Monroe Fluid Technology

An ISO 9001:2000 Certified Company

End User
Coolant Management and Trouble Shooting

Coolant Management Assistance Guide

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Company History

Located in Hilton, New York about 20 miles west of Rochester, **MONROE FLUID TECHNOLOGY** has been manufacturing high quality speciality fluids for the metalworking industry since 1958. We are proud that we are ISO 9001 Certified. This testifies to our long-standing commitment to providing the best possible products, service and delivery. Our #1 goal is total customer satisfaction.

Our company history in metalworking fluids began with the introduction of COOL-TOOL CUTTING AND TAPPING FLUID which went on to become an international brand name. The success of this product led to the development of a complete line of water extendible cutting and grinding fluids, sawing fluids, industrial cleaners, rust preventatives, drawing and stamping compounds, thread cutting oils and other associated products.

Our metalworking fluids offer advanced technology and are formulated to provide superior performance while complying with all OSHA and EPA regulations. Our products are designed to be friendly to the environment and the people who use them. Our BIOSTABLE cutting and grinding fluids are performing very successfully all over the world. They are guaranteed not to go rancid (with proper maintenance) and because of their long sump life, disposal costs are reduced.

We continually research new and improved technology and raw materials for our fluids as well as advancements in the metal-cutting industry while at the same time complying with any new OSHA, EPA, and DEC regulations.

As part of our commitment to customer service, lab personnel are available to answer questions regarding selection, application, safety, handling and maintenance of all **MONROE FLUID TECHNOLOGY** products, including troubleshooting and cross-referencing of competitors' products. If you would like more information, please contact our Technical Department at **1-800-828-6351.**

This Brochure

This brochure will assist you in the sometimes confusing task of selecting and maintaining metalworking fluids for peak performance. We have included a review of the function and basic types of metalworking fluids as well as a section on coolant maintenance which defines the procedures needed for proper sump clean-out, machine charging and concentration control. Included also are recommendations on ways to prolong fluid life by minimizing contamination from dirt, tramp oils and other extraneous materials.

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FUNCTIONS OF METALWORKING FLUIDS

Metalworking fluids or coolants play a critical role in most machining processes. The main functions of a metalworking fluid are:

- **COOLING**: To reduce and remove heat build-up in the cutting zone and in the workpiece.
- **LUBRICATE**: and thereby reduce friction between the tool and the chips being removed.
- **CHIP REMOVAL**: Flush chips away from cutting zone, carrying them back to the sump.
- **PROTECT AGAINST CORROSION**: of machine workpiece and tools.

COOLING VS. LUBRICATION

Every operation has its own specific requirements for cooling versus lubrication. By varying the mixing ratio or concentration of a water extendible coolant, you can alter the balance of cooling and lubrication.

In general, the more water (leaner mix), the better the cooling; the more concentrate (richer mix), the better the lubrication provided. When machining, the requirements for lubrication are generally greater than for cooling; hence a richer concentration is used. When grinding, the requirements for cooling are greater; hence a more lean concentration is used (but not so lean as to cause rust).

There are exceptions to every rule and this one is no different. Some high-speed machining can be performed well with rather lean mixes, and some grinding applications, such as form or creep-feed grinding require a rich mixture for high lubricity. Each operation should be evaluated on its own to determine proper concentration.

Classifications of Metalworking Lubricants

Neat or Straight Oils

- Neat oils are made up primarily of naphthenic or paraffinic base oils with extreme pressure additives such as chlorine, sulfur and fats. Neat oils will not emulsify with water nor do they contain any water.

Soluble Oils

- Greater than 30% mineral oil and no water in concentrate. Dilution appears milky and not translucent.

Semi-Synthetics

- Less than 30% mineral oil content in concentrate and the concentrate contains water. Dilution appears translucent.

Synthetics

- Zero mineral oil content. Dilution looks transparent and is a true solution with no droplet formation like semi-synthetics and soluble oils.

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Soluble Oil

Soluble Oil Advantages

- More economical than straight or neat oils; dilution with water lowers cost without sacrificing a great deal of tooling effectiveness.
- Soluble oils cool 2 to 3 times better than straight oils.
- Emulsions of soluble oils are very versatile and can be used in most machining and grinding applications on a wide variety of materials.
- Soluble oils have better health and safety aspects with respect to the shop environment vs. straight oils; no fire hazard, reduced oil misting and fogging.
- Of all the water extendible metal removal fluids soluble oils are the most forgiving of concentration fluctuations and poor management .
- Residues created by soluble oils are generally oily and not sticky.

Soluble Oil Disadvantages

- Higher disposal costs due to high percentage of oil versus synthetics or semi-synthetics.
- Emulsions are milky; therefore the workpiece is not visible through fluid.
- Less cooling in high-speed applications vs. synthetics or semi-synthetics.
- May tend to pick up tramp oils due to partial mechanical emulsification from circulation through the coolant pump.

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Semi-Synthetic

Semi-Synthetic Advantages

- Leaves oily film on machine and parts for protection.
- Tend to reject tramp oils.
- Very stable emulsion, long lasting.
- Better cooling allows higher cutting speeds.
- Semi-synthetics offer the best of both technologies; soluble oils and synthetics.
- Semi-synthetics emulsions offer micro size oil droplets that have advantages in single point turning applications where optimal cooling and less lubrication is required.
- Our semi-synthetics are ideal for powdered metals, cast iron and metals that when cut don't create chips but rather sand-like swarf that can clog filters and form sump clinkers. Monroe's semi-synthetics are great for cast iron machining and grinding applications.
- Semi-synthetic coolants are great for cleanliness and workpiece visibility.

Semi-Synthetic Disadvantages

- Low oil content reduces the physical corrosion film that is needed in some applications.
- Mists, smoke or disposal may be a problem due to oil.
- Semi-synthetics are not very forgiving when it comes to concentration control and rust and corrosion could be the results of poor fluid management.

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Synthetics Advantages

- Rapid heat dissipation.
- Excellent workpiece visibility.
- Total rejection of tramp oils possible.
- Usually easy to measure and control concentration.
- Bacterial attack may be easier to control.
- Usually stable and potentially long-lasting.
- No oil mist problem; no oil disposal concerns.
- Easily filtered.
- Recycling or reclaiming is usually highly effective.
- Low consumption due to the fact that synthetics are true solutions with no droplet formation adding to carry off issues.

Synthetics Disadvantages

- High performance products can be expensive.
- Residual films may be tacky or sticky, which may cause gumming in the moving parts of the machine.
- Compared to oils, they have significantly reduced corrosion protection.
- Less forgiving in poor fluid management scenarios and require tighter control of concentration ratios to protect against rust and corrosion.

COOLANT MAINTENANCE

- Good coolant maintenance programs will include regular laboratory tests of the coolant, either in-house or by the coolant manufacturer. This section contains suggestions for proper maintenance and control of coolant that the customer can perform. Implementing these suggestions is not as straightforward as it seems. Particularly in small systems or individual sumps, control and maintenance of coolant can be challenging.

- Frequent testing and adjustment of coolant is feasible on large central systems where the cost of these procedures is easily justified in the control of 10,000 gallons of coolant. It is not as easy to justify detailed analysis of a 100 gallon sump. Unfortunately small systems are subject to much more rapid changes and greater fluctuations and therefore actually should be checked *more* frequently than large tanks to maintain good control. These factors make the choice of coolant particularly critical for small sumps.

- Small coolant systems normally use less effective equipment for filtration and oil separation than those found on central systems. This requires that the coolant in small systems be more tolerant of contamination from metal fines, tramp oils and other materials or contaminants.

COOLANT LIFE

- Many factors are involved in the success or failure of a metalworking coolant. This brochure will attempt to address the most frequently encountered factors, and also offer tips and techniques for maximizing the performance of your fluid. These guidelines should be strictly adhered to for optimal results.

PREPARING THE MACHINE

- The most important step in maximizing coolant life is to start with a clean sump.

- Any bacteria, fungus, dirt and/or sludge left from the previous coolant can decrease the life of the new fluid.

- Thoroughly cleaning with a good machine cleaner is recommended before the introduction of any new coolant.

- **ASTRO-CLEAN A** is a low-foam alkaline cleaner designed to remove process oils, gummy deposits of oil, grease, swarf and normal shop soils from machine tools, floors, and other hard surfaces. Astro-Clean A combines organic and mineral alkalinity builders, detergents, water conditioners and deodorizer for optimum sanitizing performance.

- Astro-Clean A also contains special additives designed to penetrate deep into compacted chips and swarf, and render the machine neutral of bacteria and fungus. Astro-Clean A is mild enough on the operator's skin that there is no concern for operator discomfort during the 24 hour cleaning cycle.

MACHINE CLEANOUT PROCEDURE (A)

1. If the system is severely contaminated or rancid, an appropriate amount of conditioner approved for use in coolants should be added and allowed to circulate per manufacturer's instructions before initiating cleanout procedure.

2. Drain sump or system as far as possible.

3. Remove any solids from sump or system.

4. Add 1 gallon of **ASTRO-CLEAN A** machine cleaner for each 20 gallons of coolant capacity.

5. Fill the sump with tap water up to the normal operating level and allow the fluid to circulate for at least 4 hours.

6. While the fluid is circulating, use a rag or brush to remove stubborn deposits on machine surfaces and troughs. Allow the fluid to wash the material into the machine sump.

7. Remove the fluid from the sump.

8. Remove any further solids from the sump.

9. Fill the sump to normal operating level with water, add 1 gallon of **ASTRO-CLEAN A** to each 100 gallons of water and allow the fluid to circulate for at least 1/2 hour as a final rinse.

10. Drain this solution from the machine sump.

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MACHINE CLEANOUT PROCEDURE (B)

ALTERNATIVE CLEANING PROCEDURE: (Minimal down time)

- When production absolutely cannot be interrupted for the period of time required for the previous cleaning procedure (A), the following method may be substituted with good results:

1. Add **ASTRO-CLEAN A** directly to old coolant at 1-3% of volume of sump.

2. Run production 1-2 shifts to allow the built up residues to release from the most difficult to reach areas of the machine.

3. Drain system. Remove all solids. If you are using a sump sucker be sure to suction from the top of the fluid first, this will pull all of the free tramp oils off first.

4. Rinse sump and flush coolant lines. Remove rinse water. Another option to rinsing the machine with pure water is to make a weak dilution 1.5% concentration of the newly selected coolant as your rinse solution.

5. Recharge the machine with fresh coolant at the suggested and recommended concentration ratio %.

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Astro-Clean A

General Description

Astro-Clean A is a low foam alkaline cleaner designed to remove process oils, gummy deposits of oil, grease, swarf and normal shop soils from machine tools, floors, and other hard surfaces. It combines organic and mineral alkalinity builders, detergents, water conditioners and deodorizer for optimum performance.

Application

The primary application of **Astro-Clean A** is for cleaning machine tool coolant sumps and surfaces. **Astro-Clean A** can also be used for general shop cleaning with mop and bucket, auto-scrubber or spray washer.

Advantages

- Powerful Detergency
- Non-Ozone Depleting
- Versatile
- Economical
- Mild Odor
- Oil Rejecting

Directions For Use

- Drain sump or system as completely as possible.
- Remove any solids from sump or system.
- Add 1 gallon of **Astro-Clean A** for each 20 gallons of coolant capacity.
- Fill sump with water to normal operating level and allow to circulate for a period of at least 4 hours.
- While cleaner is circulating, use a rag or brush to remove stubborn deposits on machine surfaces and in coolant troughs. Allow fluid to wash material into the sump.
- Remove cleaner and all solids from the sump.
- Fill sump to normal operating level with water and add 1 gallon of **Astro-Clean A** for each 100 gallons of water and allow to circulate for at least 1/2 hour.
- Remove fluid from the sump.

Note: For minimum downtime cleaning procedure, please refer to the website.

Product Characteristics	Recommended Starting Dilutions
Appearance - Concentrate - Clear Blue Liquid	Floor Cleaner, light dirt 40:1 @ 110 °F
Appearance - Dilution: Transparent Blue Liquid	Heavy Deposits of Soil and Sludge 10:1 @ 70 °F - 110 °F
Odor: Slight	
pH @ 20:1 (5%): 10.8 ± 0.3	Added Directly to Old Coolant and Sump Cleaning 2-4% by volume
Specific Gravity @ 60 °F: 1.02 ± 0.01	
Lbs/ Gallon: 8.50 ± 0.1	Most Cleaning Applications 20:1 @ 70 °F - 110 °F
Flash Point - PMCC: None	

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MACHINE CHARGING PROCEDURE

- For best coolant life and successful coolant management program follow these methods to recharge a freshly cleaned machine with Monroe metalworking fluid:

1. When mixing coolant, it is best to use an automatic proportioner which accurately and thoroughly mixes coolant.
2. **Always replenish the coolant with a mixture of coolant and water, not just coolant or water. Never add coolant concentrate directly to the sump.**
3. Add the mix to the sump to the proper level.
4. Start the pump and allow the fluid to circulate for at least 1/2 hour.
5. Check concentration with refractometer and make necessary corrections before machining.

Note: Due to the detergency of fresh emulsions they will continue to clean a sump and system after the initial charge. This may result in:

- A temporary flush of odors from loosened deposits
- A temporary spike in bacteria levels

Don't be alarmed if the appearance of floating masses of sludge which have been dislodged from the inaccessible areas of the sump and or system.

These are considered normal and will usually occur within the first two weeks of use of a fresh charge. Once removed these floating masses should not reappear.

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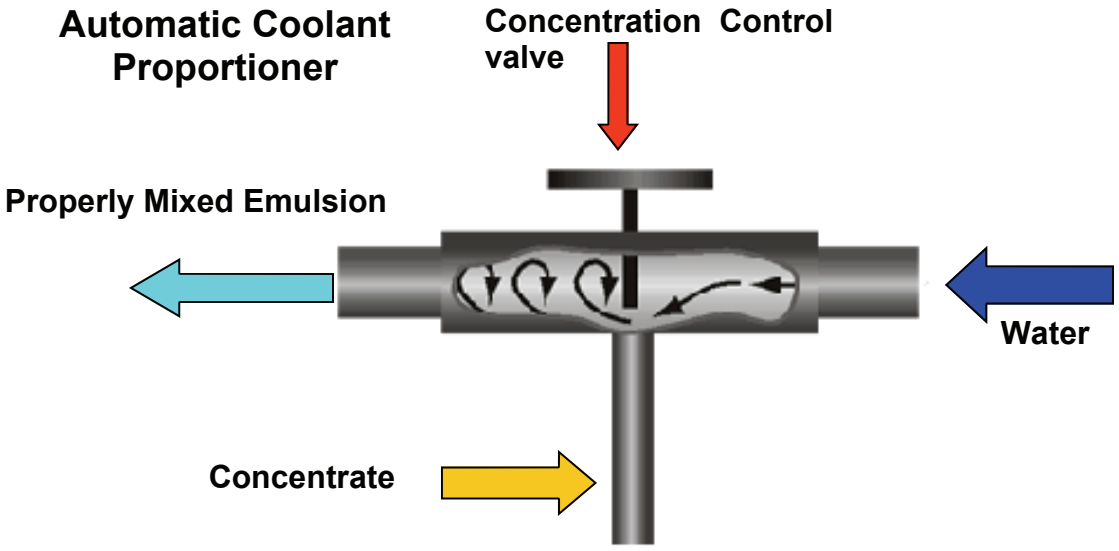
CONCENTRATION CONTROL

Once a new coolant is in, concentration control is the most important parameter for a coolant user to monitor. It is imperative for long coolant and tool life.

As a rule of thumb: Concentration consistency can be achieved by never adding straight water or adding straight concentrate to the machine sump; always add a weak dilution half of the goal concentration. If the goal concentration is 7% always add 3.5% concentration. The reason for this is that the water evaporation rate versus additive and component depletions correspond to this formula.

Low concentration is the most common cause of coolant problems that customers experience. Our coolants have been designed to operate at a minimum concentration of 4% (25:1). A lower concentration than this, even for a short period, could lead to problems such as machine and workpiece corrosion, poor tool life and rancidity of the in-service coolant.



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CONCENTRATION CONTROL

Refractometers: designed for measuring the concentration of an aqueous solution, can be used for checking cutting and grinding fluid concentrations. Hand refractometers are useful for day-to-day control of concentration and are much faster than the laboratory procedure.

To use a refractometer, you simply place one or two drops of the coolant solution onto the prism surface, close the cover plate, look through the eyepiece (facing the light) and read the scale. Compare this reading with the Brix chart for your coolant to get actual concentration. It is important to ensure that your refractometer reads zero on water alone. This is accomplished by placing a drop of water on the prism and reading the results normally. If the reading is not zero, an adjustment screw must be turned to calibrate the unit.

Hand Refractometer

View Through Sight Glass

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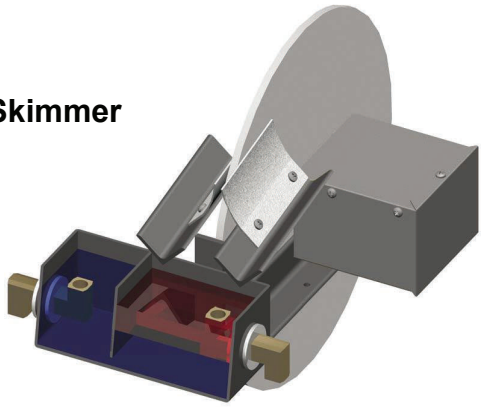
TRAMP OILS

- An important factor in coolant life is control of tramp oils. This term refers to any oils which are not part of the original coolant formulation, including way lubes, hydraulic oil, tapping fluids, gear lubes, etc. which find their way into the coolant.
- These tramp oils carry their own contaminants, such as sulfur, phosphorous or solvents, which can be detrimental to the coolant, either by destabilizing the emulsion or by providing food for bacteria. If tramp oil is allowed to cover and "seal off" the surface of the sump, bacteria will grow and multiply rapidly, producing the "rotten egg" odor familiar to many machinists. Keeping the level of floating oils to a minimum will prevent this.
- Another problem with tramp oils is the potential for dermatitis caused by skin contact with these oils, which may contain irritating components. Monroe's metalworking fluids are designed to reject rather than emulsify these oils, causing them to float to the surface, making removal a simple job. They can be skimmed from the surface of the sump by any of a variety of methods, such as oil wheels, rope-type skimmers, absorbent pads or even shop vacuums.

Belt Skimmer

Disk Skimmer



SOLIDS CONTAMINATION

- An area for concern that is so often overlooked is the level of chips, fines or swarf in the sump. Quantities of these small particles can provide an enormous surface area for bacteria to attach themselves to while at the same time creating "dead areas" where coolant cannot circulate. There are many methods available for removal of these particulates such as magnetic wheels, conveyors or indexable filters. In general, the less solid material in the sump or system, the better.

- Due to the nature of manufacturing facilities today, it is rare that only one type of material would be machined. Because of the numerous types of metal chips that conglomerate at the bottom of the sump, there is a potential to create galvanic reactions, which could harm the coolant emulsion and result in shortening the coolant life span. Corrosion is also possible.

Water Quality

- Due to ordinary evaporation, a metalworking sump acts like a still and any minerals in the water will remain behind as the water evaporates. Over time the mineral build-up can result in poor emulsion (mix) stability, heavy residue on machine surfaces, corrosion problems and a host of undesirable conditions.

- Monroe Fluid Technology can perform analysis of the customer's water for hardness and conductivity to determine compatibility with MONROE products. A good rule of thumb is to use tap water for the initial charge and the purest water available for makeup solutions, thus minimizing the level of mineral buildup. (A certain amount of water hardness can actually help suppress foam levels.)

DAILY COOLANT UPKEEP

Daily In-service Coolant Management

1. Run oil skimmers to remove excess tramp oil from coolant. These are generally more efficient if run during down time, when the coolant is still and the oils can float to the surface. A wet/dry vacuum can also be used to remove floating oils. Dispose of as waste oil.
2. Circulate coolant and check concentration with a refractometer. Maintain fluid level. Add rich or lean pre-mixture of coolant and water where needed.
3. Check pH. (If pH starts to fall, add coolant to bring up concentration. If pH does not stabilize, it is time to replace coolant. If coolant needs to be replaced, dump old coolant, clean machine and charge with fresh coolant.)
4. Record data on a machine check sheet (See example). This can be used to follow trends of a particular machine.
5. Check all filters, chip strainers and canister filters.
6. Provide aeration of coolant during extended periods of idle time. An air lance with 5 psi pressure allowed to bubble *gently* in an idle sump is often sufficient to prevent excessive anaerobic bacteria formation.

COOLANT pH

Coolant pH (acidity/alkalinity) can give a good indication of overall system condition. All water extendible coolants are designed to operate in the alkaline range, between 8.0 and 9.5 pH. Alkalinity helps control rusting and minimizes microbial growth. A regular pH check using tape, strips or pens can spot trends *before* they become problems. A severe drop in pH can indicate seriously degraded coolant.

Daily Coolant Report Card

Here is a sample machine check sheet which can be used to track the condition of a particular machine or system in regards to evaporation rates over time, deterioration based on pH, and record of cleanouts. Other fields may be added, including bacterial and fungal levels, water hardness, conductivity and TDS.

DATE	APPEARANCE	BRIX	pH	GALLONS COOLANT ADDED	GALLONS WATER ADDED	DATE LAST CHANGED	INITIALS

COOLANT ANALYSIS

- As a no-charge service to our customers, MONROE FLUID TECHNOLOGY provides sample bottles, mailers and preprinted labels for routine analysis of in-use coolant samples. These analyses include checks for concentration, pH, biological activity and contaminant levels, etc. Upon completion of analysis, full reports with any recommended actions are forwarded to the customer. A full description and explanation of coolant analysis follows.

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EXPLANATION OF COOLANT ANALYSIS

Astro Cut HP Central System	Brix	pH	% Conc 6-11%	% Tramp Oil	% Dirt	Bacteria	Fungus	Con-ducti vity MHO	H2O Hard-ness PPM
051908	4.5	8.7	9.0	0	0	Neg.	Neg.	1756	120

- **BRIX:**

This is simply the refractometer reading (brix scale) using an optical refractometer. The value obtained can be converted to % concentration using brix charts from the product label or the product data sheet.

- **pH:**

A measure of the acidity or alkalinity of a system. Most fresh dilutions of metalworking fluid will run between 9.0 and 9.5 pH. This will normally decrease over time. The decrease may be accelerated by contaminants or excessive bacterial growth.

- **CONCENTRATION:**

A measure of percent of coolant in the submitted sample based on titration, refractive index or other analytical method.

- **% TRAMP OIL:**

Tramp oil refers to any process oil (way lube, hydraulic oil, rust preventative or other) **not part of the initial coolant formulation,** which makes its way into the coolant system. Floating tramp oils can seal the surface of a sump, excluding oxygen and accelerating the growth of damaging anaerobic bacteria.

- **% DIRT:**

Refers to any insolubles in the submitted sample, determined by filtration through a 15 micron glass fiber filter. These insolubles can include metal fines and/or grinding swarf, as well as other materials. When these solids settle to the bottom of the sump they can create dead spaces which are an ideal environment for the growth of bacteria.

EXPLANATION OF COOLANT ANALYSIS

- **BACTERIA:**

Refers to the level of bacterial activity in the submitted sample, determined by dip-slide and expressed in colonies per milliliter. A level of 10^5 colonies/ml is considered the upper acceptable limit for the non-biostable products, however Monroe's coolants can withstand a level of 10^6 colonies/ml without serious degradation.

- **FUNGUS:**

Refers to the level of fungal activity in the coolant. This level is expressed as negative, slight, moderate or heavy. A fungal presence is not generally considered acceptable, as fungus (dead or alive) can plug screens, filters, lines and/or pumps if not addressed in a timely manner. Unlike bacteria, which disintegrate as they die, a fungal mass will remain intact and must be physically removed from the system.

- **CONDUCTIVITY:**

This is a measure of how well a particular coolant sample conducts electricity, expressed in micro mhos (µmho). This indicates (roughly) the potential for electrical activity such as corrosion and rusting, although it is also a function of coolant concentration, i.e.: high concentration will cause a corresponding increase in conductivity. A high conductivity without a high concentration of coolant indicates a higher potential for corrosion due to metal ion buildup.

- **WATER HARDNESS:**

A measure of the level of hardness minerals dissolved in the water phase of the submitted sample, expressed as parts per million of CaCO3 (calcium carbonate). Most fluid sumps will act as stills, evaporating pure water while leaving hardness minerals behind in the coolant. As the water is replaced (by more mineral-containing water) the level of minerals increases, which can result in sticky, hard or crystalline residue on the machine surfaces.

RECYCLING

- Monroe's coolants are fully amenable to central **recycling/reclaiming systems**, in which the coolants are centrifuged, filtered, skimmed and treated with biocides if necessary. These treated coolants may be reused after treatment, generally at a ratio of 50/50 with fresh coolant, providing the pH of the used coolant has not dropped below 7.5. If this has happened, indicating acidic contamination of the coolant, the best recommendation would be to dispose of the coolant rather than contaminate a fresh batch and risk early rancidity.

- If the decision is made to dispose of the coolant, an acid-alum, polymer or de-emulsifier type split procedure is recommended to separate the oil phase from the water portion. Upon approval from the local waste water treatment facility, the water phase may generally be sewered, with the oil phase being handled by an authorized waste oil reclaiming facility.

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DISPOSAL PROCEDURE FOR SOLUTIONS OF OIL-CONTAINING METALWORKING FLUIDS

Equipment Needed:

A holding tank of sufficient size to hold the volume to be disposed of plus an additional 10%. The tank should allow for pumping out and disposal of the lower aqueous layer as well as for removal as waste oil of the upper layer. The treatment tank should be equipped with a suitable agitator or stirrer to disperse the splitting reagents.

Reagents:

EBC-1 Oil-in-Water Emulsion Breaker available from Buckman Labs Phone: 901-278-0330.
Alum (Aluminum Sulfate) available from local chemical suppliers
Soda Ash (Sodium Carbonate)- Alkaline pH adjuster

Procedure:

1. Determine the quantity of used coolant to be treated. (i.e. 1000 gallons of used coolant at 8.33 lbs. per gallon = 8330 lbs.)
2. Determine pH. If not pH 8.0-9.0, adjust by addition of Soda Ash to raise pH.
3. Add 0.1-0.2% weight/volume EBC-1 and 0.25% weight Alum to solution to be treated and stir mixture slowly for 30 minutes.
4. Stop stirring and allow split solution to settle. Mixture will form an oil layer on top and a hazy clear water layer below.
5. A sample of the lower aqueous layer should be tested for compliance with all applicable environmental regulations before discharge into sewer or septic system.
6. The upper oil layer should be collected in waste containers for disposal as waste oil.

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Troubleshooting Coolants

Problem : Coolant foaming excessively.

Solution : The first thing to check is coolant concentration. A mix that is too rich can contribute to foaming, just as a strong soap solution will foam more than a weak one. Check concentration with a refractometer and adjust as necessary.

- Another factor that can influence the level of foam is water quality. Coolant mixed with city water or well water will break foam much faster than if mixed with deionized or otherwise demineralized water.

- A third factor to take into account is the possibility of mechanical problems. If there is a leak on the intake side or around the shaft seals of a coolant pump, air can be drawn in and become entrained in the fluid, resulting in a very slow-breaking layer of dense foam. This same condition can occur if the sump is run low and air is drawn into the intake.

- A fourth possibility is contamination with foam-generating materials such as cleaners which may have been inadvertently added to the sump.

- Another important contributor to foam generation is the velocity and pressure at which the coolant is delivered to the cutting zone. High-pressure, high-velocity delivery generates much more foaming activity in a coolant than low-pressure, low-volume delivery.

Problem : Rusting of parts

Solution : Coolant mix too lean. Check concentration with refractometer and adjust if necessary.

- pH too low for effective corrosion control, either through contamination or bacterial degradation. Check pH with paper or meter.

Problem : Short sump life

Solution : Concentration not maintained at high enough level. Check concentration with refractometer and adjust concentration if necessary to product parameters.

- Tramp oil sealing surface of sump, excluding oxygen and allowing rapid growth of anaerobic bacteria. Take steps to reduce or remove floating tramp oil.

- Excessive contamination of sump by dirt, fines or other extraneous materials, such as trash, coffee or cigarettes. Provide filtration for coolant and receptacles for garbage.

Problem : Heavy or sticky residues

Solution : Coolant concentration too rich. Check concentration with refractometer and adjust with water if necessary.

- Water too hard. High levels of minerals can build up over time due to evaporation, resulting in hard, crystalline residues. Use treated water, such as that obtained with D.I. (deionizer) or R.O. (reverse osmosis) units.
- Excessive tramp oil contamination. Tramp oils can build up and coat machine surfaces. Take steps to reduce or remove floating tramp oil.

Problem : Dermatitis or Skin Irritation

Solution : Since many factors can contribute to dermatitis in the metalworking industry, determining a specific cause can sometimes be very difficult. Some of the main factors are:

- The strength of the cutting fluid solution and the consequent defatting of the skin that results from too-frequent contact with strong solutions.
- The type of metal being machined may result in the presence of sensitizing elements such as nickel or chromium dissolved in the solution. These can result in an allergic reaction.
- Any grinding or metalworking process will result in small, sharp particles of metal or abrasive materials being circulated where they can come into contact with and damage unprotected skin. Damaged skin then becomes a route of entry for contaminants and irritants, whether at work or at home.
- Other causes of dermatitis can be such things as hydraulic fluids or way lubes which may find their way into a sump. These products are often designed without human contact in mind, and may contain components which can initiate or worsen a dermatitis condition.
- Washing hands with pumice or grit containing soaps can actually contribute to dermatitis, by creating small cuts on the skin and delaying or preventing healing in the presence of metalworking fluids.

Tech Service

TELE-CONSULTING – Lab personnel are available to answer questions regarding selection, application, safety, handling and maintenance of all MONROE FLUID TECHNOLOGY products, including troubleshooting, assistance and cross-referencing of competitors' products.

COOLANT ANALYSIS, MONROE PRODUCTS – As a no-charge service to its customers, MONROE FLUID TECHNOLOGY provides sample bottles, mailers and preprinted labels for routine analysis of in-use coolant samples. These analyses include biological activity, concentration, contaminant levels and pH, among others. Upon completion of analysis, full reports with any recommended actions are forwarded to the customer.

COOLANT ANALYSIS, COMPETITIVE PRODUCTS – MONROE FLUID TECHNOLOGY can perform comparison analyses on competitive products to determine the best MONOE equivalent or improvement. The customer or distributor need only provide a small (8 oz.) sample of undiluted product.

CUSTOMER WATER ANALYSIS – MONROE FLUID TECHNOLOGY can perform analyses of customer water for hardness and conductivity and to determine compatibility with MONROE products. (High mineral content may cause problems with corrosion control and coolant stability.)

MATERIAL ANALYSIS – MONROE FLUID TECHNOLOGY can perform compatibility tests on customer supplied metal samples to ensure proper fluid selection.

FIELD SERVICE – To serve customer needs, technical representatives are available to assist in selection and maintenance of MONREO FLUID TECHNOLOGY products.

Monroe Fluid Technology has the capability
of supplying any other specialty fluids you may require.
Please contact our Technical Department.

1-800-828-6351
technical@monroefluid.com

Monroe
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Please
contact our Technical Department for any of your Technical needs

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