



COLOUR REMOVAL: RESIN

30 January 2008

General Information:

It is advisable to have the water analysed before any attempt is implemented to remove the Colour or Tannin via the ion exchange resin. The analytical data generated will to some extent allow one to establish if the application will be successful, if it will fail, or what treatment train will have to be implemented to ensure success.

The pertinent points and facts of interest encountered via actual tests performed on the colour removal resin are the following:

- I. It is only effective when used with lightly discoloured water.
 - ◆ The resin did not function as per design with dark water sources or where a significant amount of Tannin was present.
 - ◆ The regeneration frequency or regeneration demand additionally for some water sources was excessive.
 - ◆ Dark water sources initiated a slow poisoning or fouling process which within some applications rendered the system ineffective and damaged within a single treatment cycle.
- II. The resin was sensitive to some constituents such as Iron, Manganese and excessive levels of Dissolved Organic Carbon (DOC).
 - ◆ The resin must in other words be applied to eliminate the Colour or Tannin and cannot be used to filter out any other material from the water other than the colour or tannin itself.
 - ◆ Pre-treatment requirements will thus be vitally important to ensure the success of the application. All foreign and extra-unwanted constituents will first have to be filtered out of the water before the resin cartridge is applied to remove or reduce the Colour component.
 - ◆ A common water treatment train will thus not be possible.
- III. The resin appeared to be sensitive to excessive levels of Chlorine or Ozone.
 - ◆ One was forced to tweak sanitation water treatment steps to dose the minimum level of sanitation agent to ensure the resin is maintained in a pristine state.
- IV. Ultra-Violet systems were ineffective within the colour applications.
 - ◆ The Colour or Tannin present by nature increased Turbidity which in turn interfered with the UV-radiation process.

V. It was impossible to determine the volume throughput, or in other words the estimated operational time period, or useful life between regeneration time periods.

- ◆ The Tannin concentration in all applications where the system tests were performed naturally varied wildly, from day-to-day, or week-to-week.
- ◆ When the Tannin concentration was low regeneration cycles were required after extended time periods and where the Tannin concentration increased the regeneration cycles required increased in frequency.
- ◆ It was not possible to visibly pick up the increase in the Tannin concentration via the human eye. Via the eye the water appeared to be as expected but analytically the data showed up a varying Tannin content.

- * One will have to install some form of visual aid, such as a white filter cartridge within a clear housing, which will have to be used to establish if the Tannin is breaking through or not.
- * The regeneration frequencies for a family of four people who made use of the 20-inch resin cartridge system to clean up their household water varied from the worst case of every 3-days to the best every 2-weeks.

VI. The chemicals and best regeneration procedure is described as per attached schematic.

Yours sincerely



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