

CUTTER EXP HW

Extended Performance Soluble Oil-Based Cutting and Grinding Fluid Fortified with Extreme Pressure Properties HARD WATER DILUTABLE

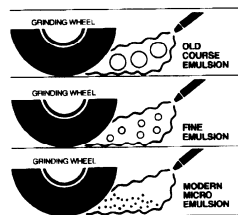
PRODUCT DESCRIPTION:

CUTTER EXP HW is a multi-functional soluble oil-based product designed to be diluted with hard water to perform heavy, medium and light duty machining and grinding operations. CUTTER EXP HW offers extended long-term in-tank stability providing maximum longevity and machine performance.

CUTTER EXP HW offers users the following advantages:

EXTENDS TOOL LIFE/IMPROVES SURFACE FINISH:

The excellent emulsion stability and stable chlorine content of CUTTER EXP HW provides outstanding tool life and surface finish on even the most difficult to machine alloys such as Stainless Steel, Hastelloy, Inconel, Titanium, Tantalum, Waspalloy, aircraft grade aluminum and other space-age metals. The micro emulsion of CUTTER EXP HW (illustration below) carries the chlorine and other lubricants between the tool and workpiece much better than the standard emulsion to increase tool life by a minimum of 20% and in most cases much higher.



CORROSION PROTECTION:

CUTTER EXP HW contains superior corrosion inhibitors to protect galvanized parts, steel, aluminum, brass, copper and their alloys. You can machine or grind any metal even in hard water without fear of stain, rust or corrosion. CUTTER EXP HW leaves a thin rust preventative film on parts for rust protection for up to six months of inside storage.

LABOR SAVINGS/ECONOMICAL:

The excellent emulsion stability combined with its extended longevity even in hard water, and cleanliness of CUTTER EXP HW means less down time, fewer pump-outs, less trade waste and more production dollars per shift.

CUTTER EXP HW does not attack o-rings, seals, way covers, bearings or other parts of the machine exposed to the coolant thereby reducing maintenance costs.

RECYCLING REDUCES HAUL AWAY COSTS BY 90%!

New to the market synergistic odor and slime inhibiting agents are formulated in CUTTER EXP HW to provide excellent longevity. Use of CUTTER EXP HW in conjunction with a coolant maintenance and recycling program can reduce haul away costs by 90%. CUTTER EXP HW can be recycled through all the modern recycling equipment manufactured today. It can be run through centrifuges, coalescers, diatomaceous earth, Xybex units, Cimcool recovery units, Menbrex filtration units and other state-of-the-art recycling equipment. The recyclability of CUTTER EXP HW reduces haul away costs, coolant purchases, labor and expense of pump-outs and recharges and loss of time and money when machines are not producing parts.

EPA is monitoring metalworking facilities closely for the amount and type of oils, solvents, and other hazardous materials they dispose of. By reducing coolant trade waste by 90% using CUTTER EXP HW, cost and potential fines by EPA are greatly reduced.

FREE FLOWING RESIDUE:

CUTTER EXP HW leaves a non-sticky, free-flowing water re-emulsifiable residue on both machine and parts. No gummy, sticky, tacky or concrete-like build-up to tie up machines or aid in bacterial growth. Bacteria, fungi, mold and yeast thrive in the sticky, grease-like residue that builds up on machines with lesser quality coolants. This is the perfect home for them. This slim accumulation constantly inoculates the coolant with thriving microorganisms to cause frequent rancidity problems.

The thin film rust preventative residue provided by CUTTER EXP HW does not form a tar-like substance, even in harder water, to tie up ways, slides, gauges, switches and other mechanisms in the modern CNC machines. The ways and slides move freely to produce high tolerance parts. No jerky, inhibited movements of the slide and ways on the x, y, z axes causing off-sized, poor surface finish scrapped parts.

CUTTER EXP HW's water resoluble rust preventative residue is easily removed from parts by water-based, non-hazardous parts washing compounds. Vapor degreasing, solvent washes, or high alkaline washing compounds are not required, adding to the safety of individuals and the environment.

There is no need for manufacturers to pay the high cost of purchasing, haul away costs and taxes of chlorinated solvents to remove the tar-like residues of some coolants.

SAFE:

CUTTER EXP HW does not contain phenols, creosols, nitrites, nitrates, ethanolamines, harsh alkalies, phosphates, sulfur, PCB's, MEA, DEA or heavy metals. CUTTER EXP HW is mild and non-irritating to the skin. CUTTER EXP HW is dye free for ease of trade waste and to meet the modern standards of metalworking fluids today. CUTTER EXP HW was formulated with the operators in mind. Each component in CUTTER EXP HW has been evaluated for oral, dermal and inhalation toxicity. This product uses virgin oil, never reclaimed, to ensure product quality and purity.

EXCEPTIONAL RESISTANCE TO BACTERIA, FUNGUS, MOLD, YEAST:

Everyone is very familiar with the foul odor of a rancid coolant. However, odor is just one of the problems caused by microorganisms in a water-based coolant. Microorganisms use the wetting agents, rust inhibitors, lubricants and emulsifiers as a source of food in a coolant. As their number increases to a count of 10^6 - 10^7 , they literally consume a large portion of the most important ingredients in a coolant. They can easily consume the emulsifiers to the point the emulsion begins to separate. Once this happens, the coolant is destroyed. Bacteria also secrete organic acids in their metabolism which can reduce the pH, cause rust corrosion, skin irritation and in some cases cause the emulsion to separate.

Some types 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 equipment. As this bacteria secrete acids, the machine and parts develop a reddish type surface rust on all exposed surfaces.

Fungus in a machine will form a raw liver type growth which is very difficult to kill with germicides. This build-up can be so severe it clogs coolant lines, pump filters and will float on top of the sump like a blanket. It also hangs from the machine and piping like stalactites. When germicides are added to the coolant, they just come in contact with the surface of this mass and cannot penetrate to kill all the fungus. The only way to eliminate this problem is to manually clean and scrape the fungus from the machine and coolant lines. This can require Roto-Rooter type equipment.

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

There are some coolant companies promoting the "good bug/bad bug" theory for their coolants. In other words, if it doesn't smell, everything is okay. They add a germicide that keeps the desulfurican, the hydrogen sulfide producing bacteria or rotten egg odor, under control, but does very little for the total population. Competitor I coolant on the Bacterial Chart is one of these coolants. Just keeping the rotten egg odor producing bacteria under control doesn't do a thing as far as coolant separation, loss of tool life, rust, loss of wetting agents, etc., is concerned. A high count of microorganisms with or without odor destroys coolants!

Studies are now being performed by OSHA and other organizations on the release of endotoxins by coolants that have a high bacterial count and germicides are added tankside to reduce the bacterial population. Endotoxins are toxic substances released by microorganisms when they are destroyed. OSHA is now investigating the amount of endotoxins released when germicides are added to a central system to reduce the microorganism population. They are concerned the amount released into the air may be harmful to the operators. CUTTER EXP HW's exceptionally effective inhibiting package keeps the microorganisms count down, so that germicide additions are not necessary as long as users maintain concentration and a low level of tramp oil.

DIRECTIONS FOR USE:

Cutter EXP HW is a multi-functional soluble oil based fluid designed for heavy, medium and light duty machining and/or grinding operations. Cutter EXP HW offers extended long term in-tank stability providing maximum longevity and machine performance.

A concentrate designed to be added to water, CUTTER EXP HW forms a stable emulsion in a wide range of water temperatures and hardness.

1. Always add CUTTER EXP HW to water in a separate container at the appropriate concentrations with as much agitation as possible. Water at room temperature forms the best emulsion. (Refer to Recommended Starting Concentration Chart.)
2. Add the mixed coolant to the cleaned sump. Use Spartan's *The Cleaner* at the appropriate concentration for cleaning the sump. Be sure to rinse thoroughly prior to filling the sump.
3. MAKEUP: When adding makeup to the machine, add CUTTER EXP HW at 1/2 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.

To determine number of gallons of CUTTER EXP HW required to charge a machine use the following formula to determine the total gallons held by the machine sump:

$\frac{\text{Length} \times \text{Width} \times \text{Height (in inches)}}{231} = \text{Total Sump Capacity in Gallons}$
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RECOMMENDED STARTING CONCENTRATION (parts water to parts CUTTER EXP HW)

	Ductile Iron	Brass Alloys	Mild Steel	Stainless Steel	Hard Steel Alloys	Aluminum Alloys	Copper Alloys
GENERAL TURNING	15-1	25-1	25-1	20-1	15 to 20-1	20 to 25-1	25-1
BORING	15-1	20-1	25-1	15-1	15-1	15-1	20-1
PLANING SPOT FACING	15-1	25-1	25-1	20-1	15 to 20-1	20-1	25-1
GENERAL MILLING	15-1	25-1	25-1	20-1	15 to 20-1	20-1	25-1
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
GEAR CUTTING HOBBING	10-1	10-1	10-1	10-1	10-1	10-1	10-1
SCREW MACHINES	10-1	10-1	10-1	10-1	10-1	10-1	10-1
THREADING	10-1	10-1	10-1	10-1	10-1	10-1	10-1
SAWING	15-1	15-1	15 to 20-1	15-1	15-1	15-1	15-1
BROACHING	5 to 10-1	10-1	10-1	10-1	5 to 10-1	10-1	10-1
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

CUTTER EXP HW DILUTION RATIO VS. REFRACTIVE INDEX*	
5-1	21.0
10-1	10.5
15-1	7.5
20-1	5.0
25-1	4.0
30-1	3.2
35-1	3.0
40-1	2.5
50-1	2.0

*A/O Instrument Model 10440 Industrial Fluid Tester

TECHNICAL DATA:

Viscosity - 190 cps @ 24°C/75°F

Specific Gravity - 0.977 @ 24° C/75°F

pH (10% emulsion) - 10.2-10.4

Density @ 24°C/75°F - 8.13 lbs./gal.

Flash Point - greater than 212°F (COC)

Miscibility - Forms an emulsion in water

Storage Stability:

1. Shelf @ 24°C/75°F - One year minimum
2. Freeze/Thaw - Product will withstand three freeze/thaw cycles
3. Accelerated @ 49°C/120°F - 60 days

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.

PACKAGING:

CUTTER EXP HW is available in tankwagons; 330-gallon reusable totes; 275-gallon disposable totes; recyclable HDPE (High Density Polyethylene) 55, 30 and 15-gallon drums; and 5-gallon pails. Label copy is available in both English and Spanish. Secondary labels are also available.

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.