



Blanton Clamshell Closure



An engineer at the Savannah River National Laboratory (SRNL) has designed and tested a new drum closure device for open-head steel drums. The device has been proven to show superior drop test performance under Nuclear Regulatory Commission (NRC) accident scenario conditions.

New Sealing Device for Open Head Steel Drums

The drum closure device, known as the Blanton Clamshell Closure, was designed to address the U.S. Department of Energy (DOE) requirement for improved packaging for shipment of radioactive materials. This invention is a flanged steel ring for securing a lid to an open-head steel shipping drum. Due to its superior performance in drop testing, this ring has been endorsed for use throughout the DOE complex for the shipment of radioactive waste. The U.S. Department of Transportation (DOT) has recently stated that the Blanton device exceeds the minimum design standard as specified in 49 CFR178.352 and 354.

The Apparatus

The sealing device is a modified two-piece c-ring closure that secures lids to open-head steel drums using bolts. The rings have flat surfaces that extend radially over the lid and downward over the drum to reinforce the contact surfaces and preserve seal integrity against accident scenario conditions. In addition, the two-piece design facilitates installation and removal, thereby reducing finger injuries. The ring design is also less expensive to produce since it has fewer parts than competing designs. The ring closure has been tested under 10 CFR 71 Hypothetical Accident Scenario conditions. Seal integrity was maintained when a drum was dropped from 30 feet at specified angles.

at a glance

- improved safety
- improved drop test performance
- easy installation and removal
- reduced fabrication costs

Potential Applications

Although use of steel drums by commercial shippers has been greatly reduced by competition from cheaper, lighter plastic, fiber, and other forms of containers, steel drums are still recommended for the shipment of DOT-regulated hazardous material. It is estimated that 5 million open-head steel drums are produced annually in the U.S. for such shipments. In addition there is a market for recycled drums that would benefit from improved closures. Its safety and ease-of-use features should make this ring attractive to these markets.

Technology transfer

SRNL is the applied research and development laboratory at the Savannah River Site (SRS). With its wide spectrum of expertise in areas such as homeland security, hydrogen technology, materials, sensors, and environmental science, SRNL's cutting edge technology delivers high dividends to its customers.

SRNL and SRS are managed for the U.S. Department of Energy by Washington Savannah River Company (WSRC). WSRC is responsible for transferring technologies to the private sector so that these technologies may have the collateral benefit of enhancing U.S. economic competitiveness.

Partnering opportunity

A patent application has been filed on this invention.

WSRC invites interested companies with proven capabilities in this area of expertise to enter into a licensing agreement with WSRC to manufacture and market this device as a commercial product. Interested companies will be requested to submit a business plan setting forth company qualifications, strategies, activities, and milestones for commercializing this invention. Qualifications should include past experience at bringing similar products to market, reasonable schedule for product launch, sufficient manufacturing capacity, established distribution networks, and evidence of sufficient financial resources for product development and launch.

for more information

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