



Turf & Soil Diagnostics

May 4, 2018

Greg Hammerlun
Texas Sports Sands
702 Easy Street
Garland, TX 75042

TSD File #18050008

Enclosed are the results of the Kosse Golf sample received by our laboratory on 5/2/18. This sample was tested as received. These results are being compared to the USGA recommendations for putting green construction.

The particle size results indicate that the sample is clean, very uniformly graded sand. Most of the particles are in the medium sand size fraction. The gradation meets USGA recommendations, but the uniformity coefficient is lower than recommended.

We recommend topdressing with a material that has similar or slightly coarser particle size than the existing greens to minimize the risk of layering. The particle size test results suggest this sand should be compatible for use as topdress for a variety of rootzones, including USGA greens. We recommend verifying topdress compatibility by submitting a sample of the existing rootzone for particle size testing.

If you have any questions or need further assistance, please contact us. Samples are generally kept on the premises for 45 days after report date. Thank you for using Turf & Soil Diagnostics, Inc.

Sincerely,

Sam Ferro
President

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Date Received May-02-2018
 Date Reported May-04-2018
 Facility Product Development

Particle Size Evaluation*

Lab ID#	Sample Name	% Sand 2.0 - 0.05 mm	% Silt 0.05-0.002mm	% Clay < 0.002mm	Gravel 4.0 (5)	Gravel 2.0 (10)	% Retained mm (US sieve)				
							V. Coarse 1.0 (18)	Coarse 0.5 (35)	Medium 0.25 (60)	Fine 0.15 (100)	V. Fine 0.05 (270)
18050008-1	Kosse Golf	99.4	< 1.0	< 1.0	0.0	0.0	1.2	26.3	69.8	2.1	0.2
USGA Recommendations for Greens		≥ 92%	≤ 5%	≤ 3%	≤ 3% Gravel ≤ 10% Combined		≥ 60% Combined		≤ 20%	≤ 5%***	
Greens Topdress Guidelines†		-	≤ 3%		0%	0%	≤ 5%	≥ 60% Combined		≤ 15%	≤ 5%

† Guidelines Developed by Hummel & Co.

Lab ID#	Sample Name	Uniformity Coefficient Cu	D15 mm	D50 mm	D85 mm	Shape Angularity	Shape Sphericity	USDA Textural Classification	Acid Reaction	pH [‡] 1:1	% Organic Matter Dry Wt.**
18050008-1	Kosse Golf	1.6	0.28	0.40	0.70	Sub-Angular to Well Rounded	Medium	Sand	Slight		
USGA Recommendations for Greens		See Below	-	-	-	-	-	-	-	-	-

*ASTM F1632 Method A & Determination of Size Factors SOP

‡ASTM D4972 w/ CaCl₂

**ASTM F1647 Method A

***Maximum of 10% combined on Very Fine Sand, Silt, and Clay fractions.

USGA Rootzone Coefficient of Uniformity Recommendations: 1.8 to 3.5 for Mixes with Peat; 2.0 to 3.5 for Mixes with Inorganic Amendment or Pure Sand.

Samples were tested as received and comments pertain only to the samples shown.

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Sample condition upon receipt was normal.

Samples were received without a transmittal letter.

Reviewed by Sam Fero