

### Bellacide® 325 – Superior Biocide for Algae Control in Water Systems

**Bellacide 325** is a highly effective algaecide for use in industrial and ornamental water systems. Bellacide 325 is particularly effective in combination with chlorine and bromine based oxidising biocides. Routine treatment with Bellacide 325, together with intermittent or continuous dosing of halogen, ensures cost effective and prolonged protection against all identified strains of algae, even at low halogen levels.

#### Features and Benefits

The combination of Bellacide 325 and free halogen has the following advantages over traditional algal control agents:

- Lower levels of both Bellacide 325 and oxidizing biocides can be used for algal control. The cost of treatment is lower and lower discharge level of biocides from cooling water systems can be achieved, thus reducing their potential aquatic toxicity and cost of discharge.
- No build up of resistance due to the mode of action of the treatment. Bellacide 325 and halogens have a different mode of biocidal action which ensures micro-organisms cannot become resistant.
- Allows oxidising biocides to be more effective against bacteria and fungi because there is no halogen demand from algae.
- The main source of nutrient for bacteria in cooling systems without process leaks is algae. So once the algae are controlled it is easier to control other micro-organisms.
- Bellacide 325 does not foam, is compatible with scale and corrosion inhibitors and is not lost by adsorption onto organic material.
- Regular use of Bellacide 325 eliminates many of the problems caused by unchecked algal growth i.e. loss of cooling efficiency, increased corrosion, blockages and unsightly visible contamination.
- Can be easily and directly applied to industrial water circuits.

#### Typical properties

Bellacide 325 is a fully stabilised 4% w/w aqueous dispersion of 4-chloro-2, 6-dialkylamino-s-triazine.

Physical form and appearance	Off white suspension
pH of undiluted product	6-9
Active ingredients content	3.8-4.2 %
Solubility of active ingredient in water	Soluble at low concentrations 8.5 mg/l solids at 20°C
Viscosity	400-1000 cPs

#### Mode of Action

Bellacide 325 was specifically selected for use in cooling water applications. Bellacide 325 selectively controls the growth of all algae by inhibiting photosynthesis. Bacteria and fungi are therefore unaffected because they do not rely on photosynthesis for growth.

Bellacide 325 inhibits the photo-reduction of water (Hill reaction) in algae photosynthesis. This is a process of light-induced electron transport, whereby light energy is trapped in a pigment system (chlorophyll) and converted to chemical energy. This energy is then used at a later stage for the fixation of carbon dioxide (Calvin cycle), which provides sugars that act as a carbon source for the growth of algae.

#### Activity with halogens

Bellacide 325 algaecide works very effectively with chlorine and bromine based oxidising biocides to allow dose optimisation and cost effective control of algae. The following study illustrates the excellent performance that can be obtained from the combination of Bellacide 325 and halogen biocides.

Test conditions: *C. vulgaris*, *P. inundatum*, pH 8.5, 24°C.  
Key: +++ = heavy growth, ++ = moderate growth, + = slight growth, - = no growth

Biocide	Free Halogen, ppm as Cl <sub>2</sub>				
	0.0	0.1	0.2	0.3	0.6
HOCl	+++	+++	+++	+++	-
HOCl + 2.5 ppm Bellacide 325	+++	++	-	-	-
HOBr	+++	+++	+++	+++	+++
HOBr + 2.5 ppm Bellacide 325	+++	++	++	-	-
BromiCide®	+++	+++	++	-	-
BromiCide + 2.5 ppm Bellacide 325	+++	++	-	-	-

## Dosing recommendations for Bellacide 325

### In a clean system

In the presence of halogens, 25 mg/l Bellacide 325 (product) should be maintained. The halogen can either be shock dosed (e.g. to give 0.5-1.0 mg/l free halogen for 1 hour once per day) or continuously dosed (e.g. to give 0.1-0.3 mg/l free halogen).

In the absence of halogens, 75 mg/l Bellacide 325 (product) should be maintained depending on the algal strains present.

### System badly fouled with algae

Clean badly fouled systems prior to treatment. The system can be cleaned manually or chemically using a broad spectrum halogen based biocide (super halogenation).

The treatment used for clean systems can then be adopted once the algae have been removed.

### Methods of analysis

Methods of analysis have been developed for Bellacide 325. They are not suitable for use in the field and require expertise in high performance liquid chromatography. Please contact your BWA Water Additives representative for further details.

### Packaging

Bellacide 325 is supplied in 25 kg (net) pails, 200 kg non-returnable drums or in 1000 kg intermediate bulk containers.

### Handling

Always read the label and material safety data sheet before using Bellacide 325.

Use of chemical resistant gloves and safety glasses or goggles is recommended when handling.

Harmful if swallowed or absorbed through the skin or inhaled. Avoid contact with eyes, skin and clothing.

Always Use biocides safely.

Do not use Bellacide 325 in recirculating cooling water or ornamental fountains where the treated water will come into contact with lawns or plants, since injury to plant may result. Water from systems treated with Bellacide 325 may not be used for irrigation or spraying of agricultural crops or for watering of animals or for human consumption.

### Storage

Keep container closed when not in use. Protect from freezing Do not contaminate water, food or feed by storage, disposal or cleaning of equipment.

### Disposal

Waste from use of Bellacide 325 may be disposed of on site or at an approved waste disposal facility. Containers should be triple rinsed and offered for recycling or disposed of in accordance with local regulations.

### Patents

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### Precaution

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