

D-Chlor Tablets

Dechlorinating Agent for Wastewater

Tablet Specifications

Active Ingredient Sodium sulfite (Na_2SO_3)
81.3% plus moisture

Inert Ingredients: 18.7%

Size: 2 5/8" diameter x 13/16" thick

Color: Pale Green

Weight: 140 grams, approximately

Density: 2.0 grams/cc, approximately

Applications

For the treatment of:

- Wastewater
- Cooling tower water
- Tap water
- Pretreatment for ion exchange or reverse osmosis
- Any process water where the presence of chlorine or oxidizers is undesirable due to corrosion, oxidation or biological hazards.

Removal of chlorine or oxidizer originating from:

- SANURIL® tablets
- AQUAWARD® tablets
- Sodium hypochlorite solution
- Calcium hypochlorite solution
- Chlorine gas

Equipment

For optimum performance, D-CHLOR tablets should only be dispensed in any of Exceltec's tablet feeders. Model 1000 or 1001 tablet feeders can individually handle up to 50,000 gallons per day or 100,000 gallons per day when two are installed in parallel. Larger capacities can be treated by using a by-pass arrangement. Smaller capacities can be handled with models 100, 200, and A-200. Exceltec tablet feeders require no electricity, have no moving parts to wear out, and no metal parts to corrode. Exceltec guarantees its tablet feeders for ten years.



Safety and Handling

- Not rated as hazardous substance by the EPA
- Unused material not designated a hazardous waste by RCRA
- Not rated hazardous by DOT
- Store in a cool, dry place away from acids and oxidizers
- Do not allow this product to come in contact with chlorination tablets, granules, or pellets
- Wash hands after handling

Field Test Data

Test 1:

16,000 GPD extended aeration/sand filter wastewater treatment plant, 1-35 GPM range. 13 GPM average. 76 days of operation.

	Inlet	Outlet
Residual Cl ₂	2.9 mg/l	0.0 mg/l
Dissolved O ₂	6.6 mg/l	6.0 mg/l
BOD ₅	<5.0 mg/l	<5.0 mg/l
Fecal Coli	<2.9/100 ml	<2.9/100 ml
pH	6.9	6.9

Test 2:

400,000 GPD Contact stabilization wastewater treatment plant, 38-110 GPM range. 71 GPM average. 74 days of operation.

	Inlet	Outlet
Residual Cl ₂	1.7 mg/l	0.0 mg/l
Dissolved O ₂	10.6 mg/l	10.4 mg/l
BOD ₅	<5.0 mg/l	<5.0 mg/l
Fecal Coli	<2.9/100 ml	<2.9/100 ml
pH	7.6	7.6

THM (Trihalomethane) Reduction

D-CHLOR controls and limits THM formation

Dechlorination following chlorine disinfection (one half hour contact time) reduces THM formation by an order of magnitude.

Data: 0.5 - 4.0 mg/l chlorine residual

Allowed Reaction Time with Chlorine Prior to Dechlorination	Resulting TTHM* Concentration
30 minutes	9 ppb
5 hours	27 ppb
10 hours	45 ppb
20 hours	64 ppb
30 hours	82 ppb
40 hours	91 ppb
50 hours	100 ppb
60 hours	109 ppb

*TTHM - Total Trihalomethanes

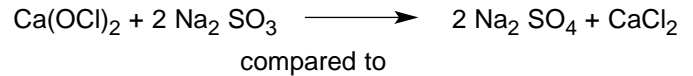
Source of Information:

EPA reports 600/2-81-156 and 600/2-80-091

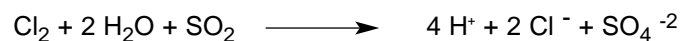
Reaction Chemistry

Generation of acidity (H+) and lowering of pH can be avoided by chlorinating with calcium hypochlorite and dechlorinating with sodium sulfite. These represent the active ingredients in SANURIL 115 tablets and D-CHLOR tablets.

SANURIL / D-CHLOR:



Cl₂ gas / SO₂ gas:



Sodium sulfite reacts immediately with and eliminates free available chlorine.

The reaction rates of sodium sulfite with certain organic chloramines are quite slow in some cases compared to those of inorganic chloramines.

In general, two parts of sodium sulfite will react completely with one part of free or combined chlorine.

Biological Considerations - Freshwater*

Acute studies - dechlorination substantially reduced, and in most cases, eliminated chlorine-induced mortality in chlorinated surface waters and secondary domestic sewage effluent.

Chronic studies - dechlorination eliminated adverse effects of chlorine on survival and growth of organisms in 100% chlorinated secondary domestic sewage.

Decreases in dissolved oxygen and pH have been reported in studies using chlorinated secondary domestic sewage after sulfur dioxide was added in excess of 4 mg/l. No changes in dissolved oxygen were reported in a similar study with excess sulfite up to 9.5 mg/l.

Biological Considerations - Saltwater*

Acute studies - limited data indicate that dechlorination substantially reduces chlorine-induced oxidant toxicity.

Chronic studies - Dechlorination substantially reduces and or eliminates mortality in American lobster larvae (19-day exposure) and juvenile American oysters (exposures up to 32 days).

No studies showed any reduction in dissolved oxygen or pH as a result of dechlorination.

*Source of information - John Hopkins University Dechlorination Study

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