

Consumer Applications

Battery Vent

Porex pioneers the development of a highly efficient, extremely cost-effective flame arrestor used in automotive batteries to control potential explosions – and becomes the industry's leading global manufacturer of this innovative component.



Design Challenge

A potential for explosion arises when hydrogen gas created during normal operation inside lead acid automotive batteries reaches a specific hydrogen/oxygen concentration. For years, automotive battery manufacturers relied on porous ceramic flame arrestors to control these flammable situations. The arrestors were designed to control the release rate of the hydrogen gas from the battery and prohibit the passage of an external flame front into the interior chamber of the battery. While they served their purpose, the ceramic flame arrestors were costly to produce as well as difficult to handle in the high speed assembly equipment. The manufacturers approached Porex to develop a highly efficient flame arrestor that would also reduce manufacturing costs.

Solution

Porex's materials scientists and development engineers identified a coarse-grade polypropylene that excelled in meeting the design criteria for part strength, airflow and back pressure. Another critical design objective was to ensure excellent performance in extinguishing any flame front before it reached the interior chamber of the battery. Once processed into a suitable form, the finished product met all the design goals. In addition, Porex's design gave battery manufacturers a viable option to use heat stake and/or ultrasonic assembly techniques, which was essential given the high-production volume of automotive batteries.

Results

Porex's single and multiple component polypropylene based flame arrestors provide a cost-effective solution that meets all performance requirements. This innovation established Porex as the pioneering manufacturer of porous plastic flame arrestors and the industry's leading global manufacturer.

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.

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www.porex.com 800.241.0195

Porex Technologies

500 Bohannon Road
Fairburn, GA 30213 USA

E-mail: 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

+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

+603 3343 4828 Phone
+603 3341 3308 Fax