

## The Types of Cases a Plastics/Polymer Expert Witness Can Encounter

By Jeffrey Gotro, Ph.D.

Since the invention of synthetic polymers (or sometimes called plastics) in the 1930's, the use of polymers has exploded. Polymers are used in everything from plastic milk bottles, molded plastic articles, fabrics (nylon & polyesters), composites, adhesives, and coatings.

A polymer expert witness may be called in the following types of cases:

- Product Liability (polymer/plastic part failure resulting in monetary loss)
- Personal Injury (resulting from a plastic part failure)
- Material Selection (was the right plastic or polymer composite used for the application?)
- Patent Infringement and invalidity assessment (involving polymer use or process)

### **Product Liability/Personal Injury**

A typical product liability case would involve a polymer or plastic article that failed in use. In this type of case, a product is defective or fails necessitating a recall or an expensive remediation (replacing parts in the field, etc.) that could have a potentially large financial impact. An example of a personal injury case was a plastic part that failed in use (at high temperatures) causing hot liquids to be spilled on the user. The plaintiff was litigating against both the plastic supplier and the company that molded the plastic part. The plaintiff needed to establish if the cause of the failure was related to the plastics selected or the manufacturing process. Experimentation which was supported by the scientific literature indicated that one of the plastics used did not have the required temperature resistance and failed when exposed to hot liquids. In this case the polymer expert witness demonstrated the plastic supplier did not use the accepted standard of care in the materials selection process.

### **Patent Infringement and Invalidity Analysis**

Intellectual Property litigation can be very technical and require very specific expertise since deciphering the claim language in patent infringement cases can be challenging. First, the expert needs to have a very deep understanding of the polymer technology in the patent(s) in litigation. Second, experience with the patenting process is very helpful and having some issued patents demonstrates the expert has an understanding of the requirements to obtain a patent. Many IP litigation cases require experimentation to validate (or invalidate) the claims and literature searches to establish prior art. The stakes can be very high as witnessed by the recent Apple vs Samsung litigation over mobile phone intellectual property. Having highly skilled polymer expert witnesses is a must in IP litigation.

The field of plastics is very diverse with many specialties. Not every polymer expert will be appropriate for your case. For example, one type of polymer is called a thermoset (typically used in adhesives, coatings, composites) and starts out a liquid and undergoes a chemical reaction (curing) during the processing (think about the 5 minute epoxy from the hardware store). For these types of polymers, the expert witness has to have a deep understanding of chemistry and material properties. On the other hand, most plastics (called thermoplastics) used in molded parts are solid at room temperature but can be melted and formed into complex shapes using various types of molding processes. Expert witnesses in thermoplastic cases have expertise in molding and physical property measurements.

How to identify the right polymer expert:

- Ask questions about the types of plastics they have experience with
- Education: Most polymer expert witnesses have a Ph.D. in a materials related field such as Polymer Science, Materials Science, Chemistry, or Chemical Engineering. Some molding engineers may have engineering degrees and many years of processing experience.
- Experience: What type of polymers have they worked with? How long have they been in the industry?
- Expertise: good polymer expert witnesses have a deep understanding of structure-property-process-performance relationships. In other words, how the chemical structure influences the material properties, how they process, and how all of these interact to control the in-use performance (or in the case of a polymer failure, non-performance).
- Skills: Are they expert in polymer material property testing, molding/processing, literature searches, and have patent experience (if required)?
- Does the expert have industry specific publications or presented technical talks at polymer conferences that demonstrate mastery of a particular area of plastics?
- Do they teach at a University or instruct professional development courses in their field of expertise? Teachers make good expert witnesses since they can take complex topics and explain in simple and easily understandable ways to non-technical individuals.

### About the Author



Dr. Jeffrey Gotro is an expert in polymers/plastics with over 30 years' experience. His expertise spans polymer chemistry and physics, along with deep knowledge of polymer characterization. Expert in polymers used in electronic applications such as adhesives (non-conductive, electrically conductive, thermally conductive), coatings and laminates. Experience with polymer composites, highly filled compositions (fiberglass and fillers). Specialist in thermosetting polymers, epoxy, curing, processing, and process analysis. Expert in polymer/plastics

characterization including multiple thermal analysis methods, mechanical property measurements, rheological (flow) measurements, and polymer processing such as dispensing, coating, lamination, and molding. Extensive experience in new product development, new product valuations, product development process such as Stage/Gate. Experience in manufacturing process development, process characterization, and defect analysis. Dr. Gotro has expertise in Intellectual Property evaluations and patent infringement analysis. He is an inventor on 15 issued US Patents with 4 patent applications pending. Experience in polymer (plastics) product liability, fitness for use, and polymer/plastics material selection. Provides expert witness testimony, litigation support, and polymer/plastics consulting. Dr. Gotro has published 59 technical papers including 4 book chapters.

### **Education**

Ph.D. in Materials Science from Northwestern University (specialty in polymer science)  
BSME in Mechanical Engineering from Marquette University (specialty in Materials Science)

### **Litigation Experience**

Over 25 cases in the areas of Intellectual Property litigation, Product liability, polymer/plastics material selection and fitness for use. Services included litigation support and depositions. See my CV for more details.

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