

TRAMFLOC, INC.

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Technical Information Bulletin TRAMFLOC® 907 METAL PRECIPITANT

Product Characteristics

- **Precipitates Chelated Metals**
- **Cost Effective Heavy Metal Removal**
- **Produces Dense Sludge**
- **Produces a Very Low Volume of Sludge**

Tramfloc® 907 is a trithiocarbonate designed as an efficient metal precipitant. This product offers a cost efficient metal precipitation and has lower aquatic toxicity when compared to dithiocarbamate products.

Features and Benefits

Cost effective metal removal	Produces dense sludge
Precipitates complexed or chelated metals	Produces a low volume of sludge
Lower aquatic toxicity than some dithiocarbamates	Forms easily dewatered, high solids sludge
Effective against all multivalent metal ions	Functions over a wide range of pH and temperature
Reduces Cr+6 to Cr+3 for precipitation.	Easily monitored by oxidation reduction potential.

Product Use Metal Removal

Tramfloc® 907 reacts stoichiometrically with heavy metals in solution. Table 1 below, lists the active pounds of Tramfloc product required to precipitate one pound of metal.

Table 1: Pounds Active per Pound of Metal

Metal	Tramfloc® 907	25% DE DTC	40% DM DTC
Cd+2	1.4	3.0	2.5
Co+2	2.6	5.8	4.9
Cr +3	4.4	9.9	8.3
Cu+2	2.4	5.4	4.5
Fe+2	2.8	6.1	5.1
Hg+2	0.8	1.7	1.4
Ni+2	2.6	5.8	4.9
Pb+2	0.7	1.7	1.4
Zn+2	2.6	5.8	4.8

Figures 1, 2 and 3 demonstrate removal rates of metal from water. These results were obtained by measuring the residual metal in solution by atomic adsorption after filtration.

Figure 1: Copper Removal with Tramfloc® 907 (50 ppm Copper)

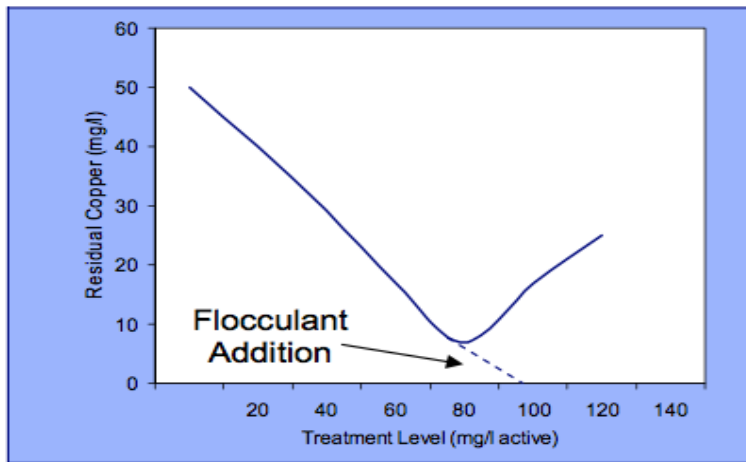
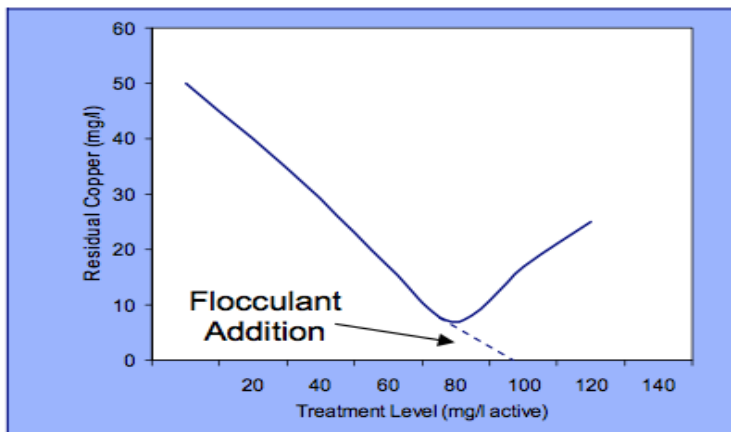


Figure 2: Nickel Removal with Tramfloc® 907, DE DTC, DM DTC (20 ppm Nickel)



For two of these metals; copper and nickel, a point is obtained where metal removal has stopped, and it appears that these metals are resolubilizing. At this point, the precipitate particles are forming at colloidal size and pass through the filter medium. This issue may be corrected by adding a small amount of flocculant, such as alumina.

The Aquamet products will have a nearly stoichiometric reaction with solubilized heavy metals, while the reaction of chelated metals with our metal precipitant line is not stoichiometric, but it is predictable.

The Aquamet products will form an insoluble precipitate with both complexed and chelated metals. This precipitate may be removed by filtration, for disposal or recovery. Hence, it is advised to consider all of our metal precipitants to determine the best product for your service.

Sludge Disposal

Sludge disposal is an important factor in metal precipitation of waste water. Tramfloc Metal Precipitants produce a sludge that weighs less per unit of metal, and is much lower

in volume than common treatments of hydroxide and sulfide precipitation.

Tramfloc® 907 generates lower sludge volumes compared to 40% DM DTC or 25% DE DTC respectively. This data is given in Table 2, following:

Table 2: Tramfloc Metal Precipitation (Sludge Generation)

Precipitate Per Pound of Cu

	Weight in lbs.	Volume in Gals.
Tramfloc® 907	3.6	0.5
25% DE DTC	5.9	0.7
40% DM DTC	4.3	0.9

Typical Properties of Tramfloc® 907:

Active Ingredients	25%
pH	13.2
Density	1.2
Weight per US Gallon	9.8 lbs.
Color	Clear
	Red

Storage, Shipping and Handling:

Tramfloc® 907 is supplied in bulk, or 55 gallon drums with a net weight of 525 pounds.

This material should be shipped and stored in stainless steel, fiberglass or polyethylene. Certain phenolic linings are acceptable for bulk storage. Mild steel, copper, brass, and aluminum are not acceptable for storage or handling.

Tramfloc® 907 may be decomposed by acidification. This process will generate hydrogen sulfide, thus this acidification must be done in well ventilated areas.

Tramfloc® 907 exhibits toxicity to aquatic species and should not be discharged directly into the water supply. This toxicity is given in Table 3, following:

Table 3: Tramfloc Product Aquatic Toxicity LC50 as Product, ppm

	Rainbow Trout	Daphnia Magna	Bluegill Sunfish
Tramfloc® 907	7.5	38	NR₍₁₎
40% DM DTC	0.85	NR	3.3
25% DE DTC	10.00	NR	9.5

NR₍₁₎ = Tests not completed

DM DTC = dimethyl dithiocarbamate; DE DTC = diethyl dithiocarbamate

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