Usage of KSS-Kombi-Test®

Sample

Aqueous metal working fluids or water-based cleaners

Sampling

Take a sample at a position, where the fluid is perfectly mixed. Samples, which are not tested immediately, should be stored below room temperature until measurement.

Procedure

Take a stick, close the tube, and insert the stick into the MWF for \sim 1 second. Immediately shake of the liquid excess and wait 60 seconds before evaluation.

For comparison with the printed color scale, hold it parallel to the left side of the label of the

"closed" tube. The nitrite patch is located at the lower end of the stick, and at the top of the tube label. Please hold the stick slightly downwards or at least horizontally.

Evaluation:

Match the color on each field with its corresponding color scale printed on the tube and write down the value. Personal with red-green color recognition debility are often unable to read the hardness scale of these sticks.

Caution!

After taking out a stick, always close the tube with the delivered cap. The cap contains a nonhazardous humidity adsorbent. Continuous infiltration of humidity into the tube will degrade the indicator fields. Store below 86°F. The sticks are not hazardous but contact with children should be avoided. The intended use is restricted to water miscible metal working fluids or water-based cleaners.

KSS is the German abbreviation of Metal Working Fluid - MWF.

Nitrite (NO₂)

Concentrations of Nitrite in MWF \geq 20 mg/l indicate mutagenic and cancerous risk factors due to possible formation of N-Nitrosamines. Check it every week. If levels \geq 20mg/l are found, contact your MWF-supplier. Some MWFs are inhibited against nitrosamine formation up to 80 mg nitrite/l. Sources for nitrite formation are: Bacterial degradation of nitrate in process water, spillage from tempering baths, general microbial activity, diesel exhaust.

Water Hardness (dH° - mMol/l Ca²⁺)

Soft foam may appear at low levels of Calcium ($Ca^{2+} < 1 \text{mMol/I}$). High Calcium ($Ca^{2+} > 5 \text{mMol/I}$) may lead to scaling, promotes corrosion and microbial growth. The resulting foam is often rather "hard". Emulsions may even break (separation of the oil from the aqueous phase). A regular check is recommended. We strongly recommend replenishment of your system with water from reverse osmosis blended to $\sim 1 \text{ mMol/I}$ (Ca^{2+}).

pН

MWFs and cleaners should only be operated in the pH- and concentration-range recommended by the manufacturer. An increase enhances the risk of skin irritation. Lowered pH is an indicator for loss of stability, corrosion protection and microbial degradation. Cleaners show bad washing performance in this case. The degradation may cause stench. Deviations therefore should be corrected. Otherwise, the exchange of the MWF/cleaners is recommended. A weekly check is reasonable. Sometimes constituents of the liquids obscure color of the pH-indicator. To avoid misinterpretations first check the pH of a freshly prepared sample of with the KSS-Kombi-Test, and compare the reading with the data sheet, or better control it with a calibrated pH-meter. If large deviations occur, you can still use the test stick, however the reference value of the fluid for routine control should be adopted. Relevant for daily workshop live is only the ph-degradation. An a decrease of 0.2 to 0.3 pH units is normal, a larger drop indicates problems.



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