Kouper Lubricants Private Limited

KOUPER Products are derived with innovative formulations and technology with the re-defined tribological solution to all industrial applications.

Coolant Management Jan-24


METAL WORKING FLUIDS


NEAT CUTTING OILS


GEAR OIL


HYDRAULIC OIL


RUST PREVENTION OIL


SPINDLE OIL


LUBE OIL


KNITTING OIL


CLEANERS


EDM OIL


DRAWING OIL

Your ideal product collaborator.

Continuous monitoring of coolants is crucial to uphold their performance and quality. This practice not only extends machine and fluid lifespan but also enhances manufacturing efficiency, maximizes profitability, and contributes to improved safety. Despite these benefits, fluid condition monitoring doesn't have to be complex or costly.

Multiple monitoring techniques are available to measure a range of factors affecting coolants. While some tests may require laboratory analysis, others are relatively simple and cost-effective to conduct. This concise guide offers insights into establishing and implementing efficient condition-based analysis techniques for coolants.

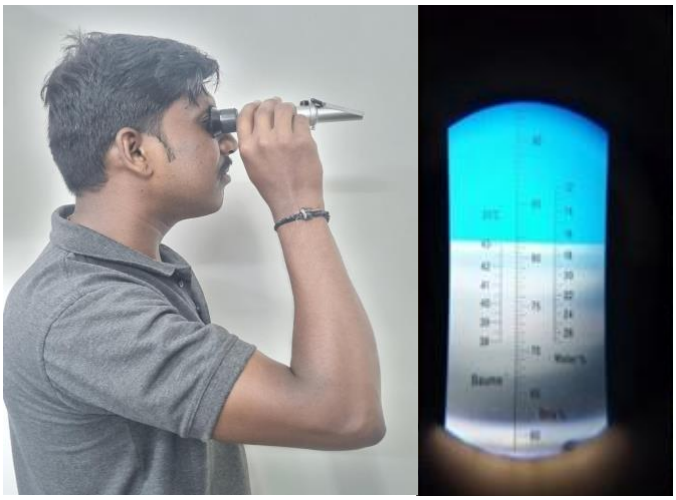
Kouper lubricants come up with knowledge transfer magazines to improve our product partners to enhances their manufacturing efficiency, maximizes profitability, and contributes to improved safety.

Technical Support Excellence

Benefit from our unparalleled expertise in lubrication and chemical processes at KOUPER. We offer unmatched products and services with focused engineering, administrative, and technical support. Our comprehensive business support solutions encompass customer service team, customer account managers, and a team of experienced technical engineers and product specialists.

Every lubrication recommendation schedule and review are customized to the unique needs of your operation. Our goal is to extend service life and optimize operational efficiency. At KOUPER, we are committed to providing exceptional support for your technical requirements.

COOLANT
MONITORING

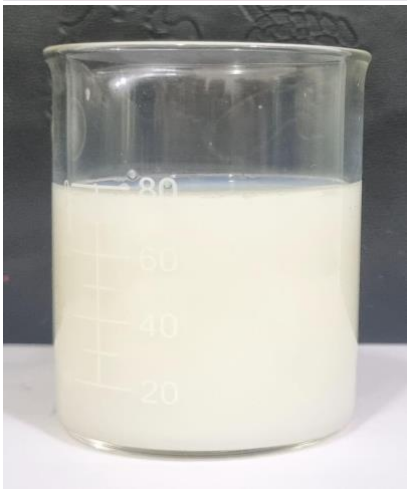


MONITORING COOLANT CONCENTRATION

- Maintaining the correct concentration in metalworking fluids is crucial, and it is highly advised to adhere to the recommended dilution rates.
- When the proper concentration is maintained, end users can realize significant cost savings, potentially up to 50% on coolant costs. Moreover, maintaining the correct concentration helps in reducing bacteria populations and mitigating skin-related issues.
- The concentration recommended by the manufacturer for any water-miscible metalworking fluid is set at a level that ensures maximum performance. For example, a 5% concentration indicates that 5 parts of water-miscible metalworking fluid concentrate should be mixed with 95 parts of water.
- Regular checks of a coolant's strength are essential, and daily monitoring is recommended. Shop floor personnel can easily conduct concentration checks using a refractometer.
- This simple yet effective tool allows for quick and accurate assessments of the fluid concentration, ensuring optimal performance and cost-effectiveness.

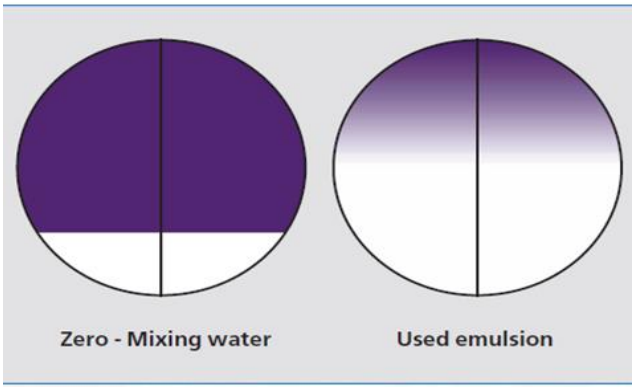
MIXING OF WATER MISCIBLE METALWORKING FLUIDS

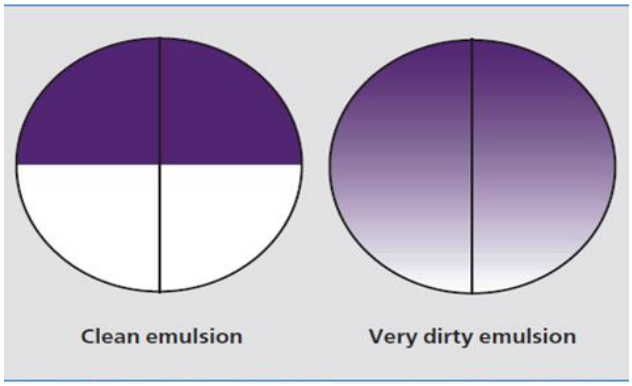
- **Clean Mixing System:** Use a dedicated mixing system with a clean container for preparing water-miscible coolants. Avoid contamination by ensuring the system is free from residues of other substances.
- **Avoid Sump Mixing:** Refrain from mixing fluids directly in the sump of the machine tool. Choose a separate mixing system to maintain precision and prevent potential contamination.
- **Automatic Mixing Systems**: Consider using automatic mixing systems. These systems offer precision and efficiency, allowing for accurate dosing of the desired mix strength. They contribute to consistency and reduce the margin for error.
- **Set-Up Accuracy:** When using automatic mixing systems, ensure they are set up accurately to deliver the desired coolant concentration to the machine tool. Regularly check and calibrate these systems for optimal performance.
- **Contamination Prevention:** Implement measures to prevent contamination during the mixing process. Clean containers, tools, and equipment are essential to maintaining the purity of the coolant.



REFRACTOMETER

A refractometer is an instrument designed to assess the 'refractive index' of a solution, providing information about the proportions of oil and water within the coolant mixture. In essence, it quantifies the volume relationship between these components in the coolant composition. Refractometers offer a swift and user-friendly method for keeping tabs on coolant concentration.
Always ensure the refractometer is thoroughly cleaned between testing different emulsions.





CALIBERATION

- **Clean the Prism:** Lift the Perspex flap and wipe the glass prism clean.
- **Apply Clean Water:** Place several drops of clean water onto the glass surface and close the cover.
- **Focus Adjustment:** Look into the refractometer and use the focus ring to create a clear image, ensuring that the scale comes into focus in the eyepiece.
- **Calibration:** Adjust the small screw on the top of the refractometer until the line between the white and blue areas meets at 0 on the scale. This action effectively 'zeroes' the refractometer.
- **Zeroed State:** Confirm that the refractometer is now 'zeroed' for accurate readings.
- **Prism Cleaning:** Wipe the water off the prism to prepare it for the next measurement.

Following these precise steps ensures that the refractometer is properly calibrated and ready for accurate coolant concentration readings

REFRACTOMETER MEASUREMENT

- **Apply Coolant**: Place several drops of coolant on the glass surface and close the cover. It's recommended to use coolant from the delivery jets. Carefully exclude any floating oil, as this can impact the instrument reading positively.
- **Read the Scale**: Look into the refractometer and note the reading on the scale. The reading is taken where the line between the blue and white areas intersects the scale.
- **Factor in Concentration:** Calculate the actual concentration of the emulsion by multiplying the scale reading by the correction factor for the specific coolant in use.
- **Use Correction Factor:** Each coolant product has its unique refractometer correction factor. Always refer to the correction factor provided in the product's data sheets for accurate concentration calculations.
- **Calculation Formula**: To calculate concentration: Refractometer Reading x Correction Factor = Actual Concentration.

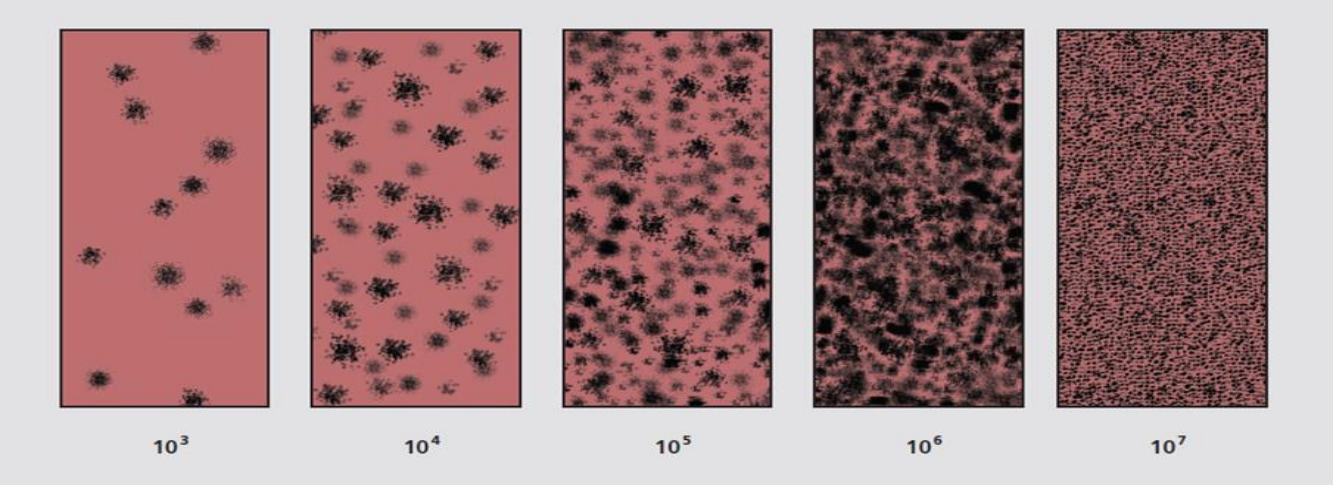
REFRACTOMETER READINGS

Maintaining the clarity and accuracy of refractometer readings is essential for reliable results:

- **Clean Coolant for Clear Reading:** Fresh or thoroughly clean coolant will provide a crisp and clear reading initially.
- **Changes Over Time**: As coolant is used over time, the reading may become more obscure, showing a diffused area of color.
- **Dirty Coolant Challenges**: In cases of very dirty coolant with a high tramp oil content, obtaining a reading can be challenging or impossible.
- **Potential Causes of Obscured Reading**: Even with good coolant, an obscured reading may indicate contamination of the glass slide and Perspex cover with oil, dirt, or grease.
- **Essential Cleaning:** To ensure reliable and repeatable results, regular cleaning of the glass slide and Perspex cover is imperative. Use soft, non-scratching materials for cleaning to prevent damage to the refractometer components.
  By adhering to proper cleaning practices, you enhance the longevity and accuracy of your refractometer readings, providing dependable results over time.

MONITORING BACTERIA LEVELS

Routine monitoring of bacterial contamination is crucial to sustaining optimal conditions in soluble oil emulsions. The substantial presence of bacteria poses a dual threat by degrading the technical performance properties of the emulsions and elevating the risk of health problems. Through regular checks, you not only confirm the effectiveness of your bacterial control standards but also gain early insights into potential increases in bacterial levels. Measurement techniques, such as using dip slides, offer a swift and cost-effective means to uphold low bacterial levels, enabling timely interventions if necessary. This proactive approach ensures both the technical efficiency of the emulsions and a safer working environment.



DIP SLIDES

- A dip slide is a testing device comprising a plastic carrier coated with a sterile culture medium. This slide is immersed into the liquid under examination.
- Afterward, it undergoes incubation to foster microbial growth. The ensuing colonies are assessed by referring to a chart that compares the density of the colonies. This comparative analysis indicates the degree of bacterial contamination.
- The outcomes are typically expressed in Colony-Forming Units per Milliliter of fluid (CFU/ml).

USING A DIP SLIDE

Follow these steps for proper handling of dip slides:

- **Prepare for Sampling**: Loosen the cap on the tube and carefully remove the dip slide from the container, ensuring not to touch the surface.
- **Immerse in Emulsion:** Immerse the dip slide into the emulsion under test. It's crucial to guarantee that both sides of the slide come into contact with the emulsion.
- **Record Information:** Enter the machine ID and emulsion ID on the container for proper identification
- **Send for Laboratory Analysis:** Send the dip slide to a laboratory for incubation, typically at 30ºC for 48 hours, and subsequent interpretation.
- **Avoid Contamination:** Exercise care during dip slide sampling to avoid tramp oil contamination, ensuring the accuracy of results.
- **Safe Disposal:** Dispose of used dip slides safely, adhering to the instructions provided by the dip slide manufacturer.

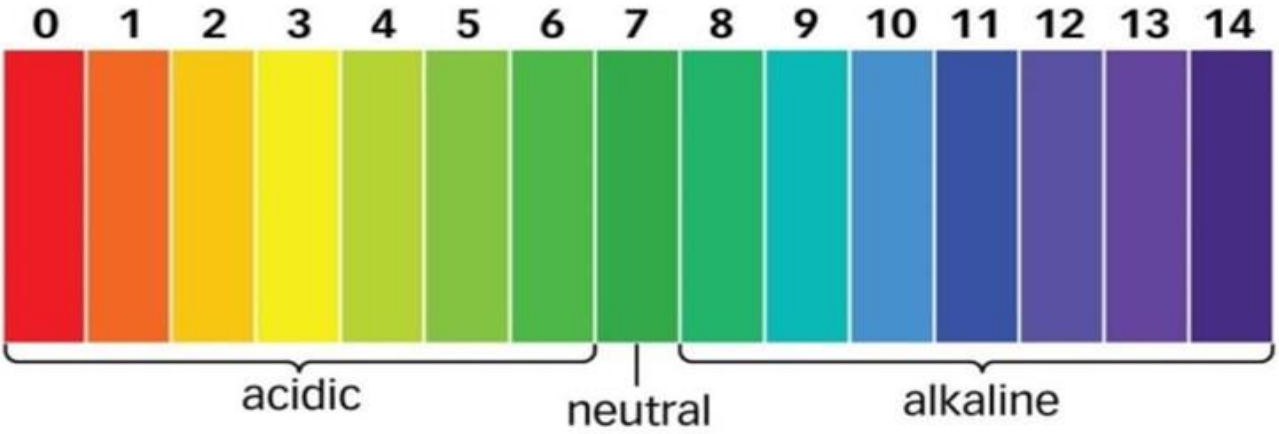
EFFECTIVE MONITORING

BACTERIA LEVEL GUIDELINES

- **Good Level = <10^3 CFU/ml**
  Bacteria are being maintained at low levels. No further action is required.
- **Reasonable Level = 103 to 106 CFU/ml** Review control measures to ensure levels of bacteria remain manageable. Risk assessment should specify action to be taken. Biocides and or cleaning may be indicated. If biocides are used, expert advice should be obtained, and the concentration of biocides should be monitored.
- **Poor Level = > 106 CFU/ml**
  Immediate action should be taken in line with the risk assessment. Normally at very high levels, draining and cleaning should take place.

THE pH SCALE

- **pH Measurement:** The pH scale gauges the acidity or alkalinity of a solution.
- **Scale Range:** The scale spans from one to fourteen, with 7 marking neutrality (e.g., distilled water).
- **Higher pH (Alkali) Implications:** Elevated pH values suggest potential issues like incorrect materials in the machine tool sump, excessive biocide or machine cleaner, or a high coolant concentration. Consequences may include skin irritation and corrosion.
- **Lower pH (Acid) Implications:** Lower pH values indicate heightened bacterial activity. Consequences may include emulsion instability and the formation of gummy deposits.



MONITORING pH LEVELS

- **Frequency of pH Checks:** pH levels should undergo checking at least weekly.
- **Importance of Regular Checks:** Regular checks are crucial because a shift in the coolant's pH value signals internal changes in the coolant.
- **Measurement Methods:** Various methods exist for pH measurement, but the simplest on-site approach is employing pH strips

USING pH STRIPS

- **Dip the Strip:** Submerge the pH strip into the emulsion sample.
- **Wait Period:** Allow the strip to remain in the sample for 30 seconds.
- **Color Comparison:** After the wait period, compare the colors on the strip with those on the scale provided on the box.
- **pH Value Indication:** The comparison will indicate the pH value of the emulsion.

MONITORING ESSENTIALS

- **Strategic Planning:** Develop a comprehensive strategy outlining what needs to be tested, testing frequencies, and methods.
- **Regular Monitoring:** Ensure that monitoring is conducted on a consistent and regular basis.
- **Visual Monitoring Importance:** Emphasize the importance of visual monitoring. Staff should be vigilant for signs of contamination and changes in fluid appearance and odor.
- **Fines Debris Counts:** Routinely monitor fines debris counts at specified sample points.
- **Specialized Sample Analysis:** Collect and analyze samples from machines not on routine oil analysis, specifically for fines debris and bacteria.
- **Equipment Cleanliness:** Ensure that all equipment used for capturing and containing samples is impeccably clean.
- **Prevent Cross-Contamination:** Take precautions to avoid cross-contamination when taking multiple samples from different systems.
- **Safety Precautions:** Always ensure fluid systems are not under pressure when collecting samples.
- **Record Keeping with Charts:** Use charts to record results, facilitating easy interpretation into graphs for quick trend and change analysis.
- **Long-Term Record Keeping:** Maintain records of all tests for several years to establish benchmarks for monitoring.
- **Actionable Results:** Ensure that results are acted upon promptly.
- Follow-Up on Recommendations: Follow up on any recommendations and record their effects.
- **Fungal Growth Checks:** Regularly inspect coolant systems for evidence of fungal growth, especially in head spaces and above the coolant level in tanks. Seek technical support for advice on removal and treatment if fungal presence is suspected.
- **Contact for Help:** For further assistance and advice, contact KOUPER. By adhering to these best practices, you establish a robust and proactive approach to monitoring that ensures the longevity and optimal performance of your systems.

Should you have any questions or require further assistance, please feel free to contact our technical support team at info@kouper.in / +91- 9611517922. Your satisfaction and the optimal performance of your metalworking fluids are our top priorities.

Your Right choice lubricant for Right application

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