

TROUBLESHOOTING

The Fine Art of Troubleshooting - Who Do You Blame?

Have you ever been told that it is wrong to blame someone else when problems occur? A more pragmatic approach is to take advantage of human nature. Instead of asking “who is to blame?”, ask “who can fix the problem?” Simple questions are often difficult to answer. A proven method to solve complex problems is to ask a series of simple questions to quickly narrow the range of possible causes. Troubleshooting is the process of eliminating possible causes until only one remains. It is then a simple task to fix the problem.

The first question to ask is “what is wrong with the product?” We usually answer this question by comparing the product to acceptable standards. Take film as an example. All film properties are a result of crystallinity and orientation of molecular chains in the film. The relationships are shown in Diagram 1. Crystallinity and molecular orientation are affected by three key factors: raw material properties; processing conditions and equipment limitations. You can solve any problem once you understand the cause and affect relationships between these three factors.

History is a useful ally. If you have successfully produced the product in the past, ask “what has changed?” Accurate process condition records are very useful. If you don’t have them, consider implementing a system right away. If you are producing a new product, ask “what can be done to improve the product?”

You can develop your own troubleshooting guide to help operators. See Table 1 for an example. Make a list of common problems. Group potential causes into the three factors: raw material, processing conditions, equipment malfunctions. Beside each cause, list a method to confirm or eliminate it as a cause. List the best corrective action to eliminate the problem. Take advantage of the experience in your production department and update the guide regularly. Keep in mind that changes are required when equipment is modified or installed in your plant.

Once you have identified the probable cause, you can work with the appropriate person(s) to fix the problem: purchasing for raw material or new equipment, production to change processing conditions, maintenance to repair or modify production equipment.



