



## BIODEGRADATION OF DIALKYL DIMETHYL AMMONIUM CHLORIDES (DDAC)

### Applicable to these current Stepan products:

BTC® 1010	BTC® 1010-80%	BTC® 818
BTC® 818-80%	STEPANQUAT® 1010	STEPANQUAT® 1010-80%
STEPANQUAT® 818	STEPANQUAT® 8188	

### Applicable to these inactive Stepan products:

BTC® 99		
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### Biodegradation Information:

Dialkyl Dimethyl Ammonium Chloride (DDAC) is an antimicrobial used in several types of applications, such as indoor and outdoor hard surfaces (e.g., walls, floors, tables, toilets, and fixtures), eating utensils, laundry, carpets, agricultural tools, and water. There are also DDAC-containing products that are used in residential and commercial swimming pools, in aquatic areas such as decorative ponds and decorative fountains, and in industrial process and water systems such as re-circulating cooling water systems, drilling muds and packer fluids, oil well injection and wastewater systems. Additionally, DDAC-containing products are used for wood preservation.<sup>(1)</sup>

Number of biodegradation studies conducted for the DDAC quats show these products to undergo extensive primary and ultimate (CO<sub>2</sub> production) biodegradation. In the Zahn-Wellens study (OECD 302A) primary biodegradation reached > 90% in 12 hours while the ultimate biodegradation reached 93% in 28 days<sup>(2)</sup>.

In, the modified OECD Screen Test (301E), the didecyldimethylammonium bromide is shown to be readily biodegradable reaching 70% biodegradation in 28-days<sup>(3)</sup>. It should be stressed that the same conclusion is valid for didecyldimethylammonium chloride, since the negative ion part of the molecule is rapidly exchangeable.

### References:

(1) EPA Registration Eligibility Decision for Aliphatic Alkyl Quaternaries August 2006!

(2) Stepan Study 01-058A

(3) Stepan Study 89-031A

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