

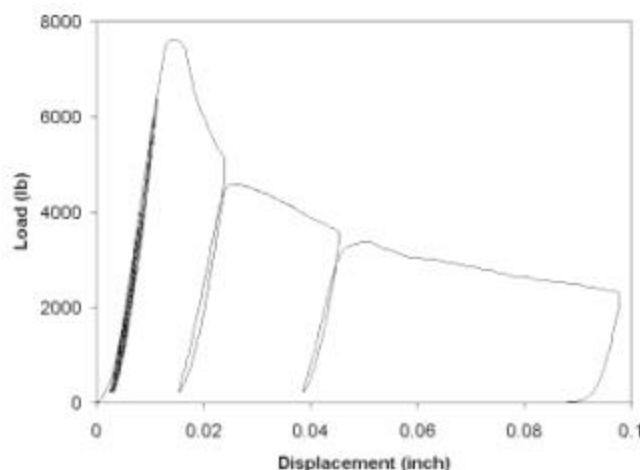


## Lightweight Concrete

Lightweight concrete is of utmost importance to the construction industry. Most of current concrete research focuses on high-performance concrete, by which is meant a cost-effective material that satisfies demanding performance requirements, including durability. The advantages of lightweight concrete are its reduced mass and improved thermal and sound insulation properties, while maintaining adequate strength. The reduced weight has numerous advantages, not the least of them being a reduced demand on energy during construction.

We have developed a new kind of lightweight concrete, which combines the advantages of normal-weight aggregate with cellular concrete, that is, good strength and durability properties as well as thermal and sound insulation. The key is an admixture that introduces air bubbles into the cement matrix using normal mixing procedures and therefore can be combined with both normal- and lightweight aggregate. The advantage it promises is that it can be produced using standard methods familiar to the construction industry.

The material may be used in sandwich or layered construction, such as a thick layer of lightweight concrete, topped with a thin layer of normal-weight architectural concrete containing waste glass aggregate.



The extraordinary stress-strain behavior displayed in the graph is unlike that of any other known plain concrete material. After having been loaded repeatedly beyond the “point of failure”, the material showed no visible cracks. This behavior can best be compared with that of rubber-like materials.