

Assignment 11

Due: *In Lab*, Tuesday, March 5/Thursday, March 7

1. In Lab 4, you will be compression-molding your materials in molds that will shape your samples into disk-shaped compression specimens. There are a number of other possible methods that you might use to form your plastics, however. Jack Avery's *Injection Molding Alternatives* (on reserve at Walter Library) has good descriptions of some polymer molding techniques.

Match each plastic consumer good on the left with the molding technique on the right that would best be used to fabricate it.

Consumer good

Seamless water bottle
Model airplane pieces
Flat rubber gasket
Gasoline can (with hollow handle)
Disposable drink cup

Molding technique

Compression molding
Injection molding
Thermoforming
Blow molding
Rotational molding

2. Compression testing is just one type of mechanical test done on polymer materials. As you might imagine, in addition to compressing, a polymer sample can be stretched, twisted, torn, impacted, or otherwise stressed to test the response of the material. Many of these tests say different sorts of things about a material.

Instron (the manufacturer of the testing instrument you will be using) describes a number of different mechanical tests, and the instruments used to perform those tests, on their website (<http://www.instron.us/wa/solutions/>). Describe (any) one test other than compression that you might perform on the polymers you synthesized in lab. (Pick one that interests you personally!) What data would you collect from this test, and what physical constants (if any) could you determine from this data?