COPPER ADDITION TRIALS

Treatment for H_2S and Mercaptan

EQUIPMENT

4 ounce or 2 ounce bottles with caps
1 ml serological pipet
wine glasses
watch glasses
Eppendorf pipettor (optional) or 1 mL pipette
pipet safety bulb

CHEMICALS

Cupric Sulfate 5 Hydride crystals, $CuSO_4 \cdot 5\ H_2O$ MW = 249.686 Cu = 25.47%

Crystals	1.0 g/L	= 254.7 ppm Copper
	1.0 g/gal	= 67.29 ppm Copper
	1 #/1000 gal	= 30.55 ppm Copper
1% $CuSO_4$	1 mL/L	= 2.57 ppm Copper
	1 mL/gal	= 0.67 ppm Copper
	0.15 mL/gal	= 0.1 ppm Copper
10% $CuSO_4$	15 mL/1000gal	= 0.1 ppm Copper

LAB SOLUTIONS/PROCEDURE

0.5% $CuSO_4$	0.1mL/100mL	= 1.25 ppm Copper
	0.1mL/120mL	= 1.05 ppm Copper
0.1% $CuSO_4$	0.1mL/100mL	= 0.25 ppm Copper
	0.1mL/120mL	= 0.20 ppm Copper
0.05% $CuSO_4$	1 mL/100mL	= 1.25 ppm Copper
	1 mL/120mL	= 1.05 ppm Copper
0.0025% $CuSO_4$	1.0mL/100mL	= 0.063 ppm Copper
	1.0mL/120mL	= 0.052 ppm Copper

1. Decant samples into several 4oz (120mL) bottles. (can be done in 2oz (60mL) bottles) Make 1 full bottle as a Control.
2. Label each bottle with increments of Copper: +0.1ppm, +0.2ppm etc. up to +0.5ppm. (or levels appropriate for removal)
3. Mix each bottle, top off, and cap tightly. Let stand overnight.
4. Pour each into a glass and evaluate for improvement in odor. If the off aroma diminishes but is not gone, consider adding up to 1.0ppm Cu and evaluate the effect. Also a repeat of the trial, adding Ascorbic acid (+30 ppm) prior to Cu addition, may work.

Note: TTB regulations state "Copper added in the form of copper sulfate shall not exceed 6 ppm of copper with a residual level not in excess of 0.5 ppm copper. 21 CFR" GRAS

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