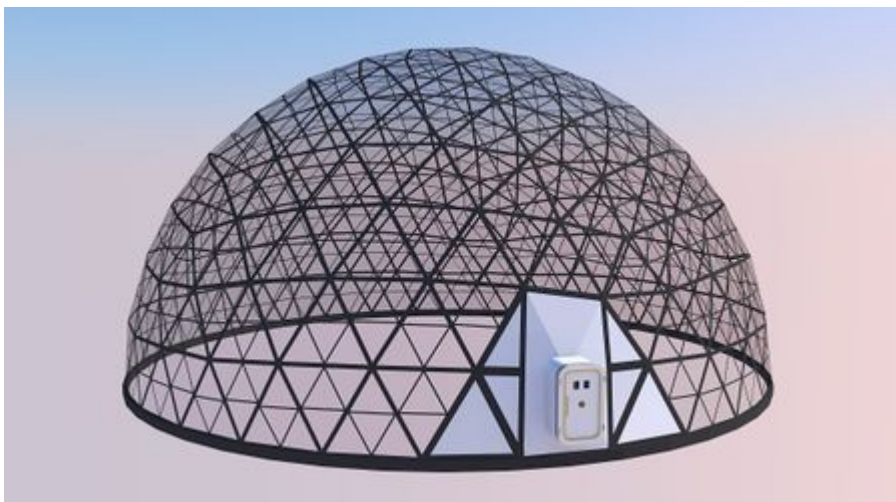


Glass

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Glass is a transparent, strong, brittle material resistant to most chemicals. Glass is a mainly a compound of Silica (SiO_2), mixed with other elements such as chlorines, iron and alumina oxides. Glass is made mainly from silica sand and requires thermal energy. Glass may be combined with plastics to increase its strength and radiation shielding capabilities.

Glass is an excellent candidate for ISRU, as the source materials are abundant on Mars and local production costs should be orders of magnitude bellow transportation costs from Earth. Glass embodied energy is 6-15 MJ/kg for finished products.



A classic glass geodesic dome. The glass panes in this image might be too large to be easily produced on Mars, or might need to be too thick, due to to internal pressure in the dome.

A glass-blower can create a very wide variety of useful vessels, utensils, instruments, and chemical equipment from Martian sand, although these may have to be designed very differently from the analogous equipment on Earth. The glass-blowing craft requires only other small-scale crafts for its equipment (brick-making for the furnace and blacksmithing for its iron tools), thus qualifies as a small-scale craft suitable for a frontier town (small and largely self-sufficient) economy.

Flat plane glass, or sheet glass, or Soda Glass.

Due to the 1/3 gravity, windows, structures, and chemical equipment made out of glass can be much larger than on Earth, yet still hold up under their own weight and be easy to transport. Large glass bricks or thick windows may make excellent structural material. Water ice sandwiched and sealed between two layers of glass may make an excellent radiation shielding structure. Pressure vessels with glass elements are more difficult to construct than opaque metallic vessels.

While the Martian population is small, goods made by talented Martian artists and craftsmen out of native Martian materials will probably have high curiosity and scarcity values on Earth, and thus may fetch high premiums as collectibles.

See also

ISRU

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