

Sand for Golf Courses

by THE USGA GREEN SECTION STAFF

Of all the materials necessary for the construction and maintenance of golf courses, sand—common sand—is among the most important. Great quantities are needed for bunkers and in topsoil mixtures both for the construction of greens and for later topdressing.

Sand is among the most abundant materials on earth, and it can be found in differing

textures and colors, from the coarse white sand of coral atolls of the Pacific to the fine pink sand of Bermuda's beaches. Not every sand can be used for every purpose on golf courses, however. They must be defined and graded. Sands for topsoil mixtures have been precisely defined, while, surprisingly, sands for bunkers have not. More surprisingly, both are so close in

Sand of the recommended particle size is at left; common granulated sugar, the kind you find on any table, is on the right.



particle size designation that they could be used interchangeably. Research at Texas A&M University and at Mississippi State University resulted in the USGA Green Section recommendation for sand particles sizes ranging ideally between 0.25 millimeter and 1.0 millimeter in topsoil mixture for greens.

Sand in this particle size range also is suitable for bunkers. Sands in the range will not remain on top of the grass, but will seep into the soil. Everyone has seen a spray of sand lying on the green after an explosion shot from a bunker. Particles larger than one millimeter tend to remain on the putting surface, while sand particles in the recommended range permeate the turf and, therefore, cause no problems in mowing operations. Secondly, players will not have to remove pebbles from their line, and therefore, putting should take less time.

Sand for bunkers preferably should be light in color, or perhaps even white, but color is not so important in soil mixtures. The specifications table below is universally accepted by commercial sand firms throughout the nation.

At present, anyone can go to a sand dealer and order as much brick, mason or concrete sand as he wants. Isn't it reasonable to expect, therefore, that sand companies should also add a golf sand to their stockpile, one that meets the specifications described herein?

The recommended range of sand particle size for bunkers best suits both requirements: that is, all sand should go through a 16-mesh screen and be retained on a 60 mesh screen. Ideally, the major portion of the sand, 75% at minimum, should be in the 0.25 to 0.50 millimeter range (medium sand). Silica sands are preferred, round rather than angular, if available.

The information presented here is the best judgement of the entire USGA Green Section Staff after study of research available and practical findings as a result of the Turfgrass Service Program. It is edited and reported by Alexander M. Radko, National Research Director. Staff members are William H. Bengueyfield, William G. Buchanan, Holman M. Griffin, James B. Moncrief, F. Lee Record, Carl Schwartzkopf, and Stanley J. Zontek.

SAND PARTICLE SIZE CLASSIFICATION TABLE

*ASTM Mesh	Millimeter	Sieve Opening Inches	
4	4.76	0.187	
5	4.00	0.157	
6	3.36	0.132	
7	2.83	0.111	
8	2.38	0.0937	
9	2.00	0.0787	
10	1.68	0.0661	
12	1.41	0.0555	
14	1.19	0.0469	
16	1.00	0.0394	
20	.84	0.0331	
24	.71	0.0278	COARSE
28	.59	0.0234	↓
32	.50	0.0197	—
35	.42	0.0165	↑
42	.35	0.0139	MEDIUM
48	.30	0.0117	↓
60	.25	0.0098	—
65	.21	0.0083	↑
80	.18	0.0070	FINE
100	.15	0.0059	↓
115	.13	0.0049	
150	.11	0.0041	
170	.09	0.0035	
200	.07	0.0029	
250	.06	0.0025	
270	.05	0.0021	
325	.04	0.0017	

Range For Bunker Use

Range For Soil Mixes

IDEALLY—
MINIMUM
OF 75%
MEDIUM
SAND