

This report issued by GEOARTEC TECHNICAL SOLUTIONS S.L., a Spin-Off of University of Zaragoza, has been made by Ion Ander Somovilla De Miguel (geologist), and it completes the one issued by Arbotante Research Team, concretely, made by Josep Gisbert Aguilar (geologist, Dr. in Petrology), Óscar Buj Fandos (geologist, Dr. in Petrology) and Laura de Juan Mangas (geologist). Both teams document the following:

**PRODUCT TECHNICAL SHEET: AQUASHIELD ULTIMATE – water repellent based on nanoparticles for porous substrates.**

Water/Stony materials high contact angle. The contact angle of treated substrates is between 137° and 144°.

Capillary absorption reduction through treated substrate is 73.26% in macroporous materials.

Capillary absorption coefficient or water absorption speed is reduced between 69.89% in microporous materials and 98.12% in macroporous materials.

Water vapour permeability reduces less than 10% in both microporous and macroporous materials.

AQUASHIELD ULTIMATE resists water-rain impact more than 10 years. In Cantabrian Cornice would suppose 30 years of rain to generate a 10% decrease in the contact angle.

No perceptible chromatic variation.

After one year equivalent of ultraviolet radiation exposition, there is no perceptible chromatic variation. The capillary absorption coefficient has decreased 6% in relation to initial value, the water vapour permeability has increased 4.86% and the contact angle has been reduced from 138.37° to 128.79°.

**GENERAL CONCLUSIONS:**

TECNADIS AQUASHIELD ULTIMATE presents optimum qualities regarding to contact angle improvement, absence of colour variation of the material and low water vapour permeability modification. According to these qualities, there are evident advantages in comparison with traditional water repellent products.

After water stream erosion accelerated ageing, TECNADIS AQUASHIELD ULTIMATE shows minimum variation in performance and efficiency for 10 years of water repellence and durability in the presence of rain.

The obtained results show less than 7% variations, after equivalent to one year sun exposition, according to UNE-EN ISO 11507 (2002) ultraviolet radiation exposition accelerated ageing, water capillary absorption, and water vapour permeability and contact angle variation tests.

Zaragoza, September 18th, 2015



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