



## Case Study

GLS Thermoplastics Elastomers  
Engineered Materials  
PolyOne Distribution

# Dual PolyOne Solutions Optimize SealSafe® Liquid Dosing Adapters from Andwin Scientific

PolyOne formulates specialty materials that improve part consistency and production efficiency, and fosters opportunities for global production.

## Situation

Andwin Scientific, a leading manufacturer and brand owner of medical and laboratory supplies, recently focused its considerable engineering talent on finding a solution to a recurring problem in healthcare: inaccurate dosing of liquid medicines. According to the US Centers for Disease Control, 70,000 children in the US are sent to the emergency room each year as a result of overmedication. Andwin realized that a main underlying cause was the fact that consumers generally continue to use spoons or cups to dose liquid medicines despite the fact that such measuring methods can be imprecise, supplying too much or too little medication.



As a result of its search, Andwin came up with a concept for the SealSafe® bottle dosing adapter for oral liquid medicines. Using a dosing syringe equipped with a bottle adapter allows the user to completely invert the bottle when dosing. The adapter improves dosing accuracy, allows the end-user to use every last drop of medication, helps prevent cross-contamination and reduces the chance for an accidental spill.

The concept was based on a self-sealing membrane, or septum. For this component, Andwin required a material that would be inert to liquid medicines such as amoxicillin and would completely reseal after removing a dosing syringe. The material also had to be FDA-compliant. Further, Andwin Scientific wanted a supplier that could provide globally consistent products in North America and Asia and establish drug master files for both the US and China.

During the development and prototyping stages, Andwin was using an SBS-type elastomer, but turned to PolyOne for advice on optimizing the material based on its noted healthcare expertise.

## The PolyOne Difference

Drawing from a wide range of technologies formulated to meet healthcare industry needs and regulations, PolyOne's team recommended two different custom materials for the device, a Synprene™ thermoplastic elastomer (TPE) blend and a GLS Dynaflex™ TPE. Both materials comply with FDA requirements, and are used to manufacture the dosing adapter in a two stage process.

The dosing adapter consists of a cylindrical shell with the self-sealing membrane at its core. To create the membrane,



a custom-formulated GLS™ Dynaflex™ TPE is overmolded onto the shell, which also includes flexible fins. For this shell component, PolyOne devised a tailored Synprene™ polymer blend that provides resistance to most common medications. In addition, this specialty blend offers enough flexibility so that the fins can be easily pressed into the inner diameter of a medication bottle, locking the shell firmly in place.

To improve the consistency of the product's appearance and quality, PolyOne formulated the Synprene™ blend to tolerate processing variability, and applied its compounding expertise, technology, and quality control systems to produce comparable results from batch to batch for even greater consistency.

"PolyOne's knowledge of materials, applied to our specific needs, gave us better consistency and quality," said Ryan Smith, Andwin's General Manager. "Because PolyOne brought us a more consistent product, we have better process control and were able to reduce downtime and increase our production speed by 40 percent."

## Delivering a Value-Added Solution

With its patented, self-sealing membrane, SealSafe® adapters completely close after the syringe is removed, preventing air contamination, spills, and evaporation even if the bottle is not immediately closed. With the dosing adapter in place, medication bottles also have an additional layer of child-resistance to protect against overdosing.

Using the custom PolyOne blend enabled Andwin Scientific to decrease cycle time by 60 percent and reduce scrap rate. This optimized process resulted in savings of more than \$30,000 annually in production costs.

Andwin Scientific is now looking at opportunities to expand into China, backed by PolyOne's global supply and customer support, providing confidence and peace of mind. PolyOne's manufacturing facilities in China are capable of supplying Andwin with locally produced material having the same properties and consistency as product used in the U.S. while providing shorter lead-times and economical supply chain costs.

**Product choices often vary by region due to differences in regulatory and agency requirements, availability and other key factors. Please contact your nearest sales office for assistance in choosing the right solution for your locale.**

### CONTACT INFORMATION

#### Americas

U.S. – Avon Lake OH  
+1 866 POLYONE  
U.S. – McHenry IL  
+1 815 385 8500  
U.S. – Distribution  
Romeoville IL  
+1 630 972 0505  
Canada – Distribution  
Mississauga ON  
+1 905 405 0003  
Brazil –Sao Paulo  
+55 (11) 3576 2500

#### Asia

China – Shanghai  
+86 21 5080 1188  
China – Guangzhou  
+86 (0) 20 8732 7260  
China – Suzhou  
+86 512 6265 2600  
Hong Kong  
+852 2690 5332  
Taiwan – Taipei  
+886 9396 99740  
India – Mumbai  
+91 9820 194 220

#### Europe

Germany – Gaggenau  
+49 (0) 7225 6802 0  
Spain – Barbastro  
+34 (0) 9 7431 0314  
Turkey – Istanbul  
+90 (0) 212 549 2256



[www.polyone.com](http://www.polyone.com)

#### PolyOne Americas

33587 Walker Road  
Avon Lake, Ohio 44012  
United States  
+1 440 930 1000

#### PolyOne Asia

Guoshoujing Road No. 88  
Z.J Hi-Tech Park, Pudong  
Shanghai, 201203, China  
+86 (0) 21 5080 1188

#### PolyOne Europe

6, Giällewee  
L-9749 Fischbach  
Luxembourg  
+32 (0) 83 660 211