




Table 5.8. Common components of biogenic sand

Picture	Biogenic Sand Origin and Description
	<p>Barnacle fragments. Pieces of the calcareous plates that form the carapace of a barnacle, may be white, yellow, pink, orange, lavender, or purple. Occasionally they have a striped or notched pattern. The rest of the barnacle is made of chitin, which is not resistant and thus will disintegrate over time rather than form sand.</p> <p>http://www.maine.gov/dacf/mgs/explore/fossils/sediment/barnacle.htm Image courtesy of Maine Geological Survey Image caption: Barnacle base plate on upper left, side and top plates to lower right.</p>
	<p>Bivalve mollusks. Bivalve shells or pieces of clam, oyster, or mussel shells may appear white, gray, blue, or brown. These are usually not shiny, and are slow to dissolve in acid.</p> <p>https://www.flickr.com/photos/repoort/5354811359/in/gallery-bunnyfrogs-72157627587834618/ Image courtesy of kreezzalee Image caption: Sediment made from a variety of crushed bivalve shells, Catawba Island in Port Clinton, Ohio</p>
	<p>Gastropod mollusks. Snail shells, or fragments of shells, vary widely in color, shape, and pattern. Juvenile shells are more fragile than their adult forms and may differ in appearance. Eroded fragments may reveal internal spiral growth patterns.</p> <ul style="list-style-type: none"> • "Cat's eyes," white disks, round on one side and flat on the other, are intact operculums, trapdoor-like structures used to close the outer opening when the foot is withdrawn into the shell. • "Puka" shells are the tops of eroded cone shells that appear as light-colored disks with a hole in the center. The word <i>puka</i> is Hawaiian for hole. Their slightly concave undersides sometimes show concentric rings. <p>http://www.sandatlas.org/2012/10/coral-sand/ Image courtesy of Siim Sepp (www.sandatlas.org) Image caption: Sand grains made from coral fragments and gastropod snail shells, Tankah, Mexico. Width of view is 25 mm</p>



Calcium-depositing algae. Calcareous algae are green or brown algae, like *Halimeda*, that secrete small amounts of calcium carbonate to form delicate skeletons. **Coralline algae** are marine algae that secrete large amounts of calcium carbonate to form robust skeletons. Encrusting coralline algae appears rose or lavender when alive and white when dried.

Image courtesy of Ingrid Knapp

Image caption: Flake-shaped sediment produced by *Halimeda* green algae, Palmyra Atoll, central Pacific ocean basin



Coral. Fragments of dull-white coral rubble are common in tropical sand. Larger, intact pieces from the outer layer of coral skeletons may be identified by their many small holes (cups) where individual coral polyps once lived.

<http://www.sandatlas.org/2012/10/coral-sand/>

Image courtesy of Siim Sepp (www.sandatlas.org)

Image caption: Coral fragment gravel from Jeju-do Island, South Korea




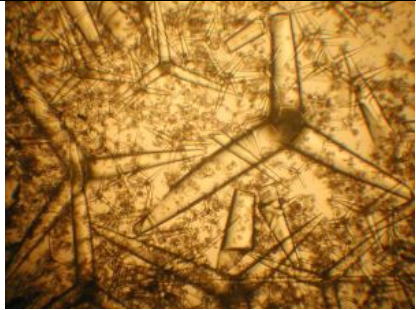

Foraminifera. Foraminifera are the skeletons of protozoans, one-celled animals. They may be white, dull or shiny, or covered with tiny sand grains. They look like tiny shells except that their openings are small and look like slits or pores. These opening are where the living animal extended its false feet to trap food.

<http://www.sandatlas.org/rocks-pictures/>

<http://www.sandatlas.org/2011/12/the-most-common-foram-of-hawaii/>

Images courtesy of Siim Sepp (www.sandatlas.org)

Images caption: Individual foraminiferan skeletons. The rounded discs are wave-worn *Amphistegina* foraminiferans, common in Hawai'i. Width of view is 10 mm

	<p>Sea urchin fragments. Sea urchin spines may be white, purple, black, beige, or green. Viewed under a microscope, some have crystalline matrices that look like ornate corn-on-the-cob structures from the side or concentric growth rings from the top. Tests are the inner skeletons of sea urchins. Test fragments have tiny holes and raised knoblike structures arranged in regular sequences; they appear dull white or lavender.</p> <p>http://www.sandatlas.org/2011/12/colorful-sea-urchin-spines/ Image courtesy of Siim Sepp (www.sandatlas.org) Image caption: Sea urchin spines and test fragment. Width of view is 10 mm</p>
	<p>Sponge spicules. Spicules are usually clear and transparent or whitish. Large triaxon sponge spicules may resemble the three-pointed logo of the Mercedes-Benz automobile. They make up the internal skeletal support structure of some sponges.</p> <p>http://en.wikipedia.org/wiki/File:MicroscopicSpiculesfromPachastrellidSponge.jpg Image courtesy of the National Oceanic and Atmospheric Administration (NOAA) Image caption: Sponge spicules</p>
	<p>Other animal or plant parts. Biogenic sand may contain other animal parts such as calcareous marine worm tubes, pieces of crab or shrimp skeletons, or the colonial animals known as bryozoans (numbers 7, 18, and 20 in image).</p> <p>http://www.sandatlas.org/2011/12/sand-full-of-life/ Image courtesy of Siim Sepp (www.sandatlas.org) Image caption: Assorted biogenic sand grains from Majorca, Spain. Width of view is 10 mm (1–3 Sea urchin spines; 4, 8, 19 Gastropod; 5 Bivalve; 6, 10, 14, 15, 17, 21, 23 Foraminiferan; 7, 18, 20 Bryozoan; 9 Ostracoda; 11 Scaphopod; 16 Mollusk; 22 Sponge spicule)</p>