



# Product Engineering Bulletin

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Page 1 of 5

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**To:** Distributor Service Managers  
Distributor Applications Managers

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**CC:** OAC Service  
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**Subject:** QualiChem, Inc. coolants

**Purpose:** Approval for use as supplier of coolants

**Scope:** All Okuma machines

## Details:

Okuma America has completed an assessment of QualiChem, Inc. as a supplier of coolants for use in Okuma machines. Attached is a letter from QualiChem listing the coolants approved for use and the oil content of each part number. Please read and follow the instructions below for selecting and managing coolants supplied by QualiChem. **Contact your local QualiChem representative to determine which coolant is best suited for your application.**

## Metalworking Fluid (Coolant) Guidelines

Okuma machines include components made from various materials, some of which can be sensitive to certain types of coolants, including o-rings, seals, gaskets, guide-way surfaces and the paint. Using a coolant that exhibits chemically aggressive tendencies can lead to the failure of these and other components.

For optimum machine tool compatibility, Okuma recommends using coolants that contain >10% oil in the concentrate.

While Okuma does not mandate a specific type of coolant technology, nor make claims about cutting performance, it is Okuma's assessment that the QualiChem coolants listed below should work well in Okuma machines.

Brand	Series	Product ID	Type
QualiChem, Inc.	XTREME CUT	220C, 230, 231, 250C, 251C, 290, 291, etc.	Mineral Oil Semi
QualiChem, Inc.	Q-CUT	225, 235, 236, 237, 245C, 246C	Mineral Oil Semi
QualiChem, Inc.	EQO-COOL	430, 450, 451	Vegetable Ester Emulsions
QualiChem, Inc.	Q-MAG	420 (for magnesium machining)	Oily Emulsion
QualiChem, Inc.	Q-SOL	200, 205CF, 285, 286, 296	Oily Emulsion

Okuma's "Recommended Coolant Control Plan" should be considered when developing a maintenance program for the coolant.

## Recommended Coolant Control Plan

This bulletin provides important information regarding the use of metalworking coolants in Okuma machine tools. Improper coolant maintenance can damage your machine.

It is imperative to use metalworking coolants that are compatible with recommended machine lubricants to properly protect machine finished surfaces, ways, guides, ball screws, sheet metal, bearings, seals, gaskets and o-rings.

**Deviation from recommendations may cause chemical reactions including washing way lube, bearing grease, and excessive seal and/or wiper swelling.** The effects can be way and stainless cover oxidation (rust), protective coating removal (e.g. paint), premature bearing failure, and premature seal or wiper failure.

### Overview:

The following control plan and notes are an overview and should be used in conjunction with your coolant and lubricant supplier's suggested maintenance procedures. The plan is intended to help you make more informed decisions concerning the MWF (metalworking fluid) coolants you choose to use, as they pertain to maintaining your machine tool.

### **Always read and follow all coolant manufacturer's instructions and warnings.**

Should you require further assistance, contact your current coolant supplier or QualiChem, Inc. for a local representative.

In general, all MWF's (coolants) that are mixed with water require some level of maintenance. How much or how little maintenance depends on numerous variables including the MWF formulation, quality of the water used in the system and all other types of contaminants in the system (chips, way lubes, etc.).

Most MWF suppliers will agree that monitoring the concentration on a regular basis is highly recommended. Beyond concentration, monitoring programs should be tailored to the meet specific needs.

The following parameters are suggestions from Okuma and are intended to help keep fluids in good operating condition.

<b>Parameter</b>	<b>Method</b>	<b>Frequency</b>	<b>Range</b>	<b>Corrective Action</b>
<b>Concentration</b>	Refractometer	Daily	Follow Min-Max guidelines from fluid supplier	Adjust concentration as needed and follow supplier mixing guidelines
<b>Tank Volume</b>	Visual Inspection	Daily	For best results, keep machine tanks filled with coolant at the proper %	Follow supplier mixing guidelines and suggestion for maintaining concentration
<b>Chip Removal</b>	Visual Inspection	Daily	Slight to none	Remove excess chips
<b>Tramp Oil</b>	Visual	As needed	Slight to none	Skim accumulated oils and investigate any high usage
<b>pH</b>	Strips for use in field, and meters in the lab	As recommended or as coolant condition's change	Follow guidelines from MWF supplier	Follow guidelines from MWF supplier
<b>Water quality</b>	Strips for use in field and meters in the lab	As needed	Consult with your MWF supplier on suitable water quality parameters	Use deionized or reverse-osmosis water if recommended by the MWF supplier
<b>Machining Cleaning</b>	Preventive Maintenance Schedule	Yearly, or more if required		Follow your supplier's machining cleaning guidelines

Consult with your MWF supplier to help design an appropriate preventive maintenance program specific to your shop conditions and local regulations.

## Notes:

### Concentration:

- Know if your coolant has a “Refractometer Index factor” because there is a difference between % by volume and refractometer reading (°brix). The refractive-index factor for the coolant can sometimes be found on drum labels or product data sheets.
- Follow coolant supplier’s guidelines for concentration ranges to ensure machine and operator safety as well as optimum cutting performance.
- Most coolants have a minimum concentration of 4% to 5% by volume or 20:1 (water/concentrate). Maintaining operating concentrations below minimum recommended range can result in problems with: corrosion, cutting performance, bacteriological attack, odor and residues.
- Avoid using coolants at concentrations above the suggested maximum (typically 12-15%) to avoid skin problems and machine damage. Needing to exceed maximum concentrations for cutting performance and/or stain/corrosion control suggests the need for a coolant with properties better suited to your operation.

### pH:

- Monitoring the pH of coolants should be done if recommended by the fluid supplier. It is not usually necessary for a job shop to monitor pH.
- pH is usually recommended to monitor in very large central systems or in response to specific technical support issues.
- Maintaining the fluid in the recommended concentration range is the best method for maintaining pH. It isn’t typical to need “tank-side” pH adjustments in individual sump applications.
- Each coolant formulation will have its own “optimum” pH range. Being outside the optimum pH range could suggest problems with coolant stability or contamination from alkaline or acidic sources.
- Consult with your MWF supplier for recommended trouble-shooting assistance.

### Water Quality:

- Water quality is very important and can impact coolant performance. Not all coolants will be impacted in the same manner. Sump life, coolant usage, tool life, machine cleanliness and corrosion control are subject to water quality and fluid design limitations.
- Water quality related to metalworking fluids is generally measured as “hardness”, pH and “chlorides”. Hardness (calcium and magnesium ions) contributes to coolant residues, high coolant usage rates and dirty machines. Very high or low pH waters can affect the stability of fluids. Chlorides contribute to ferrous corrosion and aluminum staining.
- How much hardness and chlorides are acceptable will differ by MWF formulation and specific manufacturing conditions.
- Hardness can act as a “natural defoamer” by combining with components of the coolant creating insoluble soaps. Be sure to use a coolant formulation that is foam-compatible with your water quality and doesn’t become destabilized due to hardness.
- Removing hardness with a “softening system” is not always the best choice in water treatment options. Deionization or reverse osmosis treated water are the preferred methods for metalworking fluids.
- Consult with your MWF supplier for advice concerning water quality and recommended treatment methods.

### Machine Cleaning:

- Cleaning machines the right way can take time, but it pays you back by yielding more consistent coolant performance and fewer dumps related to premature coolant failure.
- Machines should be cleaned periodically even if the coolant can last forever. Foul odors are not the only reason to pull coolant from the machine.

- Most coolant suppliers also sell machine cleaners. Be sure to use one that is compatible with your coolant.
- Follow the supplier's directions when using a machine cleaner. Machine cleaners often contain strong alkaline chemicals which can be harmful if misused. Please refer to the manufacturer's instructions for safe and effective use.

### **Coolant Maintenance**

- Assign appropriate personnel the responsibility for coolant maintenance. If a coordinated program is not established to control the system, it will result in no control.
- Keeping the tanks full at the proper concentration is the primary task of coolant maintenance.
- Use of a coolant mixing device or proportioning unit is highly recommended.
- Removing contaminants from the coolant sump is secondary to concentration control, but also very important.
- Free-floating oils should be skimmed from the coolant tanks and solids should be filtered out.
- Employ good housekeeping practices to avoid contamination of the sump with cleaners, bleach, chemicals, trash, tobacco products, food, etc.
- Consult with your MWF supplier for ideas on how to best recycle your coolant. Not all coolants are suitable for recycling or extended tank life.
- Design your coolant maintenance program to be simple and routine; it will get done well.