What Makes Good Bunker Sand?

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A lot of golf course superintendents have been asking about the availability of bunker sands in Minnesota and would like to know what makes a good bunker sand.

What makes a sand "Good" for use in bunkers? This varies from club to club and has several variables. Is the existing sand acceptable to your membership? The cost of replacing the sand will vary upon whether you use local natural sand or manufactured white sand brought in from out of state. The cost for the sand alone will range from $12 per ton for local sand to $70 per ton for sand brought in from out of state. How much of your budget is allocated to bunker maintenance? Does the sand meet the Brown and Thomas recommendation for particle size distribution and the overall sand quality guidelines published in the 1986 issue of *Golf Course Management* used by all independent testing laboratories? Testing is the only way to determine how sands rank for quality.

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Jim Moore with the USGA Green Section has determined the seven factors that should be considered when selecting bunker sand.

Particle Size

Is the sand gradation comparable to the greens root-zone mix?

Particle Shape And Penetrometer Value

Is the sand rounded, angular or crushed?

Crusting Potential

Direct indication of how much silt and clay is in the sand.

Chemical Reaction (ph) and Hardness

High ph and high calcarous sands are subject to wear.

Infiltration Rate

Minimum rate of 20 inches per hour is needed.

Color of the Sand

Do you want natural light brown sand or a white imported sand?

Overall Playing Quality

Fill a test bunker on your course for your membership to evaluate.

The sands available in Minnesota for bunker sands are generally mined and washed with the sands being sub-angular to well-rounded and have a low to high sphericity. We have had clubs use round silica sand that was too soft for play and also blew away during high winter winds, to sands with too high silt and clay content that have become like concrete and have no internal drainage.

A clean, washed, modified mason sand that meets USGA Guidelines and that has virtually no clay or silt is the best available local sand to use that will allow in excess of 20 inches per hour infiltration rate.

Today's bunker sands are measured using a Penetrometer Value (or Fried-Egg Lie Index) with a value of 2.4 or higher being desirable. Our local sands range from 1.5 to 2.2 on this scale unless they have a high percentage of silt and clay in them. You can recognize those sands because they tend to be bathtubs not bunkers.

Drainage, Fabric Liners And Irrigation

Drainage, fabric liners and irrigation for the bunker sand is a must in today's bunker maintenance programs. Hand raking of elevated faces is recommended and power raking should be reduced to a minimum. Re-design of rainwater run-off is mandated to divert flow away from the bunkers so they do not become contaminated.

Available Bunker Sand In Minnesota

We have available in Minnesota three sands for bunkers:

1: Natural modified mason sand that meets USGA Guidelines and a penetrometer value of 2.0 to 2.2

2: Imported off-white sand with 50% crushed sand and a penetrometer value of 2.6 to 2.8

3: Imported 100% crushed white sand with a penetrometer value of 2.8 and above.

Be sure to always ask for independent testing.