MSE-401

COMPOSITE MATERIALS

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Importance of Composite Materials:

- Composites can be very strong and stiff, yet very light in weight, so ratios of strength-to-weight and stiffness-to-weight are several times greater than steel or aluminum
- Fatigue properties are generally better than for common engineering metals
- Toughness is often greater than most of the metals
- Composites can be designed that do not corrode like steel
- Possible to achieve combinations of properties not attainable with metals, ceramics, or polymers alone

Disadvantages and Limitations of Composite Materials:

- Properties of many important composites are anisotropic
- Many of the polymer-based composites are subject to attack by chemicals or solvents
- Composite materials are generally expensive
- Manufacturing methods for shaping composite materials are generally slow and costly