



## Nanotechnology at work

**Nanotechnology is an emerging scientific field creating materials, devices, and systems at the molecular level. By being able to work at this ultra-small scale, nanotechnology is being used to deliver innovations in industries including clean energy, environment, health and personal care, electronics, transport, construction, telecommunications, manufacturing and mining.**

### Stretchy but strong plastics

TenasiTech is an innovative materials science company that has developed super-tough strong and stable rubbers through the use of nanotechnology. Currently, the key applications for TenasiTech's strong, stable and flexible thermoplastic polyurethanes (TPUs) include more burst resistant flexible hoses, tougher laminated bullet-proof glass, and better scuff-resistant golf balls.

TPUs are an important class of commercial polymers, used in areas including biomedical devices (pacemakers, catheters, balloon devices and other implants), textiles (Lycra and Spandex fabrics), automotive and industrial components (high-pressure hoses, soft-touch interior coverings, life rafts and aircraft escape slides, hand grips for power tools and recreational vehicles), footwear (high performance sports shoe soles) and sporting goods (ski boots and golf ball covers).

The worldwide market for TPUs is worth \$US12 billion and growing. TPU materials can be greatly stretched, but return to original size and shape. However, there is a need for these materials to do more than they currently are able to, so enhancements in strength and temperature stability is needed, but without losing flexibility.

TenasiTech uses nanotechnology to create new "stretchy" TPUs with increased strength and stability, while preserving the flexibility of the material. They are unique since they use thermoplastic polyurethane nanocomposites, reinforced with small amounts of tiny synthetic clay particles to significantly increase the strength of the material. By adding as little as two per cent nanoparticles to the material, tensile strength can be improved by up to 130 per cent, thus creating the "stretchy but strong" TPU.

By using nanotechnology, TenasiTech has achieved unique technological advances in developing their strong and flexible thermoplastic polyurethanes. They are now well placed to become a key player in many TPU application areas.

**TENASITECH**  
Putting Tenacity into Flexible Elastomers

### ABOUT TENASITECH

TenasiTech is a novel materials science company commercialising strong, stable and flexible thermoplastic polyurethanes.

### CONTACT TENASITECH

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