Natural Cork vs. Synthetic Cork

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Mission Statement:

•Determining properties, and significant differences in mechanical and structural behaviors between natural and synthetic cork (nomacorc®)

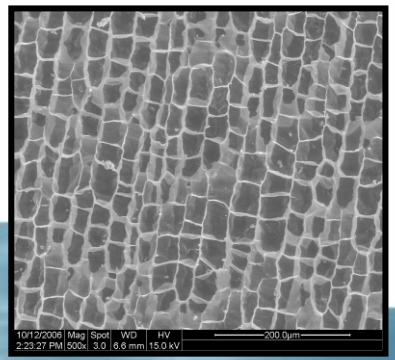
•Determine which material performs better in specific applications

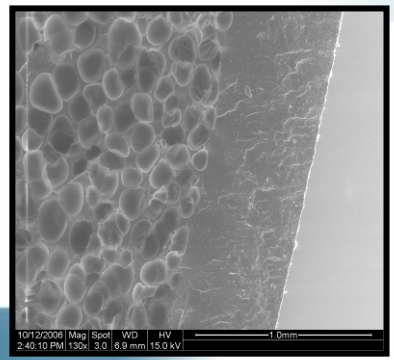
Mechanical tests of Fatigue and Compressive tests (at 2 temp) conducted (below):

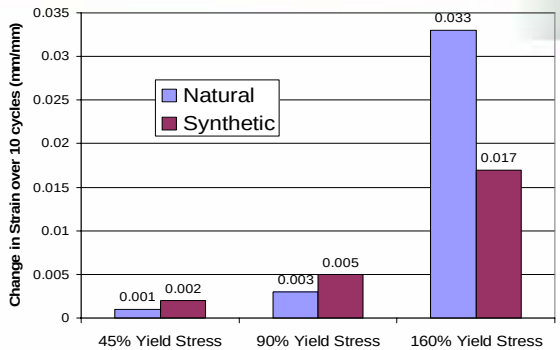
•Natural cork performed better in fatigue under yield stress values

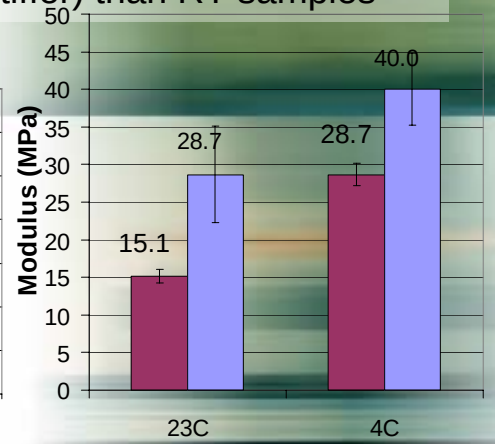
•Natural cork stronger under compression than synthetic cork

•Colder samples stronger (stiffer) than RT samples









Microstructural analysis conducted using the ESEM (above):

•Natural cork constructed of cell walls

•Synthetic cork contains foam-like structure with skin coating.

Mechanical Compressive test performed on samples (right):

•Natural cork buckled due to existing **defects**

•Synthetic cork compressed with **consistent** form and structure

Material Selection for Specific Applications

- **Wine Stopper: Synthetic** – more consistent, better under compression, does not taint wine, more aesthetically pleasing than our cork samples
- **Bulletin Board: Natural** – stronger hold of pin over time and repeated use
- **Floatation Device: Natural** – lower density so more buoyant
- **Flooring and Shoe Sole: Synthetic** – lasts for more cycles in fatigue, better under compression

N.B. – Natural cork always better in environmental aspect due to lower emissions of toxic gases as well as biodegradable and sustainable

Natural Cork

Synthetic Cork