

FIRE-RESISTANT ACTIVATED CARBON

US Pat. No.: 8,945,277; 9,315,730

Technology Readiness Level: 4

Key elements of the technology have been proven to work as expected in the laboratory environment

Sandia National Laboratories has developed an economical and efficient activated carbon adsorbent that is fire-resistant with spontaneous ignition temperatures of up to 860°C and favorable sorption capacity. Sandia's activated carbon possesses high gas adsorption capacities and rapid adsorption kinetics comparable to commercially available alternatives, while also demonstrating superior performance in comparison to the use of conventional zeolite materials such as mordenites. The adsorbent can be used to trap noble gases including Argon, Krypton, Xenon and radioactive 85Kr.

This technology is well suited for a variety of applications including the chemical and petrochemical industries, where such materials are used to control emissions of solvents and other volatile organic compounds from process streams, off-gases and tank venting. Similar applications exist in the environmental engineering, nuclear, military and extracting arenas.

TECHNICAL BENEFITS

- Significant reduction in risk of fire hazards associated with traditional activated carbon
- Adsorption of noble gases
- Reduces risk associated with nuclear fuel reprocessing
- Numerous applications in other industries that also reduce risk and environmental impact

Performance Comparison SNL Activated Carbon Adsorbent vs. Commercially Available Carbon	
Material	Spontaneous Ignition Temperature (°C)
SNL Activated Carbon	540 ± 5 to 800 ± 10
Commercially Available Carbon	300 ± 10

INDUSTRIES & APPLICATIONS

- Energy applications in gas capture or storage
- Mining
- Waste management
- Water purification
- Environmental clean-up
- Medical
- Chemical
- Nuclear power & fuel processing