

# Sand for Golf Courses

by The USGA Green Section Staff

An article together with a Table which shows how to assess a sand used on your Golf Course. Each year now brings further certainty into areas where previously guesswork, however experienced, was the only guide line.

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 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

*(Continued on page 19.)*

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 PARTICLES SIZE CLASSIFICATION TABLE

	Millimeter	Sieve Opening Inches	
	4.76	0.187	
	4.00	0.157	
	3.36	0.132	
	2.83	0.111	
	2.38	0.0937	
	2.00	0.0787	
	1.68	0.0661	
	1.41	0.0555	
	1.19	0.0469	
RANGE FOR SOIL MIXES	1.00	0.0394	] COARSE
	.84	0.0331	
	.71	0.0278	
	.59	0.0234	
	.50	0.0197	
RANGE FOR SOIL MIXES	.42	0.0165	] MEDIUM
	.35	0.0130	
	.30	0.0117	
RANGE FOR SOIL MIXES	.25	0.0098	] FINE
	.21	0.0083	
	.18	0.0070	
	.15	0.0059	
	.13	0.0049	
RANGE FOR SOIL MIXES	.11	0.0041	] FINE
	.09	0.0035	
	.07	0.0029	
	.06	0.0025	
RANGE FOR SOIL MIXES	0.5	0.0021	] FINE
	.04	0.0017	

### Food for thought

Dan Maples has passed along the following information for your review:

1. President of the largest steel company.
2. President of the largest gas company.
3. President of the New York Stock Exchange.
4. Greatest Wheat Speculator.
5. Great Bear of Wall Street.
6. Head of the world's largest monopoly.
7. President of the Bank of International Settlement.

These certainly should be considered the world's most successful men. At least, they found the secret of making money. Now, some 50 years later, where are these men ?

1. The president of the largest steel company, Charles Schwab, died a pauper.
2. The president of the largest gas company, Howard Hopson, is now insane.
3. The president of the New York Stock Exchange, Richard Whitney, was released to die at home.
4. The greatest wheat speculator, Arthur Gooton, died abroad insolvent.
5. The greatest bear on Wall Street, Gesace Rivermore, died a suicide.
6. The head of the world's largest monopoly, Ivan Krueger, the Match King, died a suicide.
7. The president of the Bank of International Settlement shot himself.

The same year, 1923, the winner of the most important golf championships, Gene Sarazen, won the U.S. Open and the P.G.A. Tournament. Today, he is still playing an excellent game of golf and is solvent.

Conclusion: **Stop worrying about business and go play golf.**

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