

## Consumer Applications

### Sports Bottle

A sports bottle manufacturer gets a real winner with Porex's water filter design. The filter meets challenging design goals of removing sediment while also improving water flow – all with a single-component, porous plastic product.



### Design Challenge

Competitive advantages in sports bottle marketing increasingly focus on filtration capabilities. A manufacturer selected Porex to assist in the development of a water filter capable of removing sediment, lead and chlorine to NSF Class I standards in a single pass filtration process. Another requirement was to minimize the water's flow resistance through the filter while allowing enough residence time for removal of the chlorine and lead. The challenge, similar in many filtration applications, required a balance between two contradictory design goals: a large pore size to improve water flow and a smaller pore size to improve particle capture efficiencies.

### Solution

Porex design engineers balanced the filtration and flow rate design goals by creating a porous plastic based matrix that also functioned as a carrier for chlorine and lead removal agents. However, this chemical removal requirement added a layer of complexity to the project. Chlorine and lead removal efficacy is increased with high fluid residence time in the filter. This can be achieved with smaller pore sizes, but smaller pore sizes also hinders fluid flow rates. Porex engineers solved this challenge by optimizing the mesh size of the chlorine and lead removal additives and pore size of the porous plastic matrix. As a result, this pseudo-composite porous matrix met all of the design goals.

### Results

The sport bottle water filter demonstrates Porex's ability to blend functional additives into a porous plastic matrix creating a functional porous composite. In this case, similar to many others, multiple design goals were satisfied with a single component porous plastic product.

*By combining ideas, know-how and proven results with the highest standard of innovation and excellence, POREX Porous Media provides unique solutions for various applications.*

**POREX**

©2006 Porex Corporation. Porex is a registered trademark of Porex Corporation. All rights reserved.

PPG-233-071706-00

[www.porex.com](http://www.porex.com) 800.241.0195

#### Porex Technologies

500 Bohannon Road  
Fairburn, GA 30213 USA

E-mail: [porous.info@porex.com](mailto:porous.info@porex.com)

770.964.1421 Phone  
770.969.0954 Fax

#### Porex Technologies GmbH

Sales & Marketing Europe  
Strangenhäuschen 30  
52070 Aachen, Germany

E-mail: [info@porex.de](mailto:info@porex.de)

+49 241 910525-0 Phone  
+49 241 912426-16 Fax

#### Porex Technologies Sdn Bhd

Lot P.T. 74, Jalan Hulu Tinggi 26/6  
Seksyen 26, Sektor A  
Hicom Industrial Park  
40400 Shah Alam,  
Selangor, Malaysia

E-mail: [sales@porex.com.my](mailto:sales@porex.com.my)

+603 3343 4828 Phone  
+603 3341 3308 Fax