

SPARCUT NC

NON-CHLORINATED HEAVY DUTY SOLUBLE OIL-BASED CUTTING AND GRINDING FLUID

PRODUCT DESCRIPTION:

SparCut NC is a micro-emulsion structured cutting and grinding fluid formulated to provide extreme pressure properties without the use of chlorine, sulfur or phosphorus. SparCut NC is dark brown in color and has a slight oil odor.

THE IMPORTANCE OF NON-CHLORINATED COOLANTS:

Chlorine and sulfur, which are in most quality soluble oil based coolants made today, react with the surface of metal on the tools and parts to provide a chemical type lubricity when machining and/or grinding. However, when chlorine is left behind on the metal, which is possible with most coolants, over the course of time it can cause stress cracking of that metal when the metal is in use. By eliminating the chlorine, sulfur or phosphorus in SparCut NC, the potential for stress cracking is greatly reduced, providing safer operation, particularly in the aeronautical and nuclear industries.

In the near future, and in some cases already today, aeronautic and nuclear facilities will not be able to use any coolants or solvents, etc., in their facilities that contain chlorine, sulfur and/or phosphorus. The materials used in SparCut NC to replace chlorine and other extreme pressure type materials are almost exclusively used by Spartan due to the newness of these materials in the marketplace. By incorporating these new high-tech lubricants into the formulation of SparCut NC, tool life is actually increased over most conventional chlorine containing soluble oil type coolants in the market today.

SparCut NC reduces the potential for stress cracking and lowers disposal costs due to the absence of chlorine which is found in most EP type coolants. This makes SparCut NC ideal for use in the nuclear and aeronautical industries where stress cracking is of great concern.

HARD WATER STABILITY:

SparCut NC utilizes emulsifiers in its formulation. This emulsifier package in turn leads to a vastly improved emulsion over other conventional soluble oil products even in the presence of hard water. This hard water stability will help keep emulsions from separating due to mineral buildup which is commonly associated with hard water use. As a result, this will help to promote better tool life, surface finish, and help with controlling corrosion.

MULTI FUNCTIONAL/MULTI METAL:

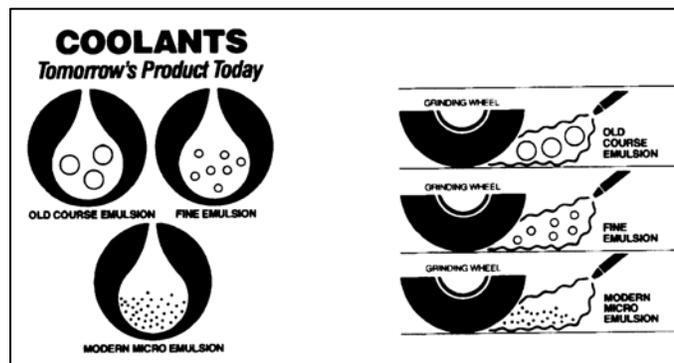
SparCut NC is a multi functional, soluble oil-based fluid for use in most machining and grinding operations. The product contains superior corrosion inhibitors to protect galvanized parts, steel, aluminum, brass, copper, Inconel, Hastelloy, titanium, tantalum, centrifuged aluminum and other space age metals or alloys. In effect, with SparCut NC, the entire operation can run rust and corrosion free, no matter what metal is being machined and/or grinded. Use SparCut NC on heavy duty as well as light duty operations: drilling, tapping, reaming, boring, turning, milling, surface grinding, OD/ID grinding, plunge form grinding.

EXTENDS TOOL LIFE/IMPROVES SURFACE FINISH:

Most coolants depend on chlorine, sulfur or phosphorus to provide tool life and surface finish. While the SparCut NC formula contains no chlorine, sulfur or phosphorus, newly synthesized chlorine replacement type raw materials are incorporated. These materials, in connection with the micro emulsion, provide excellent tool life and surface finish on even the most difficult to machine alloys such as stainless steel, Inconel, Hastelloy, titanium and aeronautical aluminums.

CONTROLS RANCIDITY:

SparCut NC has been field tested in a number of different facilities for nearly two years. During this two year period, providing concentration is maintained and tramp oils are kept to a minimum, SparCut NC is virtually rancidity free. The extremely small emulsion droplet size and the tightness of these droplets in the



emulsion eliminates the home for bacteria, which is commonly found in the large bulky oil droplets of the conventional soluble oil type coolant. By eliminating their home, it is extremely difficult for bacteria, fungus, mold and yeast to grow in a soluble oil type system. In addition, since SparCut NC also contains odor killing components, coolant can last indefinitely in a metal working shop. The diagram illustrates relative size of the emulsion droplets in a soluble oil with a fine emulsion versus the modern micro emulsion characteristics of SparCut NC. This illustrates how the characteristics of SparCut NC help prevent Monday Morning Stink.

LABOR SAVINGS/ECONOMICAL/REJECTS TRAMP OIL:

SparCut NC's excellent emulsion stability, due to its micro emulsion structure and the cleanliness of SparCut NC means less down time and more production dollars per shift. SparCut NC rejects water-resistant tramp oils for ease of removal resulting in fewer pumpouts and less maintenance . . . more man hours to produce parts!

FREE FLOWING RESIDUE: SparCut NC leaves a non-sticky, free flowing water re-emulsifiable residue on both machine and parts. No gummy, sticky, tacky build-up to tie up machines or aid bacterial growth.

SAFE:

Perfume free. Dye free. SparCut NC does not contain chlorine, sulfur, PCB's, phenols, creosols, nitrites, nitrates, harsh alkalies, phosphates or heavy metals. SparCut NC is formulated without perfume and dye due to the fact that larger corporations, such as General Motors, Ford, Chrysler, etc., stipulate that any coolants in their facilities must be perfume and dye free. Mild and non-irritating to the skin, SparCut NC is operator friendly. It's one of the safest coolants to work in, eight hours a day, five days a week, as far as oral and inhalation toxicity is concerned.

REDUCES TRADE WASTE:

No chlorine, no sulfur or hazardous metals. Using modern trade waste technology, SparCut NC is easily cracked to reduce the volume of trade waste haul away. Use of SparCut NC also eliminates haul away upcharges which result from use of products which contain chlorine. While chlorine can be a big factor in stress cracking on the metal, it also can add an extra expense for trade waste haul away. Any oil or other materials containing chlorine will have a surcharge added to them due to the content of chlorine. This surcharge can be as much as twice the cost per gallon for haul away charges for a chlorine containing oil versus a non-chlorine containing oil. Large users will especially appreciate the substantial cost savings SparCut NC provides.

DIRECTIONS FOR USE:

A concentrate designed to be added to water, SparCut NC forms a very stable emulsion in water with a wide range of hardness.

1. Always add SparCut NC to water in a separate container at the appropriate concentrate 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.
3. **Makeup:** When adding makeup to the machine, add SparCut NC 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.

Monitoring Coolant Concentration With AO Model 10440 Refractometer	
SparCut NC Concentration	Refractometer Reading
1:5 dil. 20%	20.0
1:10 dil. 10%	10.0
1:15 dil. 6.7%	6.7
1:20 dil. 5%	5.0

TECHNICAL DATA:

Viscosity -- 240 cps @ 24°C/75°F

Specific Gravity -- 0.94 @ 24°C/75°F

pH (10% solution) -- 9.4

Density @ 24°C/75°F -- 7.82 lbs./gal.

Flash Point (COC) -- greater than 230°F

Solubility -- Emulsifiable

Storage Stability --

- a. Shelf @ 24°C/75°F -- One year minimum
- b. Accelerated @ 49°C/120°F -- 60 days minimum
- c. Freeze/Thaw -- 3 cycles

Formula for determining Total Volume by Gallons

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

RECOMMENDED STARTING CONCENTRATION (parts water to parts SparCut)

	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

PACKAGING:

SparCut NC is available in tank wagons; 330-gallon reusable totes; 275-gallon, DOT-approved totes; recyclable HDPE (High Density Polyethylene) 55-gallon drums and 5-gallon pails. Label copy is available in both English and Spanish.

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.