



Du Pont Animal Health Solutions
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Environmental Degradability of Dupont™ Virkon® Aquatic

Dupont™ Virkon® Aquatic is a disinfectant used in aquaculture to prevent disease, illness and death in farmed seafood.

Dupont™ Virkon® Aquatic is an oxygen based disinfectant containing simple organic salts and organic acids. The environmental degradation profile of each component material of the Dupont™ Virkon® Aquatic formulation within natural systems is summarised below.

Oxone® Monopersulphate Compound.

The active substance in Dupont™ Virkon® Aquatic is Oxone® Monopersulphate Compound, or potassium peroxomonosulphate triple salt. This is an inorganic oxidant that degrades in the environment by a variety of routes.

Environmental fate tests are designed primarily to assess the breakdown of organic compounds, which may produce many complex degradation and decomposition products. Hence, many of the specific tests are inappropriate for a reactive, inorganic substance.

As a peroxygen compound it will undergo catalytic decomposition by iron and other transition metal salts present naturally in waters to form innocuous products, potassium sulphate and oxygen. Heterogeneous catalytic decomposition on clay and other particles in soil or sediment may also occur.

Sodium alkylbenzenesulphonate.

Sodium alkylbenzenesulphonate is an organic anionic surfactant compound, used extensively in household detergent products.

As a result of the large-scale use of this product, extensive data relating to the environmental fate of this substance has been developed. A summary of the data available is published in the IUCLID dataset (Reference ID: 90194-45-9) generated for the purposes of notification and evaluation for entry into the European Chemical Inventory.



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A selection of results and endpoints presented in the IUCLID dataset for sodium alkylbenzenesulphonate are reproduced below.

Study	Method	Result	Report ref. in IUCLID
Ready biodegradability – Dissolved Organic Carbon (aerobic)	OECD Guideline 301 E “Ready Biodegradability: modified OECD Screening Test”	84% after 21 days; readily degradable	20
Ready biodegradability – Dissolved Organic Carbon (aerobic)	OECD Guideline 303 A “Simulation Test – Aerobic Sewage Treatment: Coupled Unit Test”	88.6% ; readily degradable	21
Ready biodegradability – Dissolved Organic Carbon (aerobic)	Directive 79/831, Appendix V, C.4-A	93% after 28 day; readily degradable	23
BOD5/COD Ratio	DIN 38H03, Teil 1	COD = 1760mg/g substance BOD5/COD = <0.005 and is therefore considered as readily degradable	p20

Sodium hexametaphosphate.

Sodium hexametaphosphate is an inorganic substance which hydrolyses in receiving waters to form orthophosphate, which may act as a plant nutrient.

Sodium chloride.

This substance is naturally present and ubiquitous within the environment.



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Sulphamic acid.

This is an inorganic substance, which is soluble in water and slowly hydrolyses to form sulphates of ammonia.

Test methods available for determination of degradability are typically designed to assess organic chemistry, which may produce many complex degradation and decomposition products. Many of the tests are therefore not appropriate for inorganic substances.

Malic acid.

Malic acid is a naturally occurring substance, present in apples and many other fruits. It is also permitted for use as a feed additive in Europe for use as a flavouring agent, flavour enhancer and acidulant.

Further, malic acid is formed in metabolic cycles in the cells of plants and animals. In both the KREB and glyoxalate cycles it is an intermediate in the production of energy and carbon skeletons for the formation of amino acids.

Therefore, this substance will be rapidly degraded within the environment by an abundance of readily available organisms.

Andrew Jenkins
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