

T-TAPE[®] MAINTENANCE - CHLORINE TREATMENT

Chlorine is a biocide that is used for the control of algae related problems, sedimentation of organic particles, and bacteria and bacterial slimes.

Chlorine can be sourced in three forms Liquid Chlorine Sodium Hypochlorite, Solid Chlorine Calcium Hypochlorite, and Gaseous Chlorine. The first two are the easiest to use.

1. Calculation of Injection Time

To establish the duration of injection time required for the material to reach the furthest point in the proposed block to be treated, work out the distance from the point of injection to the end of the furthest lateral, eg 600 m. Assume the average water velocity to be 1 m per 3 seconds.

Time required for the material to travel 600 m

=600 x 3 seconds

=1800 seconds or 30 minutes

Therefore the minimum duration of injection is 30 minutes

A very accurate procedure to ascertain injection time is to inject a dye following the pressurisation of the system. Measure time from injection until the colour solution reaches the furthestmost point in the block to be treated.

If you wish to run a chlorine solution through each emitter for a minimum of 5 minutes, then simply add 5 minutes to your injection time calculated above.

2. Calculation of Injection Rate of Chlorine

Check the flow rate of the system, if possible use a flow metre. For this example, assume the flow rate is 31 000 L/hr which equals 31 m³/hr (cubic metres), The desired rate of chlorine is 15 ppm and the active ingredient of chlorine is 12.5 % or 125 ml/L

Note: 1 gram or 1 millilitre in 1 cubic metre = 1 ppm

Therefore 15 g of pure chlorine in 1 m³ of water = 15 ppm chlorine.

$$\text{Injection rate ml/hr} = \frac{\text{desired ppm} \times \text{flow rate m}^3/\text{hr}}{\text{Concentration \%}}$$

$$= \frac{15 \times 31}{0.125}$$

$$= 3720 \text{ ml/hr or } 3.72 \text{ L/hr}$$

3. Calculation of Total Quantity of Chlorine Required

Minimum duration time of injection = 30 minutes

Injection rate of chlorine = 3.72 L/hr

Therefore $= 30 \times 3.72 / 60 \text{ minutes}$

$$= 1.86 \text{ L/hr}$$

FOR MORE DETAILED INFORMATION:-

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