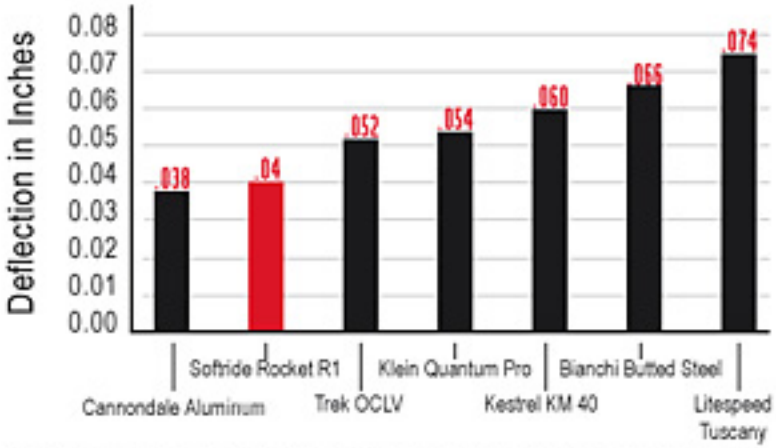
STIFFNESS & COMFORT

MATERIAL DEPENDENCY AND HOW IT RELATES TO FRAME STIFFNESS AND RIDER COMFORT:

Road Vibrations detectable by the human body usually fall between 1 and 100 Hz. The different materials that are currently used in bicycle frames only damp vibration above 2300 Hz. Materials like carbon fiber do have significant advantages over other materials in very high frequency applications like data and sound transmission. However, it does not actually offer any significant advantage in shock absorption when used in bicycle frames. The frame design, not the material, is what really determines how a frame rides and feels. This makes it possible to have a super stiff titanium frame or a whippy aluminum frame.

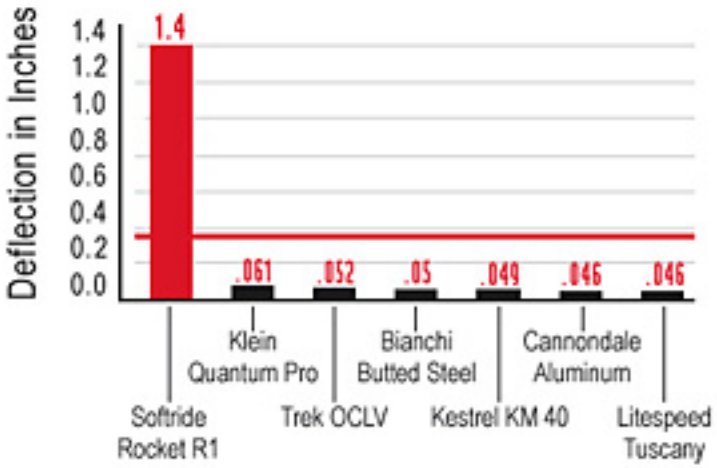
Individual materials have gained reputations for certain ride characteristics because of the designs they often lend themselves to, not because of the material itself. Frame materials on their own cannot absorb vibrations below 100 Hz. without sacrificing torsional stiffness. This is where suspension comes in. Beam suspension allows a Softride frame to effectively absorb road shock and vibration and not sacrifice exceptional stiffness.

Torsional Stiffness TEST



Torsional stiffness tests are conducted by measuring how much frame deflection was created by a set amount of force. The test was conducted on two separate planes, 90° and 0°. The results were averaged. The greater the number, the more frame deflection.

Stiffness vs. Compliancy ANALYSIS



The vertical compliance test was conducted by measuring how much frame deflection occurred when a set amount of force was applied into the seat tube. The frame was fixtured in a natural riding position. The measurement was from axle centerlines to the seat area. The greater the number, the more deflection occurred. The baseline is the average surface variance for a chip-sealed road (0.375 in).

Vertical Compliance TEST