

Biodegradability of Protectus Viridis™

Protectus Viridis™ is a water-based disinfectant with three main ingredients: organic acids, the active ingredient, and a surfactant. All these ingredients are considered to be readily biodegradable.

Protectus Viridis

Active Ingredient

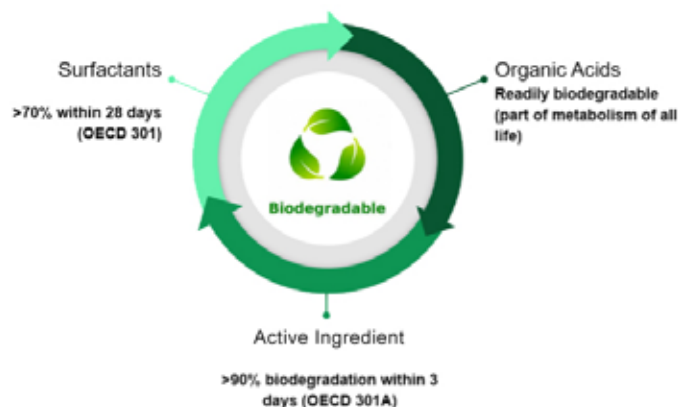
The active ingredient used in Viridis is an organic compound that has been used in cosmetic and toiletry products for many years. It also occurs in some plants and is broken down naturally by some types of Acetobacterium³. Under ECHA's REACH regulation the preservative is considered readily biodegradable and, following the OECD 301A test guideline, it was found that it degraded >90% over 3 days, in aerobic conditions⁴.

Organic acids

Viridis contains two organic acids: lactic acid and citric acid.

Lactic acid is a very common biological molecule found in nearly all plant and animal life on the planet, and it can be widely found in nature as a by-product of respiration. It is also found in many foodstuffs, as a natural product of fermentation or as a food additive (E270). The OECD found that lactic acid was 67% biodegraded after 20 days (in aerobic conditions) and concluded that it does not present an environmental hazard¹.

Citric acid is a food-safe chemical that is found naturally in citrus fruits, as well as being commonly used as an approved food additive (E330). The OECD found that citric acid biodegraded by >85% in 10 days, and thus can be considered readily biodegradable².



Surfactant:

The surfactant in Viridis products is a frequently used compound found in many soaps, cleaners, and household chemicals. Although not naturally occurring, this surfactant has been studied and its biodegradability has been verified by academic research. In a peer-reviewed study, it was found that after 28 days, 70% of the surfactant had biodegraded. Surfactants of this type can therefore be considered readily biodegradable⁵.

¹<https://hpvchemicals.oecd.org/UI/handler.axd?id=fd79fce6-c7e2-48ed-aead-8728c961980c>

²ECHA, CLH Report on citric acid (<https://echa.europa.eu/documents/10162/477e07c3-6404-d921-b1d3-d5d512e7e02e>)

³Frings, J, Schink, B, Archives of Microbiology, 162 (1994), p199-204

⁴ECHA REACH dossier, EC number: 204-589-7, Ecotoxicological Information

⁵Rios, F, Lechuga, M, Fernandez-Serrano, M, Fernandez-Arteaga, A, Chemosphere, 171 (2017) p324-331



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Manufactured in the UK:
Residual Barrier Technology Limited.
Broad March, Daventry. NN11 4HE
t +44(0)1327 313100
www.rbt.global