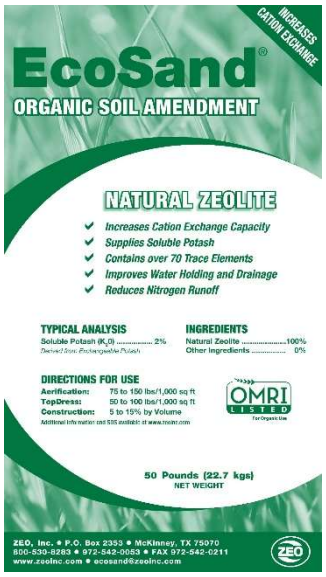
EcoSand®

Use and Installation



Zeolite Soil Amendment

Nature Refined

Science Proven

Purpose

EcoSand is a premium natural zeolite soil amendment engineered to enhance root-zone performance by increasing cation exchange capacity, retaining key nutrients, improving soil texture and drainage, and supporting long-term plant health in turf, greens, and crop-production settings.

Product Overview

EcoSand is a natural clinoptilolite zeolite for use in USGA-style sand greens and soil improvement. Its high CEC helps retain beneficial cations ($K^+/NH_4^+/Ca^{2+}$) and manage sodium in coastal or recycled-water programs—supporting healthy, uniform grow-in while maintaining infiltration and playability. Zeolite amendments have been documented in golf by the USGA Green Section since at least 1993, indicating decades of field use in putting-green media.

In a University of Florida putting-green research thesis, EcoSand showed the highest CEC and fastest grow-in among inorganic amendments tested. EcoSand increased porosity, water holding, and infiltration rate.

EcoSand also improves potassium utilization: clinoptilolite buffers potassium in the rootzone and potassium-enriched clinoptilolite has been shown to raise plant potassium and improve the potassium to sodium ratios under salinity, enhancing turf performance; slow-release potassium from clinoptilolite is also reported in fertilizer studies.

Zeolites are listed among acceptable inorganic amendments in the USGA putting-green construction guidance.

Technical Description

• Mineral	Natural clinoptilolite zeolite
• Cation Exchange Capacity (CEC)	160 meq/100 g (Zeolite Method) 95 (Soils Method)
• Standard Grain Number (SGN)	85 (0.85 mm)
• Uniformity Coefficient (UC)	1.85
• Bulk Density	55 lb/ft^3
• Soluble Potash (Exchangeable)	3%
• Low sodium (Exchangeable)	<0.7%
• Organic	Mined mineral (USDA NOP)
• Clay	<0.5%

Soil Amendment Comparison

EcoSand (clinoptilolite) performed best overall in the University of Florida comparison of four inorganic amendments used in a 15%-85% sand-by-volume golf putting-green mix. Its high CEC and exchangeable potassium buffering are the

primary drivers of performance under sand-green conditions. In the U of FL data, EcoSand showed the highest CEC (98 meq/100 g) and the fastest grow-in (33 days to ~90% cover), while maintaining acceptable hydraulic function in the sand rootzone.

U of Florida Thesis Summary					
Amendment	Clinoptilolite		Calcined Clay		Sand
Code	**1 (EcoSand)**	2	1	2	
CEC (meq/100g)	**98**	35	22	22	1
K_{sat} (cm hr)	**63**	43	52	56	61
Capillary water (%)	**11**	11	12	11	8
Grow-in (Days 90% Cover)	**33**	38	40	42	42

The source for the above data is: *Shaddox, Travis W. 2004. Investigation of Soil Amendments for Use in Golf Course Putting Green Construction. PhD diss., University of Florida.* http://purl.fcla.edu/fcla/etd/UFE0008341

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Critical Technical Notes

Sand Sources Vary Grain shape, fines, and mineralogy differ by pit; therefore, the hydraulic properties of the blend (sand + EcoSand)—including infiltration rate, total porosity, air-filled porosity, and capillary water—should be verified by a qualified laboratory before construction or topdressing programs. See USGA rootzone guidance.

CEC Claims Suppliers' literature may overstate CEC numbers. Specify CEC by 1 M ammonium acetate at pH 7 (a standard soil-lab method such as ISO 11260) and have a third-party soil lab report it on your material and report exchangeable cations (Ca, Mg, K, Na). Sodium should be less than 1%

Zeolite CEC Testing Standard soil-lab procedures often use short equilibration or contact times (≈1 hour). Clinoptilolite exchanges more slowly than many soils; longer saturation/contact times will yield higher measured CEC for zeolites than a short test. If you need a “near-maximum” zeolite CEC, ask the lab to run an extended-contact ammonium acetate method and report the protocol used.

Use Rates

New Construction: 5 to 15% by volume in greens and tees mix

Top Dress:50 to 100 pounds per 1,000 square feet

Aerification: 75 to 150 pounds per 1,000 square feet