

Coolant Basics For Maximum Performance

A practical overview of charging your machine with coolant and maintaining it for consistent performance.



Six habits that protect coolant performance

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| 01 Prepare the machine
Start with a clean machine and sump. | 02 Mix correctly
Add concentrate to water; mix thoroughly. |
| 03 Calibrate first
Zero the refractometer before measuring. | 04 Control concentration
Use the product factor and target range. |
| 05 Manage makeup
Account for water loss and recheck. | 06 Keep it clean
Remove tramp oil, chips and fines. |

Technical guidance: 1.877.877.6221

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Start clean. Mix correctly.

Prepare the machine before adding fresh coolant. Use the correct water and dilution.



MACHINE PREPARATION

- 1 Inspect first.**
For a new machine, follow startup instructions and remove shipping residue and debris.
- 2 Treat only as directed.**
If needed, use a compatible system cleaner or treatment recommended by your coolant supplier.
- 3 Drain the old coolant.**
Use a sump sucker and a suitable collection container. Handle spent fluid appropriately.
- 4 Remove chips and sludge.**
Safely isolate the machine. Clean the sump and conveyor; use an appropriate wet vacuum for remaining liquid and debris.
- 5 Clean and finish the system.**
Circulate cleaner as directed, then isolate before wiping accessible surfaces. Flush or drain residual cleaner as instructed.
- 6 Reassemble and check.**
Reinstall the conveyor and secure connections and guards before charging the machine.



MIXING COOLANT

- 1 Select a clean container.**
Use a suitable pail or drum. Follow the coolant's recommended dilution.
- 2 Water first.**
Add water, leaving room for concentrate.
- 3 Concentrate second.**
Add the measured concentrate to the water.
- 4 Mix thoroughly.**
Stir until the mixture is uniform.

Using a proportioner

Connect the unit to the concentrate container and water source. Confirm the resulting mix concentration.

Choose water with your specialist

Tap water may suit the initial charge. DI or RO water may benefit later makeup. Suitability depends on the coolant and your water quality.

RECIRCULATE FOR AT LEAST 15 MINUTES

Then measure concentration and confirm the target before production.

Calibrate. Measure. Confirm.

A refractometer reading is not always the actual coolant concentration.



Before measuring coolant

Clean the prism between samples. After calibration, test a representative sample from the recirculated coolant.

FOLLOW THE PRODUCT RANGE

Examples from the video - not universal targets

5%	Light-duty machining
7%	Typical starting example
10%	Heavy-duty machining

ZERO THE REFRACTOMETER

- 1 Use plain water.**
Use water from the coolant-mixing source, or the calibration water specified by the instrument manufacturer.
- 2 Apply and look.**
Place a few drops on the clean prism, close the cover and look through the eyepiece.
- 3 Adjust to zero.**
A reading may begin above or below zero. Turn the small top screw or dial until the blue-white boundary reads 0.

APPLY THE REFRACTOMETER FACTOR

Check the product data sheet for the correction factor, sometimes called a refractive index.

$$7 \times 1.5 = 10.5\%$$

Reading x product factor = actual concentration

Always compare the calculated result with the coolant recommendation for your material and operation.

Too lean

May contribute to rust, poor tool life and accelerated bacterial growth.

Too rich

Wastes concentrate and may contribute to skin irritation or dermatitis.

CONTROL MIST AND CONTACT

Severe or high-pressure machining can create mist that irritates eyes and airways. Use appropriate mist extraction, enclosures and PPE; follow the product safety data sheet.

Manage makeup. Keep coolant clean.

Concentration control and contamination removal support coolant life and part quality.

ADDING MAKEUP COOLANT

Water evaporates during machining and in a hot shop. The coolant left in the sump can become more concentrated.

7%

Startup

9%

After water loss

4%

Example makeup

Video example: a 7% sump rises to 9% after three days. A leaner makeup mix, such as 4%, can help bring it back toward target.

The amount matters. Choose makeup strength and volume based on the sump's current volume and concentration. A 4% mix is not a fixed recipe for every machine.

Recirculate and recheck. Confirm the actual concentration after adding makeup. Follow supplier guidance rather than routinely topping a rich sump up with the target-strength mix.



REMOVE CONTAMINATION

1

Remove tramp oil.

Use disk or belt skimmers, tank-side separation, or an appropriate wet vacuum.

2

Remove chips and fines.

Use suitable filtration. Decantation and recycling systems may help larger operations.

3

Watch machining results.

Contamination can affect emulsion stability, tool life, surface finish and part tolerances.

4

Reuse selectively.

If still suitable and approved, coolant may move to a less demanding operation before critical machines receive fresh coolant.

SHOP-FLOOR CHECKLIST

- ☐ Check sump level and fluid condition
- ☐ Confirm the product correction factor
- ☐ Review makeup additions and water

- ☐ Measure and record concentration
- ☐ Remove tramp oil and particulate
- ☐ Investigate rust, foam or part changes

This is a general overview. For product-specific procedures, water-quality advice or troubleshooting, contact your QA technical professional.

NEED HELP? CONTACT QA LUBRICANTS

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