

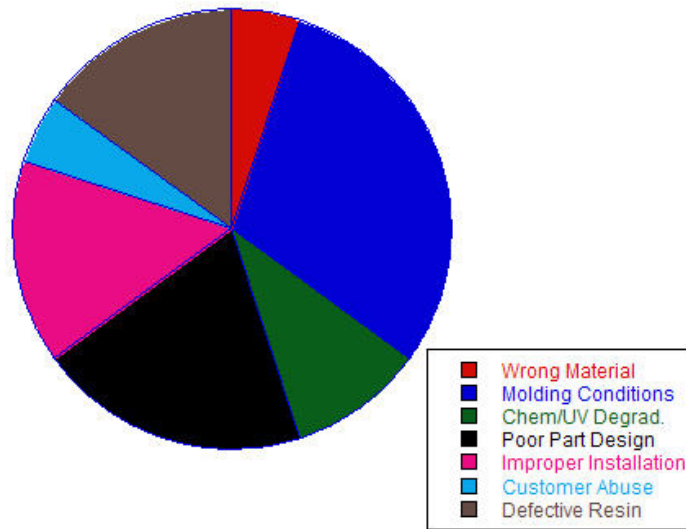


Why Do Plastics Fail?

Hundreds of plastic materials are available to provide the consumer with the properties that are required for just about any application. The property spectrum for plastics is getting broader as research continues to lead to the development of new plastic materials. One of the hottest new areas of research is in the area of nanocomposites. Nanocomposite technology seeks to extend the properties of plastics to new horizons by combining the attributes of inorganic materials with thermoplastics. Generally plastics are the preferred raw material for the manufacture of parts because of their ease of fabrication and their relative light weight. These attributes translate into excellent economics. However, occasionally problems arise resulting in plastic part failure. The failure can result in significant property damage or injury. When failures occur, our Plastic Failure Labs division generally becomes involved to conduct testing and analyses of the failed parts to determine the root cause of failure. As a Plastic Research and Failure Scientist for over 30 years, I have been asked to examine hundreds of failed plastic parts and diagnose the cause of failure. I have found that plastic part failures are generally the result of one of the following:

- 1) selection of the wrong material for the application;
- 2) manufacturing defects in the plastic raw material;
- 3) fabrication defects in the plastic part;
- 4) poor part design;
- 5) improper installation of the plastic parts;
- 6) degradation of the plastic by exposure to aggressive chemicals, contaminants, or UV radiation;
- 7) abuse by the consumer/operator.

Common Causes of Plastic Part Failure



A diagnosis of which of these root causes is the culprit is generally determined through the use of laboratory tests/analyses. Generally the failed part is first examined using optical microscopy.

To request copy of Dr. Priddy's complete article (12 pages), please email article1@plasticfailure.com

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