

SEMISPAR HD

HEAVY DUTY SEMI-SYNTHETIC CUTTING AND GRINDING FLUID

PRODUCT DESCRIPTION:

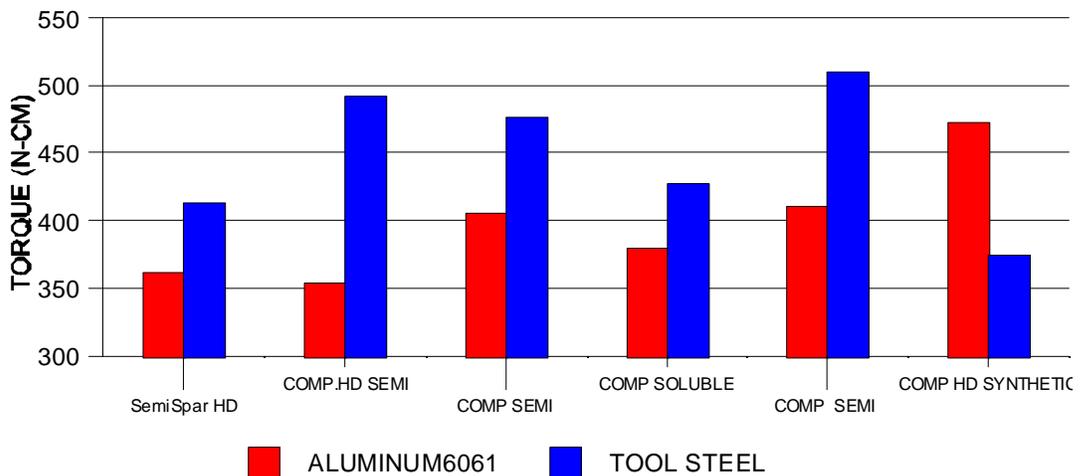
SemiSpar HD is a heavy duty, multi functional semi-synthetic cutting and grinding fluid designed for light, medium and heavy duty machining and/or grinding operations on even hard-to-machine alloys. SemiSpar HD provides multi metal corrosion protection and excellent longevity in a machine or central system.

EXTENDS TOOL LIFE AND PROVIDES EXCELLENT SURFACE FINISH:

State of the art and OSHA approved extreme pressure agents in combination with uniquely synthesized boundary lubricants provide the increased tool life and smoother surface finish even in drilling and tapping of aluminum. The extremely tight micro-emulsion carries this lubricant package directly to the tool/metal interface to enhance this metal-chemical reaction. The extreme pressure lubricants in SemiSpar HD actually react with the freshly machined surface and the hot tool surface to provide a chemical film on both surfaces, insuring extremely good lubricity at the point of cut. SemiSpar HD provides the excellent tool life and surface finish properties on steels, stainless steel, carbon steel, copper, brass, cast iron and most space age alloys.

As the Tap Torque Chart indicates, Spartan Chemical has done extensive lubricant studies using the MegaTap II manufactured by MicroTap in Germany.

TAP TORQUE VALUES



This is the next step in lubrication test equipment just developed by MicroTap to determine the machineability of a cutting and grinding fluid on certain metals. As this chart illustrates, SemiSpar HD either meets or exceeds tapping efficiency thus relating to tool life of every major competitive product we have tested this product against. In one or two cases, a competitive product might meet the tool life standards of SemiSpar HD with one metal, i.e. steel, but on a multitude of metals, particularly on the next metal aluminum, SemiSpar HD far exceeds the tool life of that particular competitive product. We have tested SemiSpar HD against top quality synthetics, semi-synthetics and other extreme pressure soluble oil coolants and found SemiSpar HD to be the leader of the pack when it comes to multi-metal tool life and surface finish studies.

MULTI METAL CORROSION PROTECTION:

SemiSpar HD's corrosion inhibiting package protects against surface deterioration due to rust, stain, or corrosion of steel, cast iron, aluminum, brass, copper, galvanized stainless steel and the modern alloys machined today. This means that one product, SemiSpar HD, can be used in anyone's shop, on a multitude of operations and on a wide variety of metals without concern for rust, stain or corrosion.

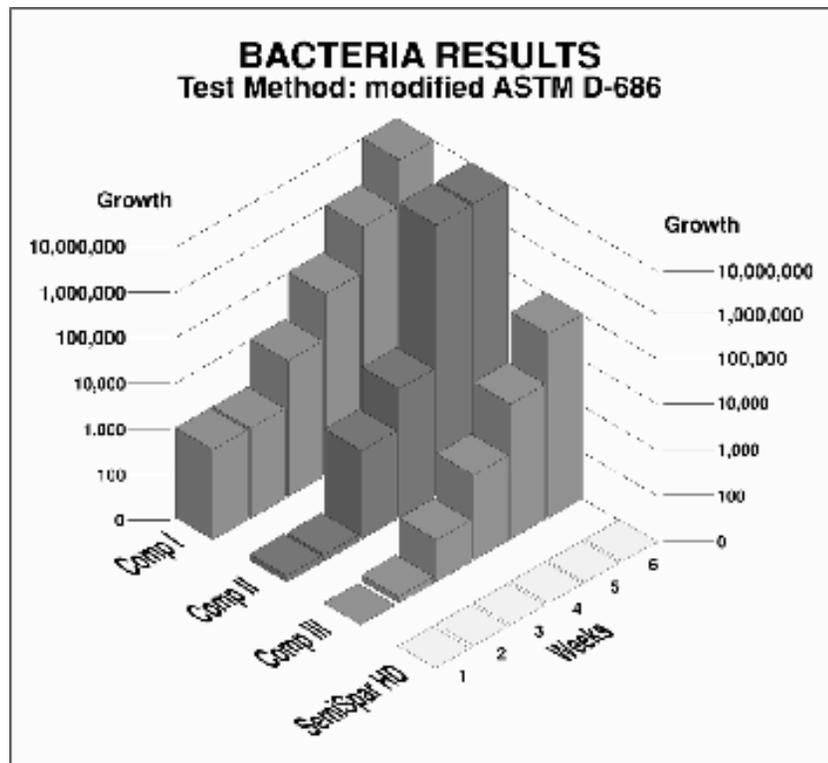
ENHANCED LONGEVITY:

The synergistic combination of EPA approved odor controlling agents along with the utilization of bacterial and fungal resistant raw materials provides excellent rancidity control. The micro-emulsion encapsulation of these approved odor-killing components protects even the oil phase of SemiSpar HD. Everyone is familiar with the foul odor commonly referred to as "Monday morning stink" of a rancid coolant. However, odor is just one of the problems caused by microorganisms in a water-based coolant. Microorganisms virtually consume wetting agents, rust inhibitors, lubricants and other important ingredients in the coolant during its metabolism functions. As their numbers increase, the coolant tends to lose all of their functions in the machine. Once a count of 10^6 - 10^7 is reached, bacteria, fungus, mold and/or yeast has virtually consumed a large portion of the most important ingredients in a coolant. Bacteria also secretes organic acids during their metabolism which reduce the pH, cause rust and corrosion on the machine and parts and can lead to skin irritation in some cases. With SemiSpar HD's excellent resistance to microorganism growth, the number one problem in metal working fluids today is virtually eliminated. Some type of bacteria like Pseudomonas are slime producing bacteria and can leave a sticky, tacky residue on machine and parts. This residue can build up to the point of tying up the machine and making it very difficult to maintain size and tolerance. With the excellent longevity of SemiSpar HD, this residue is virtually eliminated.

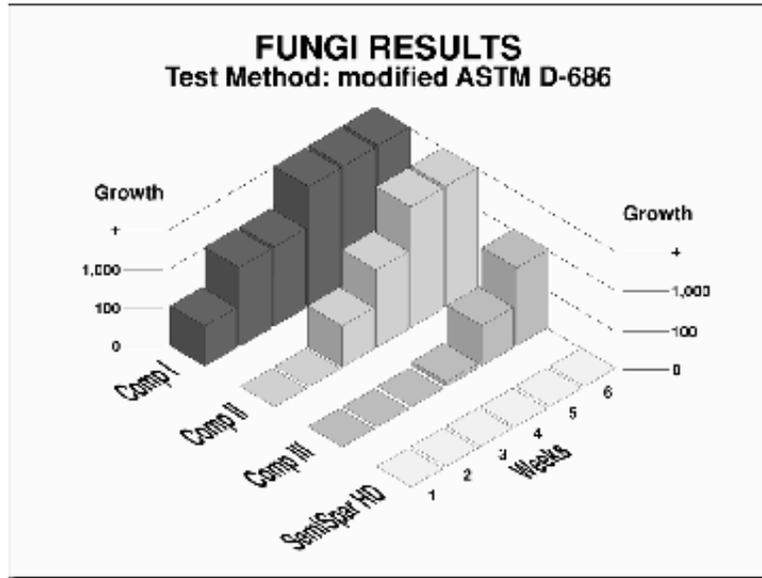
Fungus can form a raw liver type substance in a machine to clog lines, pump filters, filtration equipment, and will float on the top of the sump like a blanket. Fungus is extremely difficult to kill and once it is formed, the only way to get rid of it is by pumping out, thoroughly cleaning and disinfecting the machine with The Cleaner and recharging it. SemiSpar HD prevents fungal growth and the operation runs more smoothly for an extended period of time.

The following two charts show how resistant SemiSpar HD is to attack by microorganisms, when compared to the best the competition has to offer. These dramatic results show SemiSpar HD is exceptional in preventing odors, slime formation and growth. These tests were run according to a modified ASTM D-686 procedure. This procedure was modified to be more severe than the test requires.

In the bacterial resistance chart, SemiSpar HD went the full six weeks with essentially no growth of bacteria even after it had been inoculated with an extremely rancid coolant. The initial inoculation was 10% of this rancid coolant into a fresh solution of each coolant tested. Bacteria and fungus counts were run weekly and each week an additional extremely rancid coolant was added to each of these samples.



Again, SemiSpar HD went virtually bacteria free for the entire six weeks. It is not only the amount of bacteria that grows in the coolant, but it can come down to the types of bacteria that grow in coolant that can secrete the foul odors that most people are familiar with. SemiSpar HD's odor killing components were scientifically selected, not only to keep the total count down, but also to keep the odor producing type bacteria, such as Desulfurican, to absolute minimal growth in the machine. This provides a pleasant atmosphere around the machine for operators.



The fungal resistant chart also shows that even with severe inoculation, again 10% was added the first week of a severe fungal contaminated coolant and each solution was inoculated on a weekly basis, no fungal growth was contained in the SemiSpar HD even after these seven inoculations. This will greatly reduce the maintenance costs in a metal working facility by eliminating the need to unplug clogged pipes, pump filters, trophs, etc. due to slimy, liver-like fungal growths.

There are some coolant companies promoting the good bug/bad bug theory of their coolant. In other words, if it does not smell, everything is OK. As mentioned previously, it is not only important to keep the odor-producing type microorganisms under control, but it is also extremely important to keep the total microorganism population under control. Keeping the fowl odor producing microorganisms under control and not taking into account the total count can result in other deteriorating effects caused by microorganisms -- loss of tool life, rust, loss of wetting agents, and literally total coolant deterioration.

Studies are now being performed by OSHA, EPA, universities and by private organizations to determine the effect of the release of endotoxins by coolants. Some companies like to keep odor under control by adding a germicide to a system after the bacterial count has reached a certain level, generally 10^6 - 10^7 level. By adding a germicide and killing the bacteria, the bacteria then secrete these endotoxins which have been encapsulated in their cell walls into the atmosphere. Today, the endotoxins are suspect as far as the health of the operator is concerned. Keeping the total bacterial count down, as SemiSpar HD does, the atmosphere around a machine or central system is improved as far as operator health is concerned. There is no need for the addition of germicides to any machine when using and properly controlling SemiSpar HD.

WATER RESOLUBLE AND FREE FLOWING RESIDUE: SemiSpar HD leave a non-sticky, free-flowing, water resolvable, thin film corrosion protective residue on the machine and parts. No sticky, tacky or concrete type residue commonly associated with semi-synthetics to tie up CNC equipment. This rust preventative residue is easily removed from parts by water based parts washing compounds. Vapor degreasing or solvent washing operations are not required. This provides added safety to the operator and the environment. Competitive semi-synthetics that leave this sticky, tacky residue

cause excessive maintenance costs to most machine shops today. This residue can tie up the machines and cause off size parts, increased tolerance control problems and an overall inefficient operation. The "tack free" residue of SemiSpar HD completely eliminates these major headaches for machine shops today.

REJECTS TRAMP OIL EMULSIFICATION:

Employing modern formulation techniques and proper emulsifier balance, SemiSpar HD rejects water resistant tramp oils and greases for ease of removal by skimming, centrifugation, coalescing or ultra filtration. This helps keep the system clean, odor and smoke free. By removing these tramp oils, the primary home and nutrition source for the bacteria, mold, fungus and yeast that commonly grow in coolant is eliminated. By combining the excellent odor control of SemiSpar HD and the removal of the tramp oil, the customer can experience extremely long life with SemiSpar HD.

OPERATOR FRIENDLY/SAFE FOR THE ENVIRONMENT:

With OSHA and EPA laws changing virtually daily, SemiSpar HD was formulated to be as friendly to the operators and safe on the environment as chemically possible and still provide the excellent functions associated with this product. SemiSpar HD does not contain nitrites, nitrates, phenols, creosoles, harsh alkalies, sulfur, MEA, DEA, PCB's or heavy metals. It is mild, does not irritate skin and eliminates nitrosamine formation. Operators like its clarity and odor free characteristics and the excellent visibility of the work piece, even in harder waters.

RECYCLING HIGHLY RECOMMENDED:

One of the major expenses in any metal working operation is the trade waste involved in getting rid of spent coolant. SemiSpar HD, with its excellent bacterial resistance, is ideal for recycling, thus greatly reducing the amount of dollars spent on trade waste of spent coolant. SemiSpar HD is specially formulated for recycling through centrifuges, coalescers, diatomaceous earth, Xybex Units, Cimcool Recovery Units and any state-of-the-art recycling equipment. It can also be recycled by the simple two-tank system incorporating a dirty tank and clean tank set-up. This enables customers to reduce coolant purchases and trade waste costs while at the same time help to preserve the natural environment. With EPA laws becoming stricter every day, by using SemiSpar HD and recycling, a metal working facility can greatly reduce the possibility of potential fines due to spills and/or midnight haulers. With the proper use of SemiSpar HD, any metal working facility can reduce trade waste costs by up to 90% and at the same time greatly reduce the potential fine possibilities.

MINIMAL TRADE WASTE:

Using the latest trade waste technology, SemiSpar HD is easily cracked to reduce the volume of trade waste allowing safe disposal and discharge through conventional treatment processes. Please contact Spartan Chemical laboratories for information on these trade waste procedures.

EXCELLENT FILTERABILITY:

SemiSpar HD is easily filtered with diatomaceous earth, positive media, cyclonic, centrifugation or settling type filtration units.

DIRECTIONS FOR USE:

A concentrate designed to be diluted with water, SemiSpar HD forms a translucent solution in a wide range of water temperatures and hardnesses.

1. To insure a uniform solution, mix SemiSpar HD with water at the appropriate concentrations in a separate container. (Refer to Recommended Starting Concentration Chart.)
2. Agitate solution until thoroughly mixed.
3. Add the mixed coolant to the cleaned sump.
4. **Makeup:** When adding makeup to the machine, add SemiSpar HD at ½ to 2/3 the concentration desired in the machine. For example, startup of 10:1 requires 20:1 makeup. Always add diluted solution as makeup; never plain water.

Total Volume by Gallons Formula

$$\frac{\text{Width x Length x Height (in inches)}}{231} = \text{Total Sump Capacity in Gallons}$$

TECHNICAL DATA:

Viscosity -- 110 cps. @ 24EC/75EF

Specific Gravity – 1.00 @ 24EC/75EF

pH (Concentrate) – 10.0 ± 0.5

pH (10% solution) -- 9.5 ± 0.5

Density @ 24EC/75EF – 8.32 lbs./gal.

Flash Point (COC) – None to boiling

Solubility – Complete

Storage Stability --

- a. Shelf @ 24EC/75EF – 1 year minimum
- b. Accelerated @ 49EC/120EF – 30 days minimum
- c. Freeze/Thaw -- Passes 3 cycles

RECOMMENDED STARTING CONCENTRATION
(parts water to parts SemiSpar HD)

	DUCTILE IRON	BRASS ALLOYS	MILD STEEL	STAINLESS STEEL	HARD STEEL ALLOYS	ALUMINUM ALLOYS	COPPER ALLOYS
GENERAL					15 to	20 to	
TURNING	15-1	25-1	25-1	20-1	20-1	25-1	25-1
BORING	15-1	15-1	15-1	15-1	15-1	15-1	15-1
PLANING					15 to		
SPOT FACING	15-1	25-1	20-1	20-1	20-1	20-1	20-1
					15 to		
GENERAL MILLING	15-1	20-1	20-1	20-1	20-1	20-1	20-1
GENERAL DRILLING	10-1	10-1	15-1	10-1	10-1	10-1	10-1
TAPPING/REAMING	10-1	10-1	10-1	10-1	10-1	10-1	10-1
SAWING	15-1	15-1	15-1	15-1	15-1	15-1	15-1
SURFACE GRINDING	30-1	30-1	30-1	20-1	20-1	30-1	30-1
OD & FINISH							
GRINDING	25-1	20-1	25-1	20-1	20-1	25-1	25-1
ID & CYLINDRICAL							
GRINDING	20-1	25-1	25-1	20-1	20-1	25-1	25-1

PACKAGING:

SemiSpar HD is available in tank wagons; 330-gallon reusable totes; 275-gallon totes; recyclable HDPE (High density polyethylene) 55-gallon drums and 5-gallon pails. Label copy is available in both English and Spanish. Secondary labels are also available.

Be sure to read all Directions, Precautionary and First Aid Statements on product labels before use of this or any IPG/ Spartan product. Material Safety Data Sheets for all IPG/Spartan products are available from your authorized IPG/Spartan distributor.

GUARANTEE:

Spartan's modern manufacturing and laboratory control insure uniform quality. If dissatisfied with performance of product, any unused portion may be returned for credit within one year of the date of manufacture.