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## A Clear Reason for Moisture Testing!

CASE STUDY

There is more to a water filtration housing than the filter inside. The suppliers of these containers want them clear so that the end-user can see when the filter needs to be replaced. They also want to secure the lid with a simple half a hand turn.



This container also has to pass the NSF (National Sanitation Foundation) specifications. These include pressure tests of 400 psi for in-home systems and 500 psi for outdoor and industrial applications. Then all must pass 100,000 life cycle tests at 150 psi.

Previous water filtration housings were made of polypropylene. However PP did not provide the goal of a lighter, thinner and most importantly a clear container. Next, Polycarbonate was the resin of choice because clear parts could be molded of PC. However, because PC contains BPA (Bisphenol-A) the NSF banned its use for water filtration vessels. These water filtration suppliers then went to an ASA (Acrylonitrile Styrene Acrylate) resin. The advantage of ASA was that it could be molded into a clear part and was an approved resin for water containers. However, a wall thickness of nearly one inch was required to pass the 400+ psi pressure test. Also, the amount of resin required to mold each part made producing and shipping these cost prohibitive.

To make a clear, strong and light filter housing the supplier met with an innovative entrepreneur that believed he could make such a part using a Co-Polyester resin. Nelson McIlveen, owner of E&R Manufacturing began work utilizing a combination of blow molding and compression molding material. The resin

supplier of this Co-Pet material had a recommended moisture specification of <math><0.020\%</math> moisture. Initially, E&R Manufacturing had mixed success in producing these clear containers. Sensing that the moisture content may be a key variable in successfully producing these parts, E&R sought out the advice of the moisture direct team at Sartorius. The Mark 3 moisture analyzer from Sartorius was brought in to Nelson's molding site and within minutes he was running tests and getting the moisture results of hi Co-Pet material. Nelson found that resin dried at or below .005% produced clear, flawless parts that withstood pressure tests above 700 psi. He also ran life cycle tests and turned the machine off after 150,000 cycles. If the moisture level was above 0.007% the parts either lost clarity or failed pressure tests.

Before getting the Mark 3 moisture analyzer they relied on dew point measurement. This basically measures the dryness of the air surrounding the pellets. Because of the extremely low moisture requirements of the resin for this job E&R had to have an accurate means of measuring the actual moisture in the resin itself not just the dryness of the air surrounding the pellets.



Clear water filter housing

Now with routine moisture testing as part of their SOP, E&R Manufacturing dramatically reduced part failures, achieved an increase in part strength, reduced scrap and increased throughput. Nelson's customer is extremely pleased to receive clear, strong and lightweight filter housings from E&R Manufacturing. Upon ordering the Mark 3 moisture analyzer Nelson commented "I never knew a moisture analyzer for plastics could save so much money for a molder."

To learn more of this innovative approach to molding hi strength, clear, thin-wall parts contact Nelson McIlveen at E&R Manufacturing by calling 480.560.5404 or email [mcilveen@cox.net](mailto:mcilveen@cox.net).

For information on the Mark 3 moisture analyzer or to request a free evaluation call Sartorius at 800.835.3211 or email [info@sartorius-omnimark.com](mailto:info@sartorius-omnimark.com).