Quartz-rich sand grains from bedrock of upper midwest ("silica sand")

High strength
Chemically inert
Spherical
Large grains

Southeastern Minnesota Silica Sand Geologic and Landscape Context
Tony Runkel
Minnesota Geological Survey, University of Minnesota

"Common" sand
Coarse, quartz-rich sandstone
Fine sandstone to shale
Carbonate: Limestone and dolostone
“Best” accessible frac sand deposits

Modified from Bruce Brown, Wisconsin Geological and Natural History Survey
Jordan and St Peter Sandstones currently attracting the most interest in MN

Typical St Peter Sandstone exposure

Typical Jordan Sandstone exposure
Quartz-rich sandstone bedrock layers at or near (approx 50 ft) land surface

Silica Sand Resources
Southeastern, Minn.
Active mine, Ottawa, Minnesota (LeSueur Co.)
Modified from Winona County Geologic Atlas (Mossler and Book, 1984)
Typical landscape setting where St Peter Sandstone is near or at land surface

Near Chatfield, Minnesota (Olmsted County)
Typical landscape setting, Wonewoc Sandstone, Wisconsin
Typical landscape setting in southeastern MN where Jordan and Wonewoc Sandstones are near or at land surface
Underground mining

Maiden Rock and Bay City, Wisconsin


St Peter Sandstone

Jordan Sandstone

Wonewoc Sandstone
Jordan Sandstone
St Peter Sandstone
Wonewoc Sandstone

Typical landscape setting in southeastern MN where Jordan and Wonewoc Sandstones are near or at land surface

SARATOGA TOWNSHIP

CONTOUR MINING?

Tony Runkel
Minnesota Geological Survey
University of Minnesota
Quartz-rich sandstone bedrock layers at or near (approx 50 ft) land surface

Silica Sand Resources
Southeastern, Minn.