



## PRODUCT BULLETIN

# SPEC FLOC 49

## Heavy Metal Precipitant

### General Description

**SPEC FLOC 49** is a heavy metal precipitant used to remove metals from wastewater streams. It is particularly useful in the treatment of wastewater from plating operations. The product is effective over a wide pH range and, when used as recommended, provides nearly complete precipitation of metals, even in the presence of other chelating or sequestering agents.

The sludge cake produced from its use as a heavy metal precipitant is compact, highly insoluble, and easily dewatered. Its low solubility means that it is less susceptible to leaching and is more likely to pass leaching tests such as those required by the U.S. Environmental Protection Agency.

### Application

The weight of **SPEC FLOC 49** equivalent to a unit weight of metal ion is approximately equal to 358 times the metal ion valence divided by the atomic weight of the metal. Table 1 shows the concentration of **SPEC FLOC 49** equivalent to 1.0 mg/L (1 ppm) of various metal ions. The recommended dosage for complete precipitation of a metal is 10 to 30% in excess of the stoichiometric equivalent. For example, the equivalent for  $\text{Cu}^{+2}$  is 11.3 parts by weight of **SPEC FLOC 49** per 1.0 part of  $\text{Cu}^{+2}$ , but about 13 parts of **SPEC FLOC 49** would be needed for complete precipitation. For best results, the required concentration for a given application should be determined by laboratory tests. If practical, adjustment of the pH to values between 7 and 9 can often help improve the effectiveness of the precipitant. **SPEC FLOC 49** can be added continuously or batch wise as required. The treated effluent should be agitated, usually for at least one hour, and then allowed to settle. Cationic polyelectrolyte flocculants can be used to improve the efficiency of the separation of the precipitate from the liquid.

### Physical Properties

Density at 25 °C (77 °F)	1.18 g/mL
Approximate weight per U.S. gallon	9.8 lb
Approximate volume per kilogram	845 mL
Approximate volume per pound	385 mL
pH (neat)	11-12
pH (100 ppm in water)	8-9
Flash point	> 212°F

### Availability

**SPEC FLOC 49** is available in UN approved 5 gallon Pails and 55 gallon drums.

### Handling

Observe warning label on containers. Normal precautions for industrial chemicals apply. **Contact of SPEC FLOC 49 with copper alloys should be avoided.**

**Table 1**  
**SPEC FLOC 49 / Metal Ion Stoichiometric Equivalents**

<u>Metal ion</u> <u>Concentration</u>	<u>SPEC FLOC 49</u> <u>Equivalent</u>  <i>mg/L (ppm)</i>
$\text{Ag}^{+1}$	3.3
$\text{Au}^{+1}$	1.8
$\text{Au}^{+2}$	3.6
$\text{Au}^{+3}$	5.4
$\text{Cd}^{+2}$	6.4
$\text{Co}^{+2}$	12.1
$\text{Cr}^{+3}$	20.7
$\text{Cu}^{+2}$	11.3
$\text{Fe}^{+2}$	12.8
$\text{Hg}^{+2}$	3.6
$\text{Hg}^{+1}$	1.8
$\text{Mn}^{+2}$	13.0
$\text{Ni}^{+2}$	12.2
$\text{Pb}^{+2}$	3.5
$\text{Zn}^{+2}$	11.0