.9	53%	505.1	73%	530.7	93%	615.4
14%	444.7	34%	484.2	54%	506.1	74%	532.4	94%	624.3
15%	449.2	35%	485.4	55%	507.2	75%	534.2	95%	633.7
16%	452.5	36%	486.6	56%	508.2	76%	536.1	96%	644.5
17%	455.4	37%	487.8	57%	509.3	77%	538.1	97%	656.4
18%	458.3	38%	489.0	58%	510.5	78%	540.4	98%	671.9
19%	460.7	39%	490.1	59%	511.7	79%	542.8	99%	688.2
								FBP	697.9



25. SOUTHWEST RESEARCH INSTITUTE TEST REPORTS

STEEL SHIELD GAS ENGINE OILS AND COMPRESSOR OILS ASTM D2782 Timken,

D2783 4-Ball & D6352 GC — Original Documents

Report 3



Test Summary Report
November 20th, 2014
Steel Shield Technologies

SwRI Lab# 25252

SST-EPA

1 Gallon Plastic Jug

ASTM D2782 Measurement of Extreme-Pressure Properties of Lubricating Fluids (Timken Method)

Okay Load, lbs	75
Score Load, lbs	80
Temperature, °C	38

ASTM D2783 Measurement of Extreme-Pressure Properties of Lubricating Fluids (4-Ball Method)

Corrected Load, kgf	
Load Wear Index, kgf	
Weld Point, kg	>800
Last Non Seizure Load, kg	80

Note 1: The information contained in this document is legally privileged and/or proprietary business information intended only for the use of the individual or the entity named above. If the reader of this document is not the intended recipient, you are hereby notified that any dissemination, distribution, or copy of this document is strictly prohibited. If you have received this document in error, please immediately notify us by telephone at 210-522-2964 and return the original document to the sender at the return address via the United States Postal Service.

Note 2: Institute shall not publish or make known to others the subject matter or results of the Project or any information obtained in connection therewith which is proprietary and confidential to Client without Client's written approval. No advertising or publicity containing any reference to Institute or any of its employees, either directly or by implication, shall be made use of by Client or on Client's behalf without Institute's written approval. In the event Client distributes any report issued by Institute on this Project outside its own organization, such report shall be used in its entirety, unless Institute approves a summary or abridgement for distribution.

ORRLAKE4 Steel Shield (a).docx
Page 15 of 16



Test Summary Report
November 20th, 2014
Steel Shield Technologies

SwRI Lab# 23727

Compressor Oil Ashless
ISO #100/150
1 Gallon Plastic Jug

ASTM D2782 Measurement of Extreme-Pressure Properties of Lubricating Fluids (Timken Method)

Okay Load, lbs	55
Score Load, lbs	60
Temperature, °C	38

ASTM D2783 Measurement of Extreme-Pressure Properties of Lubricating Fluids (4-Ball Method)

Corrected Load, kgf	133
Load Wear Index, kgf	48
Weld Point, kg	250
Last Non Seizure Load, kg	100

ASTM D6352 Boiling Range Distribution of Petroleum Distillates from 174 to 700 °C by GC

IBP	310.0	20%	398.6	40%	421.7	60%	442.0	80%	465.5
1%	326.9	21%	400.0	41%	422.7	61%	443.1	81%	466.9
2%	344.5	22%	401.4	42%	423.6	62%	444.1	82%	468.4
3%	354.0	23%	402.7	43%	424.6	63%	445.3	83%	469.9
4%	360.6	24%	404.0	44%	425.6	64%	446.4	84%	471.5
5%	365.4	25%	405.2	45%	426.6	65%	447.5	85%	473.2
6%	369.2	26%	406.4	46%	427.6	66%	448.7	86%	474.9
7%	372.5	27%	407.7	47%	428.6	67%	449.8	87%	476.7
8%	375.5	28%	408.9	48%	429.6	68%	450.9	88%	478.7
9%	378.2	29%	410.1	49%	430.6	69%	452.0	89%	480.7
10%	380.6	30%	411.2	50%	431.6	70%	453.1	90%	483.0
11%	382.8	31%	412.4	51%	432.6	71%	454.2	91%	485.6
12%	384.9	32%	413.4	52%	433.6	72%	455.4	92%	488.3
13%	386.9	33%	414.5	53%	434.6	73%	456.6	93%	491.4
14%	388.9	34%	415.5	54%	435.7	74%	457.8	94%	494.9
15%	390.7	35%	416.6	55%	436.7	75%	459.0	95%	498.8
16%	392.4	36%	417.7	56%	437.7	76%	460.2	96%	503.3
17%	394.0	37%	418.7	57%	438.8	77%	461.5	97%	509.1
18%	395.6	38%	419.7	58%	439.9	78%	462.8	98%	517.6
19%	397.1	39%	420.7	59%	440.9	79%	464.1	99%	531.3
								FBP	544.3

ORRLAKE4 Steel Shield (a).docx
Page 11 of 16



25. SOUTHWEST RESEARCH INSTITUTE TEST REPORTS

STEEL SHIELD GAS ENGINE OILS AND COMPRESSOR OILS ASTM D2782 Timken, D2783 4-Ball & D6352 GC — Original Documents

Report 2



Test Summary Report
November 20th, 2014
Steel Shield Technologies

SwRI Lab# 25250

Mobil Pegasus
805
1 Gallon Plastic Jug

ASTM D2782 Measurement of Extreme-Pressure Properties of Lubricating Fluids (Timken Method)	
Okay Load, lbs	9
Score Load, lbs	12
Temperature, °C	38

ASTM D2783 Measurement of Extreme-Pressure Properties of Lubricating Fluids (4-Ball Method)	
Corrected Load, kgf	136
Load Wear Index, kgf	34
Weld Point, kg	200
Last Non Seizure Load, kg	63

ASTM D6352 Boiling Range Distribution of Petroleum Distillates from 174 to 700 °C by GC

IBP	338.1	20%	467.0	40%	495.3	60%	515.0	80%	538.2
1%	363.1	21%	468.9	41%	496.4	61%	516.1	81%	539.6
2%	384.2	22%	470.6	42%	497.4	62%	517.1	82%	541.0
3%	396.2	23%	472.3	43%	498.3	63%	518.1	83%	542.6
4%	401.9	24%	474.0	44%	499.3	64%	519.2	84%	544.2
5%	410.8	25%	475.6	45%	500.3	65%	520.3	85%	545.9
6%	419.2	26%	477.1	46%	501.3	66%	521.4	86%	547.7
7%	426.0	27%	478.6	47%	502.2	67%	522.5	87%	549.7
8%	431.6	28%	480.0	48%	503.2	68%	523.6	88%	551.8
9%	436.1	29%	481.5	49%	504.1	69%	524.7	89%	554.1
10%	440.5	30%	482.9	50%	505.1	70%	525.8	90%	556.5
11%	444.1	31%	484.2	51%	506.0	71%	526.9	91%	558.9
12%	447.6	32%	485.6	52%	506.9	72%	528.1	92%	561.8
13%	450.8	33%	486.9	53%	507.9	73%	529.3	93%	565.0
14%	453.5	34%	488.2	54%	508.9	74%	530.5	94%	568.7
15%	456.1	35%	489.4	55%	509.9	75%	531.7	95%	573.2
16%	458.5	36%	490.6	56%	510.9	76%	533.0	96%	580.2
17%	460.8	37%	491.8	57%	511.9	77%	534.2	97%	594.4
18%	463.0	38%	493.0	58%	512.9	78%	535.5	98%	634.2
19%	465.1	39%	494.1	59%	514.0	79%	536.8	99%	674.3
								FBP	689.6



Test Summary Report
November 20th, 2014
Steel Shield Technologies

SwRI Lab# 25251

Mobil Pegasus
801
1 Gallon Plastic Jug

ASTM D2782 Measurement of Extreme-Pressure Properties of Lubricating Fluids (Timken Method)	
Okay Load, lbs	9
Score Load, lbs	12
Temperature, °C	38

ASTM D2783 Measurement of Extreme-Pressure Properties of Lubricating Fluids (4-Ball Method)	
Corrected Load, kgf	74
Load Wear Index, kgf	35
Weld Point, kg	200
Last Non Seizure Load, kg	80

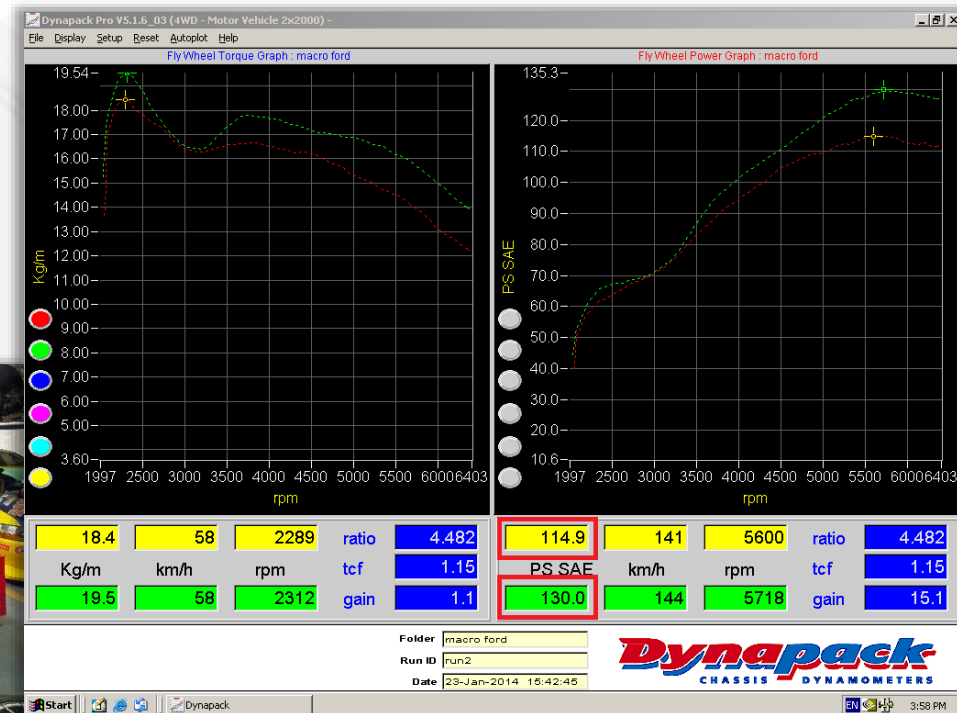
ASTM D6352 Boiling Range Distribution of Petroleum Distillates from 174 to 700 °C by GC

IBP	355.5	20%	469.5	40%	492.3	60%	510.0	80%	532.2
1%	372.7	21%	470.9	41%	493.3	61%	511.0	81%	533.6
2%	391.1	22%	472.3	42%	494.3	62%	511.9	82%	535.1
3%	401.9	23%	473.7	43%	495.2	63%	512.9	83%	536.5
4%	413.3	24%	475.0	44%	496.2	64%	513.9	84%	538.1
5%	422.1	25%	476.2	45%	497.0	65%	514.9	85%	539.7
6%	429.3	26%	477.4	46%	497.8	66%	516.0	86%	541.4
7%	435.4	27%	478.5	47%	498.7	67%	517.0	87%	543.2
8%	440.6	28%	479.7	48%	499.5	68%	518.0	88%	545.2
9%	444.6	29%	480.8	49%	500.4	69%	519.1	89%	547.4
10%	448.3	30%	481.9	50%	501.2	70%	520.2	90%	549.9
11%	451.6	31%	483.1	51%	502.1	71%	521.3	91%	552.7
12%	454.2	32%	484.2	52%	503.0	72%	522.4	92%	555.8
13%	456.7	33%	485.2	53%	503.8	73%	523.5	93%	559.1
14%	459.0	34%	486.3	54%	504.7	74%	524.7	94%	563.1
15%	461.0	35%	487.3	55%	505.5	75%	525.9	95%	568.2
16%	462.9	36%	488.4	56%	506.4	76%	527.1	96%	575.2
17%	464.7	37%	489.4	57%	507.2	77%	528.3	97%	590.1
18%	466.5	38%	490.3	58%	508.1	78%	529.6	98%	633.5
		39%	491.3	59%	509.0	79%	530.9	99%	673.0
								FBP	687.9



26. DYNO TEST REPORT

The following is a Dyno test report of a Ford Focus 2.0L car using a professional horse power tester. **The result reveals that without any mechanical or electrical modifications, the horse power increased from 114.9 to the maximum of 130 with the presence of Steel Shield product - an increase of 13% in horse power.**



27. INSURANCE CERTIFICATE AND CONFIRMATION OF NO INSURANCE CLAIM



Best Insurance Agency
 340 S. Main St., P.O. Box 670
 Butler, PA 16003-0670
 (724)283-5670 (724)283-1160 Fax
 Email: Ray@Bestinsurancebutler.com

September 18, 2013

Steel Shield Technologies (Asia Pacific) Limited
 22nd Floor, W. Business Centre
 4 Kam Hong Street
 North Point, Hong Kong

To Whom It May Concern:

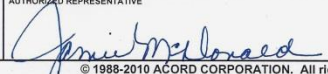
Please be advised that Steel Shield Technologies Inc, manufacturer of specialty lubricants and greases, located in Bethel Park, Pennsylvania, USA, has had no claims, claim related incidents or notices of loss under any General Liability policy issued by our office. We have provided them with General Liability coverage continuously since April 24, 2008

If you have any questions or need further information please feel free to contact me. I will be happy to be of further assistance.

Sincerely,

 Raymond A. Rosenbauer
 Vice President



ACORD®		CERTIFICATE OF LIABILITY INSURANCE		DATE (MM/DD/YYYY) 5/14/2014		
THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.						
IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).						
PRODUCER Best Insurance Agency 340 S. Main St., P.O. Box 670 Butler PA 16003-0670	CONTACT NAME Jamie McDonald PHONE (724)283-5670 FAX (724)283-1160 E-MAIL jamie@bestinsurancebutler.com ADDRESS	INSURER(S) AFFORDING COVERAGE INSURER A: Cincinnati Insurance Companies INSURER B: INSURER C: INSURER D: INSURER E: INSURER F:	NAIC #			
INSURED Steel Shield Technologies Inc 3351 Industrial Blvd / Bethel Park PA 15102						
COVERAGES		CERTIFICATE NUMBER: coi 2014 - 15	REVISION NUMBER:			
THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.						
INSR LTR	TYPE OF INSURANCE	ADDITIONAL INSURER (LWD)	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	GENERAL LIABILITY <input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR		ENP04242014	4/24/2014	4/24/2015	EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (EA OCCURRENCE) \$ 100,000 MED EXP (Any one person) \$ 5,000 PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COMP/OP AGG \$ 2,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER: <input checked="" type="checkbox"/> POLICY <input type="checkbox"/> PROJ <input type="checkbox"/> LOC					
	AUTOMOBILE LIABILITY <input type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> HIRED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> NON-OWNED AUTOS					COMBINED SINGLE LIMIT (EA ACCIDENT) \$ BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$
A	<input checked="" type="checkbox"/> UMBRELLA LIAB <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> DED <input type="checkbox"/> RETENTION \$		ENP04242014	4/24/2014	4/24/2015	EACH OCCURRENCE \$ 1,000,000 AGGREGATE \$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N N/A				WC STATUS / OTHER LIMITS EL EACH ACCIDENT \$ EL DISEASE - EA EMPLOYEE \$ EL DISEASE - POLICY LIMIT \$
DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101)						
CERTIFICATE HOLDER Steel Shield Technologies Inc. 3351 Industrial Blvd. Bethel Park, PA 15102			CANCELLATION SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE 			
ACORD 25 (2010/05) INS025 (201005) 01 © 1988-2010 ACORD CORPORATION. All rights reserved. The ACORD name and logo are registered marks of ACORD						



28. MAJOR CLIENTS



US ARMY



SIEMENS



UNION PACIFIC RAILROAD
(NEW YORK STOCK EXCHANGE
NO.: UNP)



DONGJIANG
ENVIRONMENT
(HONG KONG STOCK EXCHANGE
NO.: 895)

29. SUPER CAR USERS

Super performance cars using Steel Shield help reducing engine noise, more power at the wheels, swift response, extends battery life and cleaner engine. These car owners were **surprised to see the cars behaved just like NEW!** Cruising on the highways they gained an average **12-15% less fuel.**



30. Compliments from the US ARMED FORCES

Mark W. Pushnick
President & CEO
Steel Shield Technologies, Inc
3351 Industrial Blvd
Bethel Park, PA 15102-2543

07 May 2008

Mark,

I wanted to take time to express my sincere thanks to you and Steel Shield Technologies, Inc. for your support while I was deployed overseas in support of the Global War on Terrorism.

Your product, Weapon Shield, was truly a "life saver".

In my first combat tour to Afghanistan in late 2003, not knowing much about your product, I began to use it for my personal weapon and my crew-served vehicle weapon as a just another oil that I received in my care packages from home. I soon became educated on how this product was head and shoulders above the rest.

In the grueling conditions of southwestern Afghanistan, our weapons were subject to severe heat, dust, and even potential rust due to the humidity in the area. Compared to the other oils that we received, Weapon Shield was the only product that stood up to the battlefield environment and did not cause the bolt of the weapons to become "gummy" or "sticky". Weapon Shield actually acted as a "shield" and as a dust repellent.

When I found out that I was deploying back to Iraq in 2007, one of my first calls was to my father to get my hands on Weapon Shield. While conducting pre-deployment training at Fort Bragg, I introduced my soldiers to this product. When it comes to selling to a tough audience, young enlisted men are some of the toughest to buy into a new idea. Within days, all of the men were carrying this product and were even hoarding bottles within their packs.

When we got to Iraq, Weapon Shield bottles became a part of the combat packing list as assigned by my Detachment Sergeant. Weapon Shield was now the Standing Operating Procedure, a small bottle on each man and tube of grease in each truck.

Weapons Shield brought us through over 25 fire fights with great success when other soldier's from different unit's weapons failed. On one occasion on patrol with another unit, their .50 cal machine gun jammed. One of my gunners tossed a bottle of Weapon Shield to them. They broke down their weapon, applied the shield and quickly got back into the firefight. In our mission after action review, my soldiers quickly commented on how their weapons would only be treated with this product.

The bottom line is this... In two combat tours to both Afghanistan and Iraq, weapons treated with Weapon Shield, NEVER jammed. That saved lives. As a unit commander, my most important job was to complete this mission while bringing all of my soldiers home. Weapon Shield was a great contributor to my unit accomplishing that mission. In combat, the only option is perfect. If you are not, you can die. Weapon Shield was PERFECT every time. Victory!

Craig A. Hickerson
MAJOR, Infantry
USAR

Original



Letters of Thanks and
Compliments from the US Army
"Weapon Shield was truly a life
saver"

December 10, 2008

Mark W. Pushnick
President & CEO
Steel Shield Technologies, Inc.
3351 Industrial Blvd.

SIEMENS Letter of Gratitude

Mark,

I would like to take this opportunity to thank you for introducing us to Steel Shield Technologies line of lubricants and Metal Treatment products. The performance of your products has been overwhelmingly superior to any other lubricants or metal treatments we have used in the past.

We are currently using the Lithi-Shield grease in our shop and it has proven to work very well in our high temperature applications. We have experienced absolutely no down time due to bearing failure on our high temp furnace since we began using the Lithi-Shield grease. In the past all bearings were replaced on a quarterly basis causing a significant amount of downtime and material cost. We also use the grease in our automated welding equipment and anywhere else frequent greasing is needed. It has out performed our previously used grease in every application and we use it as often as possible.

Because of the performance of the Lithi-Shield grease we started using Steel Shield EPA in all of our metalworking equipment. Since its introduction to our machines we have not experienced a significant breakdown of any kind and it has left them running smoother and quieter than ever. The Steel Shield Drill and Tap fluid is also used our shop and has significantly decreased our tooling costs and become a favorite of most of our machinists. The Spray Shield product is used by our maintenance department and it is proving to be superior to anything used here in the past. We are very happy with the cost and performance of Steel Shield Technologies products and I highly recommend them. I am continually looking for ways to reduce costs and downtime Steel Shield products have been a great contributor to our success.

Bob Cavill
Maintenance Department Supervisor
Siemens VAI Services, LLC
2901 Industrial Blvd.
Bethel Park, PA 15102
412-851-6700

Original



32. Letters from Union Pacific Railroad & PA Port Authority

Joe Hendricks
6455 East Commerce
Kansas City, MO 64120
MMEO Central Region

10/01/2003

Marla Carrow
6455 East Commerce
Kansas City, MO 64120

RE: MT-10

Marla:

I want to update you on our progress with the MT-10 product. Sense my last report I have applied MT10 to all of my service units. We use the product in our engines, transmissions, gearboxes and hydraulic tanks thus protecting the entire systems. The product performed as expected. Our failures with these components have decreased even more. Now we are able to work on equipment from the preventative maintenance side instead of a breakdown mode.

We have had cases that I can attribute directly to MT10 and were able to save the company thousands of dollars on the spot. This product proves itself worthy over and over and should be used by all departments to get the maximum savings for the Union Pacific.

Sincerely

Joe Hendricks
Manager M/W Equipment Operations CR
816-245-2733

The letter states that the Union Pacific Railroad uses Steel Shield product extensively. Steel Shield has been proved to be functional and cost-



Authority

PORT
AUTHORITY

August 14, 2002

Mark Pushnick
President
Mark Pushnick Enterprises
3351 Industrial Blvd.
Bethel Park, PA 15102-2543

Re: Return on Investment of MT-10 Metal Treatment

Dear Mr. Pushnick:

As you are probably aware, Port Authority of Allegheny County's experiences with MT-10, has been very good. We have been using this product in the gearboxes of our light rail vehicles for approximately 8 of the last 9 years now. One year we discontinued the use of MT-10 and experienced a sharp decline in gearbox reliability and since have resumed the use of its application.

We regularly have oil analysis performed, by an independent testing laboratory and the results of the analysis have indicated that the use of MT-10 has significantly lowered the wear metals that we previously experienced prior to its use. The MT-10 has appreciably extended the service life of our existing gearboxes.

Based on the costs we were incurring prior to the use of the MT-10 product verse the costs we are currently incurring, we have realized a Return On Investment (ROI) of approximately \$45 saved for every \$1 expensed or 45:1 ratio. The most significant factor was the increase in reliability as well as availability. The vehicles were able to perform when needed and the missed trips were lowered to approximately 10% of past history.

As you are also aware, we continue to use the Power Cut (PC-10) and Power Lift (PL-10) grease with similar experiences.

If you have any questions or I can be of any further assistance, feel free to contact me at (412) 566-5149.

This letter states that they save around USD 45 in maintenance cost for every USD 1 investment in Steel Shield products. Also, the vehicles malfunctions drop



Joe F. Hendricks
Mgr. M/W Equipment Operations
Central Region
UNION PACIFIC RAILROAD
6455 E. Commerce Ave., Kansas City, MO 64120
ph. (816) 245-2733 c. (816) 804-6880
pgr. 4-8800-143-7243 pm-880906
jfhendri@up.com



Sincerely,

Mark P. Ferrari

Mark P. Ferrari, C.P.M., A.P.P.
Manager of Contract Administration
Bus & Rail



33. UNION PACIFIC RAILROAD REPORT

MUST READ

M/W EQUIPMENT CENTRAL REGION (POWER UNITS ONLY)

CASE STUDY 1

- Rail Equipment Shield-Metal Treatment (RES-MT) was not used in Power Units or any other M/W components in 2001 and 2002
- In January 2003 RES-MT was added to the Power Units as well as transmissions, hydraulic systems, gearboxes and differentials
- In 2004 RES-MT was used in the same capacity as 2003
- RES-MT was purchased and added to M/W equipment components even though Case Study 1 is only showing the savings for Power Units

Cost Saving Comparison of Union Pacific Railroad During 2001-2004



Not Just Oil... IT'S TECHNOLOGY

2001 & 2002 (Without RES-MT)		2003 & 2004 (With RES-MT)	
Cost of Failures	= \$172,296 + \$249,476 = \$421,772 (average \$210,886 per year)	Cost of Failures	= \$65,722 + \$64,021 = \$129,742 (average \$64,871 per year)
		Cost of RES-MT	= \$21,195 + \$18,000 = \$39,195 (average \$19,598 per year)
		Total Cost to Union Pacific	= \$168,937 (average \$84,469 per year)
		Savings to Union Pacific	= \$252,835 (average \$126,417 per year)
		Return on investment (ROI) with RES-MT	= $\frac{\$252,835}{\$39,195}$ = 5.45 (545% Returned)

60% COST SAVED



Days on investment: $\frac{\text{savings} - \text{cost}}{\text{cost}} = \text{ROI}$



33. UNION PACIFIC RAILROAD REPORT

MUST READ

CASE STUDY 2

UPRR COST SAVING ANALYSIS FROM 2005 TO 2008

- UPRR started using **Steel Shield Technologies Metal Treatment** Jan 1, 2007
- UPRR purchased **\$20,394.00** of **Rail Equipment Shield** in 2007
- UPRR purchased **\$14,100.00** of **Rail Equipment Shield** in 2008



Year	2005	2006	2007	2008
Cost of Failures:	53,000.00	195,000.00	45,400.00	45,100.00
Cost of Rail Equipment Shield:			20,394.00	14,100.00
Total Cost:	153,000.00	195,000.00	65,794.00	59,200.00

Cost Saving Comparison of Union Pacific Railroad During 2005-2008

2005 & 2006 (Without RES-MT)		2007 & 2008 (With RES-MT)	
Cost of Failures	= \$153,000 + \$195,000 = \$348,000 (average \$174,000 per year)	Cost of Failures	= \$45,400 + \$45,100 = \$90,500 (average \$45,250 per year)
		Cost of RES-MT	= \$20,394 + \$14,100 = \$34,494 (average \$17,247 per year)
		Total Cost to Union Pacific	= \$124,994 (average \$62,497 per year)
		Savings to Union Pacific	= \$223,006 (average \$111,503 per year)
		Return on investment (ROI) with RES-MT	= $\frac{\$223,006 - \$34,494}{\$34,494}$ = 5.46 (546% Returned)



Not Just Oil... IT'S TECHNOLOGY

64% COST SAVED

* (Note) This savings does not include man hours, rentals, downtime costs or delays

33. UNION PACIFIC RAILROAD REPORTS

STORE STOCK ITEM NUMBERS

- RES-MT-16oz # 310-4437-0
- RES-MT-128oz # 310-4440-0
- RES-MT-5G # 310-4441-0
- RES-MT-55G # 310-4444-0
- RES-MT-300G # 310-4446-0

SUMMARY

- **Rail Equipment Shield** has increased train velocity, improved on-time train performance, extended parts life and component reliability and reduced maintenance and downtime by treating the metal surfaces to reduce friction, heat and wear
- After more than 8 years of use experience shows that Rail Equipment Shield has had no negative or detrimental effects
- It helps UPRR save 60~64% maintenance cost per year



34. Letter from VOLVO China

中沃汽车有限公司



Original

致：美国离子能源有限公司

香港荃湾德士古道 188-202 号

立泰工业中心二期 11 楼 K 室

感谢 贵司提供神盾润滑油予我司作汽车马力输出测试。于是次测试当中，我司将神盾润滑油使用于 4 辆沃尔沃 Volvo 汽车 [型号：沃尔沃 S80]，并将 4 辆汽车分别放上汽车马力输出测试机 (Dyno-Shaft On-Vehicle Dynamometer) 进行测试。测试结果显示，4 辆进行测试的沃尔沃 Volvo 汽车在使用神盾润滑油之后，所输出的马力比起未有使用之前增加了 8%-12%。我司非常乐意向客户推荐神盾润滑油。

顺祝

商祺



电话:0571-86852031



Volvo Car Corporation

8th November, 2013

English

To: Steel Shield Technologies
Unit K, 11/F, Leader Industrial Centre, Phase 2,
188-202 Texaco Road, Tsuen Wan, N.T., H.K.

Dear Ms. Eva Lam,

We would like to express our gratitude to Steel Shield Technologies for providing Steel Shield lubricants for our vehicle horse power tests. In this test, our company applied Steel Shield lubricants to 4 Volvo cars (model: Volvo S80). We mounted the 4 cars on the horse power testing machines (Dyno-Shaft On-Vehicle Dynamometer) and conducted the tests individually.

The results indicate that, **the 4 Volvo cars which had Steel Shield lubricants applied got horse power boosted by 8% - 12% compared with the same 4 cars without Steel Shield lubricants.** Our company will be pleased to recommend Steel Shield to our customers.

Sincerely,

Volvo Car Corporation
R/M 1613, 2th Phase, Tongce Square,
3688 Jiangnan Road, Binjiang, Hangzhou, China
Tel.: 0571-86852031
www.sinoworldcars.com



This letter states that the horsepower of Volvo vehicles increased by 8% to 12% after using Steel Shield products.



35. MACAU GRAND PRIX AND EVENTS

61st Macau Grand Prix (2014)

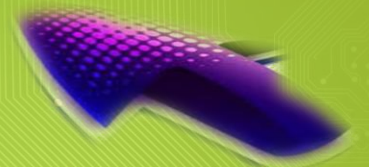


Exhibition & Events

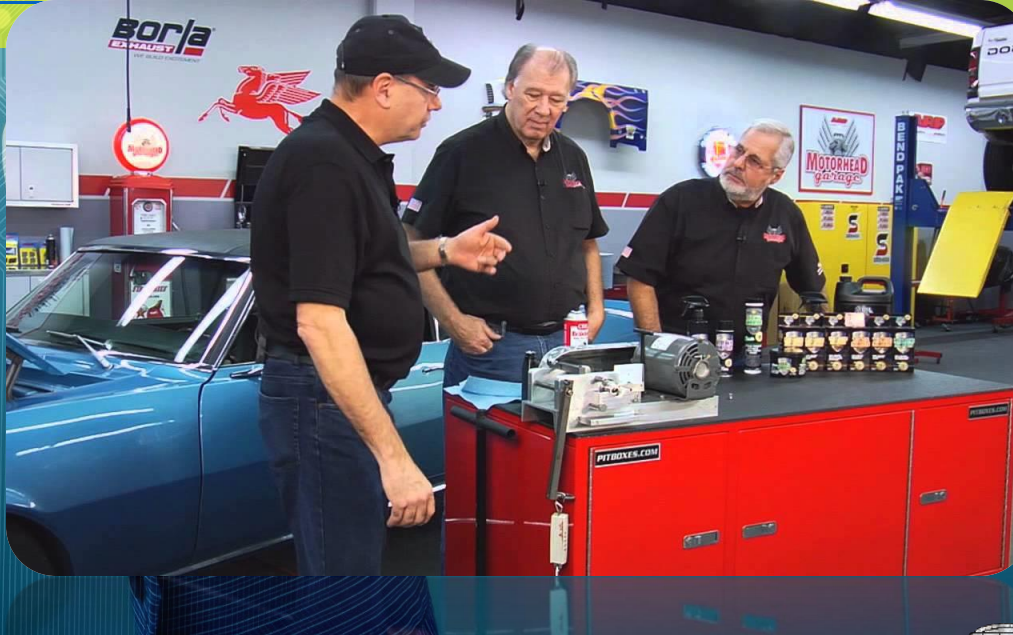


36. STEEL SHIELD VIDEO DEMONSTRATIONS

- [Steel Shield ABF Technology – How it works?](#)
- [Steel Shield ABF Technology – Timken Demonstration.](#)
- [Steel Shield Technology Demo 1](#)
- [Steel Shield Technology Demo 2](#)
- [Steel Shield Tech Full Feature on Motorhead Garage](#)
- [Steel Shield Motorhead Garage Commercial](#)
- [Steel Shield Interviewed by the Guangdong Sport TV in the China International Lubricants and Technology Exhibition](#)



Please click the links



37. Contact US

Steel Shield Technologies

Company Address :
809B, 8/F., Block B,
Goodview Industrial Building,
11 Kin Fat Street, Tuen Mun, N.T., HK
Tel : +852 2545 8029
Fax : +852 2545 8030

Email : steelshieldtech@yahoo.com
Website : www.steelshieldtech.com.hk
Facebook: www.facebook.com/steelshieldtech
Weibo : www.weibo.com/steelshield



100% Made In USA

100% Imported From USA