CORNING

Dispelling Some Myths About Glass

Ron Stewart, PhD
Corning Development Associate
Science & Technology, CSM

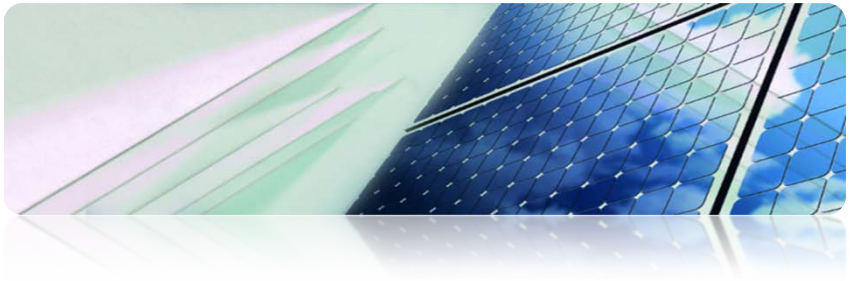
Myth1: All glass is the same

After more than 160 years of glass research, Corning holds hundreds of different patents for glass technology. A single element added to glass can significantly change its properties. By manipulating glass compositions, Corning scientists have developed glass that is light, flexible, durable, and even scratch-resistant.

Myth 1: All glass is the same

Glass	Composition	Density	CTE	Thickness (mm)
Soda Lime Glass (SLG) windows, bottles	~70% SiO_2,14Na_2O,8CaO,1.5Al_2O_3	2.52	9.5	3.2
Alkali Borosilicate - Pyrex® lab ware, baking, wafers	80% SiO2,4Na2O,13B2O3,1Al2O3	2.23	3.3	0.5 – 6
Mixed Alkali Borosilicate Space solar panel cover	Na, K, Zn, B, Al, Si, Ce, Ti	2.48	7.2	0.094
Optical Glasses	Na, K, Zn, B, Si, Ti, La, Ba, P	2.53 -3.265	2.5 -6.7	2 - 30
Mixed Alkali Borosilicate Low DC / low loss wafers	Li, Na, K, B, Si	2.13	3.2	0.5 – 1.0
Corning® Eagle XG® LCD, DLP / semiconductor glass wafers	(EXG), Ca, Mg, Sr, B, Al, Si	2.38	3.17	0.4 – 0.7
Corning® Gorilla® Glass 3	Na, Mg, Al, Si	2.403	7.62	0.4 -1

Myth 2: Glass is heavy



Corning's photovoltaic glass, about the thickness of a dime, can provide a very light weight solar energy solution while supporting the extra load of a heavy snowfall.

The lightness and durability of Corning® Gorilla® glass has led to its use as not only a cover glass, but as an added design element, in products noted for their light weight.

Myth 2: Glass is heavy

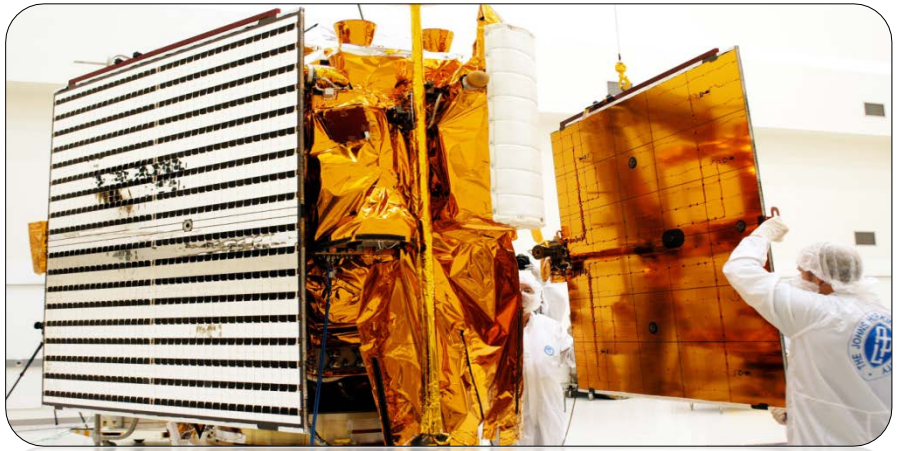


Image Credit: NASA

Image Credit: Wikipedia

Myth 3: Glass doesn't bend

While most glass doesn't bend, Corning has several glass products that do. Corning® ClearCurve® optical fiber cable is flexible enough to be stapled and bent around corners, without sacrificing performance.

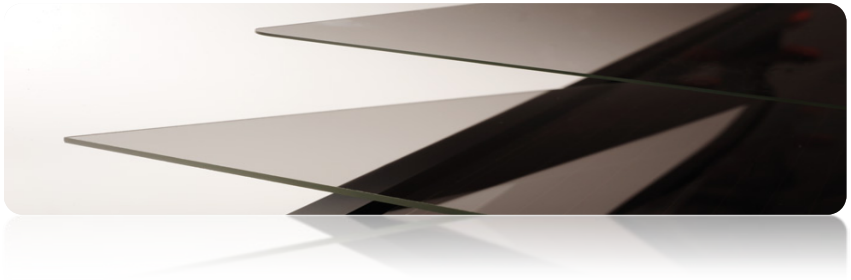
Corning® Gorilla® glass, which provides a protective cover for display devices, can be contoured and shaped without sacrificing strength. And Corning's ultra-slim Willow ® glass can be rolled like sheets of paper and flexed like wire.

Myth 3: Glass doesn’t bend

Corning® Willow® Glass

Corning® Gorilla® Glass

Myth 4: Glass must be thick to be durable



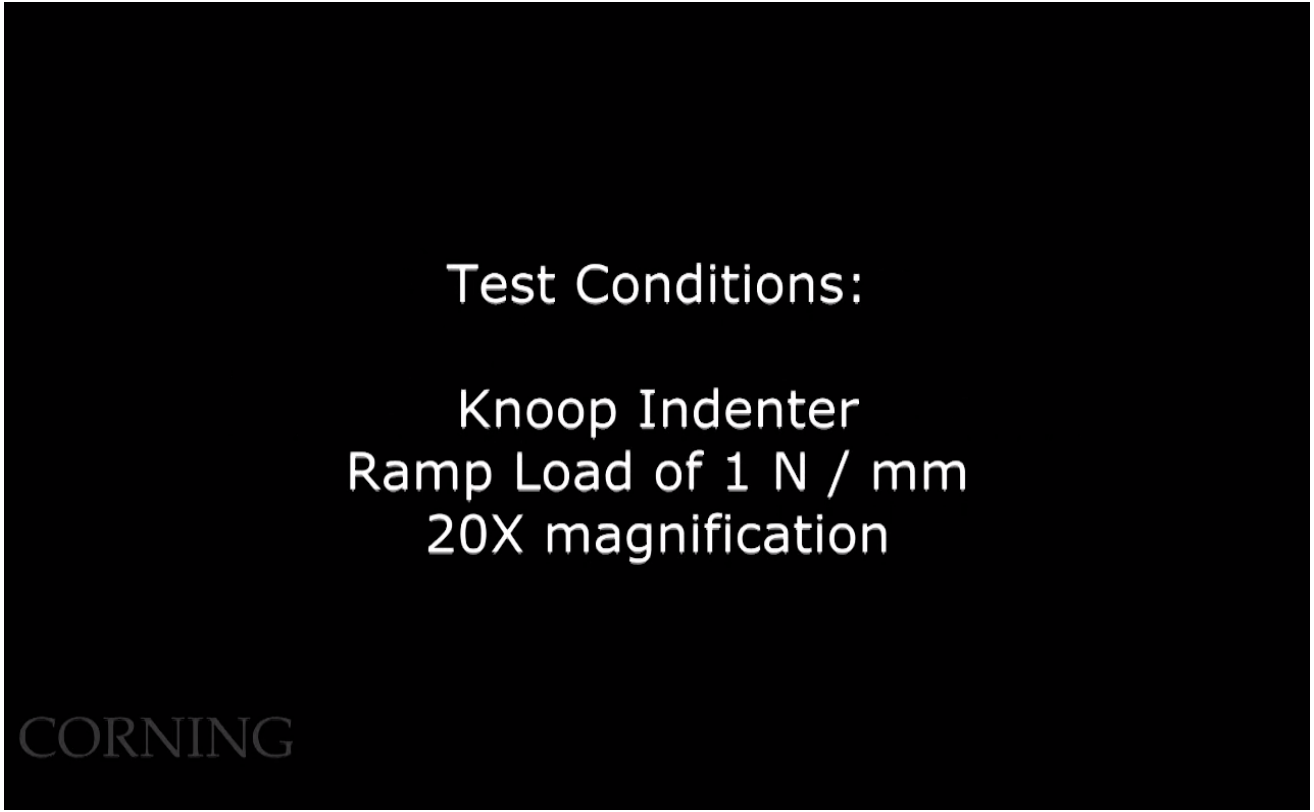
Corning scientists have proven that materials don't have to be bulky to be durable. Corning has developed display glass in large sheets measuring less than 1mm thick that can withstand the force of a remote control thrown at 65 mph.

Myth 4: Glass must be thick to be durable

Myth 5: Glass doesn’t last

Some of the oldest objects in the universe are particles of glass. Astronauts found glass billions of years old in lunar soil. As Corning scientist Dr. Pete Bocko put it, “A glass object will last until the sun blows up.”

Myth 5: Glass doesn’t last



Summary

- All glass is the same → Sands (SiO_2) & many different elements in glasses for various uses
- Glass is heavy → Can be light weight depending on elements (density), and dimensions ex: space vehicle solar panels
- Glass doesn't bend → Corning® Willow® and Gorilla® Glass certainly bends
- Glass must be thick to be durable → 1mm thick Corning® Gorilla® Glass cover over Eagle XG® Glass on TV Panel (remote launch)

CORNING