

FIRECAPE™ FIRE CONTAINMENT COVER



TSO-C203 APPROVAL FROM THE FAA

We applied our nearly 40 years of experience in advanced fire protection materials and coatings to develop the TSO-C203 approved FireCape™ Fire Containment Cover (FCC). The FireCape™ isolates a cargo fire to a single pallet for 6 hours, providing the flight crew with valuable time to land safely. The FireCape™ is constructed from Newtex's Z-Block™ fire and smoke stopping fabric which exceeds the performance standards set by the Federal Aviation Administration (FAA), the European Aviation Safety Agency (EASA), and leading cargo carriers. In addition to providing significant risk reduction for cargo transport, the FireCape™ is lightweight, durable, and easy to deploy and maintain.

Design Features

The FireCape™ features a cross-shaped design with overlapping corners for compatibility with irregular loads and for easy deployment and removal. The system is also specifically engineered to fold into a small and manageable rectangle when not in use.

Fabricated from technologically advanced Z-Block™ F-407 SOC fabric and maximum strength, high temperature threads, these units can withstand even the most extreme conditions. Z-Block™ F-407 SOC fabric is a fire and smoke resistant fiberglass material featuring a proprietary silicone overcoat for added durability. Z-Block™ is water-tight, puncture resistant, and durable. It provides extended protection from extreme heat and flames caused by challenging fuel sources, like Lithium-Ion batteries.



System Benefits

- Will not burn, melt, or allow flame penetration
- Resistant to molten metal burn-through
- Withstands temperatures up to 1800°F (980°C)
- Will not produce toxic outgassing
- Water tight and chemical resistant
- Will not support growth of mold, fungi or bacteria
- Unaffected by extreme temperature or UV
- Abrasion, puncture, and tear resistant
- Soft and pliable making it easy to handle, fold, and unfold
- Easily conforms to irregular loads, always creating a tight seal
- Easy to store, maintain, clean and repair as needed
- Designed, manufactured, and tested in the United States

Sizes

The FireCape™ is available in 3 standard sizes. Custom sizes are also available upon request.

Option 1	Size: 126" x 98" x 64" 320 x 249 x 163 cm Weight: 40 to 45 lbs / 18 to 20 kg
Option 2	Size: 126" x 98" x 96" 320 x 249 x 244 cm Weight: 50 to 55 lbs / 23 to 25 kg
Option 3	Size: 126" x 98" x 118" 320 x 249 x 300 cm Weight: 60 to 65 lbs / 27 to 29 kg
Custom Option	Custom sizes are available. Custom sizes are not TSO approved. Minimum order requirements apply.

* Weight will vary with actual size and hardware requirements.
** For a container with a net, add 30 lbs to weight.

Testing & Certifications

Z-Block™ materials and the FireCape™ Fire Containment Cover meet or exceed the following standards:

Standard	Description
TSO-C203	FAA Fire Containment Cover Certification
ISO 14186 / SAE AS 6453	Full Scale Box Burn
ISO 12236	Static Puncture Test
FAR 25 Appendix F Part III	Flame Penetration Resistance
FAR 25 Appendix F Part IV	Heat Release Rate
FAR 25 Appendix F Part V	Smoke Density
ASTM D6413	Vertical Flame Resistance
ASTM E-84	Surface Flame Spread and Smoke Density
ASTM F-955	Molten Metal Resistance
ASTM E-119	Furnace Tested
UL 1784	Smoke Penetration
BSS 7239	Non-Toxicity of Products of Combustion

Additional Features

- Designed to be used with a standard TSO-C90 certified cargo net
- Locking net connectors
- Folding instructions and a training video available

More About Z-Block™

Z-Block™ coating and substrate fabrics were originally designed to channel smoke and prevent the spread of fire in hangars, theaters, and large public gathering spaces. In 2007, after a series of incidents in which improperly stored hazardous cargo resulted in devastating tragedy, the engineers at Newtex collaborated with aviation experts, airline safety officials, and major shipping companies to optimize Z-Block™ for use in the cargo fire containment.



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For nearly 40 years, Newtex has been a pioneer and leading global producer of high performance materials and engineered solutions for thermal management and fire protection. Headquartered outside of Rochester, New York, Newtex is an ISO 9001:2008 certified, vertically integrated manufacturer of an impressive portfolio of heat and fire resistant fabrics, tapes, personal protective apparel, and custom high temperature solutions. We are a minority owned, veteran-managed business that has proudly served the US Armed Forces and leading global industries since 1978. Newtex products are proudly made in the USA.

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FAA TSO-C203 APPROVED FIRE CONTAINMENT COVER



Newtex's FireCape™ Fire Containment Cover (FCC) is designed and tested to contain a fire within a cargo load and to prevent the fire from spreading. Made from proprietary Z-Block™ F-407 SOC high temperature fire resistant fabric, the FireCape™ Fire Containment Cover is designed to maximize usable product life and minimize maintenance by offering a simple and efficient deployment and repacking process. The FireCape™ was designed and has been tested for use with a standard TSO-C90 certified net. These nets can be added or replaced as needed, and they can be left attached to the cover for one step deployment.

FAA TSO-C203 Approved: Newtex Industries received official FAA TSO-C203 approval for Fire Containment Covers in October 2016. As part of the approval process, hundreds of pages of process documentation, manufacturing procedures, and certified test reports were submitted to the Federal Aviation Administration (FAA) to show that the FireCape™ and all the materials used in manufacturing met the requirements listed in the TSO. Testing for the TSO approval included:

1. Materials:

- Flammability and Flame Penetration Test (FAR 25 App. F Part III)
 - Before and after UV/Humidity exposure
 - Before and after abrasion testing
- Puncture Test (ISO 12236)
 - Before and after UV/Humidity exposure
- UV and Humidity Test
- Abrasion Test (FAR 25 App. F Part III)

2. FCC Assembly:

- ISO 14186 / AS6453 – Large-scale box burn test for 6 hours

Non-TSO Functions: In addition to the testing required by the SAE AS6453 and ISO 14816 standards and TSO-C203, we also submitted test reports in support of non-TSO functions of the FCC including:

1. Molten Metal Resistance – The Z-Block™ F-407 fabric used to make the FireCape™ was tested in accordance with ASTM F955 against molten iron and molten aluminum. When molten metal was poured onto the fabric, the Z-Block™ fabric had minimal shrinkage, adherence, and perforation and was given values of 1 in each category, the best possible rating.

2. Toxicity of Products of Combustion – Many fire retardant coatings used on fabrics have dangerous outgassing. The safety and well-being of the pilots and crew are a top priority. Any smoke produced by the FCC during a fire should be limited and be nontoxic to ensure that good visibility and breathable air be maintained within the aircraft. The fabric used to make the FireCape™ was tested in accordance with BSS 7289. The products of combustion for the Z-Block™ fabric showed minimal values (ppm), for each of the gases tested, well below the suggested allowable maximums.

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3. Lithium Battery Fires - Although not specifically required under the guidelines of the TSO-C203, Newtex realizes that many carriers are considering the voluntary use of FCCs as a redundant protection system when carrying potentially volatile cargo such as Lithium batteries and Lithium battery-containing equipment. To assess the performance of the FireCape™, internal tests, along with sponsored tests at certified 3rd party test facilities, were conducted. A total of four (4) box burn tests were conducted that included Lithium-Ion cells. The FireCape™ successfully absorbed the small repeated explosions from the Li-Ion cells in thermal runaway and withstood the complete combustion of all flammable materials contained within without allowing the flames to penetrate through the cover material.

4. Durability - To set continued airworthiness guidelines and recommendations on expiration dates for these covers, Newtex conducted a series of tests to simulate the normal wear and tear and environmental exposures these covers could experience. This testing was done in addition to the durability test required by the TSO-C203. Specimens of Z-Block™ F-407 SOC fabric were subjected to repeated cycles of twisting and flexing in accordance with the ASTM F392 test method (Gelbo Flex). The twisting and compression of the fabric simulated the flexing and folding of deployment and removal that the covers would be subjected to during use. Individual specimens were flexed for 1000, 3000, 5000 & 10,000 cycles. None of the specimens suffered any significant damage. The specimens that had been subjected to 10,000 flex cycles were then tested for flame penetration in accordance with the requirements of FAR 25, Appendix F, Part III and passed with no flame penetration, and peak temperatures 4" above the specimen below the limit of 400°F.

5. Real World Environmental Exposure (2 years) - TSO-C203 strongly recommends that the accelerated UV testing required by AS6453 is complemented by actual sun radiation exposure over a minimum period of 6 months (AS6453 Section 6.1.3.5). To that end, Newtex conducted actual sun radiation exposure for more than 24 months. A sample of ZBlock™ F-407 SOC fabric was placed on a frame outside exposed with southern exposure in Victor, NY from Sept. 2014 to Sept. 2016. The fabric was exposed to sun, rain, wind, snow and ice; temperature exposure ranged from -11°F to 91°F. The fabric color faded somewhat, but the fabric remained intact with no holes or tears in the material. Tensile strength testing (ASTM D5035 – Strip Tensile) on the fabric showed there was some loss of strength with outdoor exposure.

Summary: The Z-Block™ F-407 SOC material used in Newtex's FireCape™ Fire Containment Cover has excellent fire resistance and maintains its integrity even after environmental exposure, abrasion, and continuous flex testing. The FCC assembly can contain a large-scale fire for more than 6 hours and withstand the extreme heat and flames of fires containing Lithium-Ion cells. Newtex's FireCape™ Fire Containment Cover is a reusable cargo cover that provides significant risk reduction for cargo transport, and an additional layer of protection and safety for the aircraft and crew, as well as weather resistant cargo protection.



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