SAFETYDRAPE®
GLASS HAZARD MITIGATION SYSTEM
SAFETYDRAPE® is a patented drapery system (USPO #5,915,449) designed to mitigate flying glass shards and debris caused by an explosion.

SAFETYDRAPE® saves lives by venting excessive blast loads while safely capturing deadly flying projectiles, shards of glass, and debris.

"80–85% of injuries sustained during a blast event can be attributed directly to glass shards."

(Glass, 2003)

SIZE
Custom made-to-order for all windows

FABRICS
Winter White, Fog (custom available)

TROUGHS
Bone White (other colors available)

INSTALL
Certified installers available worldwide

CERTIFIED
Approved Product under the SAFETY Act

The only blast curtain tested to exceed US criteria for glass hazard mitigation.
MISSION & CORE VALUES

Blast resistant since 1991 with our patented SAFETYDRAPE®, our technologies installed worldwide harden structures and vehicles against bombs and bullets. From the White House to Japan, our products and service can be found saving lives and providing safety, comfort, and peace of mind.

- We develop and deploy life-saving physical security products.
- We save the most lives for the least cost.
- We perform with integrity.
- We align with the needs of our customers and staff.
- We continuously grow with organizational efficiency and training for high-performance staff.
- We are dedicated to swift working relationships with suppliers, dealers, and vendors.

CORE COMPETENCIES

SAFETYDRAPE

SAFETYDRAPE® is our patented bomb blast curtain designed to mitigate glass shattered in a bomb. (US Patent NO 5,915,449)

The curtain "vents" the blast energy and captures the glass shards, preventing them from flying through the air. This glass hazard mitigation system has been tested with a wide variety of explosives and blast pressures, and can anchor to any building or window frame. SAFETYDRAPE® is designated and certified as a QATT (Qualified Anti-Terrorism Technology) by the DHS.

ACTIVE SHOOTER

With extensive manufacturing experience in aramid fibers, ballistic fiberglass, and armor plate, we have the tooling and design skills to help you save the most lives against ballistic threats for the least cost. Quickly create a safe zone and defensive position with our BALLISTIC ROLLING PANELS.

CROWD CONTROL

Our TAP Barrier® System is a rapid-deployed fence designed with the Department of State to add a layer of security to US embassies worldwide. It can also be used in stadium events, courthouses, and other large-gatherings where personnel protection is a priority.
MITIGATION TECHNOLOGIES is a standoff reduction company offering state of the art physical security solutions against anticipated threats and vulnerabilities.

In addition to our SAFETYDRAPE® Blast Curtains and industrial foreign object mitigation systems, we offer threat assessments and custom engineered solutions. We continue to expand our product line to offer solutions for saving the most lives for the least cost.

Based in Pennsylvania, we are proud to maintain a local, skilled team, constantly ready to meet the needs of our global customers. All primary product components are made in the USA. Most are locally manufactured within a 75-mile radius of our Headquarters and Research & Development facilities in Chambersburg, PA.

**OUR MISSION**

We develop and deploy life-saving physical security products.

**CORE VALUES**

- Save the most lives for the least cost.
- Perform with integrity, and strive for continual improvement.
- Operate in alignment with the needs of our customers and staff.
- Grow continuously with organizational efficiency and training for high-performance staff.
- Unparalleled dedication and swift responsiveness to suppliers, dealers, and vendors.

**GIVING BACK**

As part of our deep commitment to our community and to the United States of America, we donate a portion of sales to Semper Fidelis Health & Wellness (SFHW). SFHW is a non-profit organization that provides integrated health and wellness solutions to our nation’s wounded or injured warriors and their families. SFHW’s services are targeted towards Active Duty & Reserve Military, Veterans and First Responders (http://www.warriorwellnesssolutions.org/)

**MADE IN THE USA**

- FEIN 52-2257664
- DUNS 808359371
- CAGE 6RWU9
- SIZE Small
- 800-616-ATFP
- 410-309-9447
- info@mitigationtechnologies.com
- www.MitigationTechnologies.com

MITIGATION TECHNOLOGIES
12011 CARPER ROAD
MERCERSBURG, PA 17236

**EXCLUSIVE DISCOUNTS FOR WAR FIGHTERS & FIRST RESPONDERS**
SAFETYDRAPE™ BLAST CURTAINS MEET OR EXCEED THESE STANDARDS:

- ASTM F1642 Standard Test Method for Glazing and Glazing Systems Subject to Airblast Loadings
  - Glazing hazard level: LH
- GSA Standard Test Method for Glazing and Window Systems Subject to Dynamic Overpressure Loadings
  - Rating: 3
- AAMA 510-06 Voluntary Guide specification for Blast Hazard Mitigation for Fenestration Systems
- ISO 16933:2007 Glass in building - Explosion resistant security glazing - Test and classification for arena air blast loading
- ISO 16934:2007 Glass in building - Explosion resistant security glazing - Test and classification by shock tube loading
- UFC 4-010-01 DOD Minimum Antiterrorism Standards for Buildings
- Department of Homeland Security (DHS) SAFETY Act 2002 both designation and certification.
Trough Color Chart

Premium Metallic Colors

ZINC  SILVER  COPPER PENNY  AGED COPPER  CHAMPAGNE  WEATHERED ZINC
Certificate of Conformance

This will certify that, on this date, the United States Department of Homeland Security granted to MitiTech, LLC, a Maryland Corporation, a Certification for its Safetydrape™ as an ‘Approved Product for Homeland Security’ under the Support Anti-terrorism by Fostering Effective Technologies Act of 2002 (the SAFETY Act).

Dr. Charles E. McQueary
Under Secretary for Science and Technology
SOLE SOURCE JUSTIFICATION
Safetydrape® Blast Curtain System

Justification for the Purchase of Safetydrape® Blast Curtains

HUBZone Certified Small Business Concern

A sole-source HUBZone contract can be awarded if the contracting officer doesn't have a reasonable expectation that two or more qualified HUBZone small businesses will submit offers, determines that the qualified HUBZone small business is responsible, and determines that the contract can be awarded at a fair price.

- A link to our profile on the SBA site: http://dsbs.sba.gov/dsbs/search/dsp_profile.cfm?requesttimeout=60&duns=808359371
- We are active and current in SAM:
  - DUNS: 808359371

19.1306 – HUBZone Sole Source Awards.

a) A contracting officer shall consider a contract award to a HUBZone small business concern on a sole source basis (see 6.302-5(b)(5)) before considering a small business set-aside (see 19.203 and Subpart 19.5), provided none of the exclusions at 19.1304 apply; and--

6.302-5 -- Authorized or Required by Statute.

a) Authority.
   (1) Citations: 10 U.S.C. 2304(c)(5) or 41 U.S.C. 3304(a)(5).
   (2) Full and open competition need not be provided for when
      (i) A statute expressly authorizes or requires that the acquisition be made through another agency or from a specified source, or
      (ii) The agency’s need is for a brand name commercial item for authorized resale.

b) Application. This authority may be used when statutes, such as the following, expressly authorize or require that acquisition be made from a specified source or through another agency:
   (1) Federal Prison Industries (UNICOR) -- 18 U.S.C. 4124 (see Subpart 8.6);
   (2) Qualified Nonprofit Agencies for the Blind or other Severely Disabled -- 41 U.S.C. 85, Committee for Purchase From People Who Are Blind or Severely Disabled (see Subpart 8.7);
   (3) Government Printing and Binding -- 44 U.S.C. 501-504, 1121 (see Subpart 8.8).
   (4) Sole source awards under the 8(a) Program (15 U.S.C. 637), but see 6.303 for requirements for justification and approval of sole-source 8(a) awards over $22 million. (See Subpart 19.8.)

Federal Acquisition Regulation and the United States Code

Section 6.300 of the FAR identifies policies and procedures for contracting without requiring for full and open competition. Under the policies in 41 USC 3304(a)(1) and FAR 6.302-1, contracting requirements for full and open competition are suspended when only one responsible source and no other supplies or services will satisfy agency (OST) requirements.

Mitigation Technologies blast curtain Safetydrape®, demonstrates a unique and innovative concept and is the only known source based on its certified installation and guaranteed, patent rights and/or copyrights associated with the Safetydrape® Blast curtain system and all components.
Federal Acquisition Regulation Subpart 6.3—Other Than Full and Open Competition

6.300 Scope of subpart.

This subpart prescribes policies and procedures, and identifies the statutory authorities, for contracting without providing for full and open competition.

6.301 Policy.

a) 41 U.S.C. 3304 and 10 U.S.C. 2304(c) each authorize, under certain conditions, contracting without providing for full and open competition. The Department of Defense, Coast Guard, and National Aeronautics and Space Administration are subject to 10 U.S.C. 2304(c). Other executive agencies are subject to 41 U.S.C. 3304. Contracting without providing for full and open competition or full and open competition after exclusion of sources is a violation of statute, unless permitted by one of the exceptions in 6.302.

b) Each contract awarded without providing for full and open competition shall contain a reference to the specific authority under which it was so awarded. Contracting officers shall use the U.S. Code citation applicable to their agency (see 6.302).

c) Contracting without providing for full and open competition shall not be justified on the basis of—

   (1) A lack of advance planning by the requiring activity; or
   (2) Concerns related to the amount of funds available (e.g., funds will expire) to the agency or activity for the acquisition of supplies or services.

d) When not providing for full and open competition, the contracting officer shall solicit offers from as many potential sources as is practicable under the circumstances.

e) For contracts under this subpart, the contracting officer shall use the contracting procedures prescribed in 6.102(a) or (b), if appropriate, or any other procedures authorized by this regulation.

6.302 Circumstances permitting other than full and open competition.

The following statutory authorities (including applications and limitations) permit contracting without providing for full and open competition. Requirements for justifications to support the use of these authorities are in 6.303.

6.302-1 Only one responsible source and no other supplies or services will satisfy agency requirements.

a) Authority.

   (1) Citations: 10 U.S.C. 2304(c)(1) or 41 U.S.C. 3304(a)(1).
   (2) When the supplies or services required by the agency are available from only one responsible source, or, for DoD, NASA, and the Coast Guard, from only one or a limited number of responsible sources, and no other type of supplies or services will satisfy agency requirements, full and open competition need not be provided for.
   (i) Supplies or services may be considered to be available from only one source if the source has submitted an unsolicited research proposal that—
      (A) Demonstrates a unique and innovative concept (see definition at 2.101), or, demonstrates a unique capability of the source to provide the particular research services proposed;
(B) Offers a concept or services not otherwise available to the Government; and
(C) Does not resemble the substance of a pending competitive acquisition.
(See 10 U.S.C. 2304(d)(1)(A) and 41 U.S.C. 3304(b)(1).)

(ii) Supplies may be deemed to be available only from the original source in the case of a follow-on contract for the continued development or production of a major system or highly specialized equipment, including major components thereof, when it is likely that award to any other source would result in—
(A) Substantial duplication of cost to the Government that is not expected to be recovered through competition; or
(B) Unacceptable delays in fulfilling the agency’s requirements. (See 10 U.S.C. 2304(d)(1)(B) or 41 U.S.C. 3304(b)(2).)

(iii) For DoD, NASA, and the Coast Guard, supplies may be deemed to be available only from the original source in the case of follow-on contracts for the continued provision of highly specialized services when it is likely that award to any other source would result in—
(A) Substantial duplication of cost to the Government that is not expected to be recovered through competition; or
(B) Unacceptable delays in fulfilling the agency’s requirements. (See 10 U.S.C. 2304(d)(1)(B).)

b) Application. This authority shall be used, if appropriate, in preference to the authority in 6.302-7; it shall not be used when any of the other circumstances is applicable. Use of this authority may be appropriate in situations such as the following (these examples are not intended to be all inclusive and do not constitute authority in and of themselves):

(1) When there is a reasonable basis to conclude that the agency’s minimum needs can only be satisfied by—
(i) Unique supplies or services available from only one source or only one supplier with unique capabilities; or
(ii) For DoD, NASA, and the Coast Guard, unique supplies or services available from only one or a limited number of sources or from only one or a limited number of suppliers with unique capabilities.

(2) The existence of limited rights in data, patent rights, copyrights, or secret processes; the control of basic raw material; or similar circumstances, make the supplies and services available from only one source (however, the mere existence of such rights or circumstances does not in and of itself justify the use of these authorities) (see Part 27).

(3) When acquiring utility services (see 41.101), circumstances may dictate that only one supplier can furnish the service (see 41.202); or when the contemplated contract is for construction of a part of a utility system and the utility company itself is the only source available to work on the system.

(4) When the agency head has determined in accordance with the agency’s standardization program that only specified makes and models of technical equipment and parts will satisfy the agency’s needs for additional units or replacement items, and only one source is available.

c) Application for brand-name descriptions.
(1) An acquisition or portion of an acquisition that uses a brand-name description or other purchase description to specify a particular brand-name, product, or feature of a product, peculiar to one manufacturer—

(i) Does not provide for full and open competition, regardless of the number of sources solicited; and

(ii) Shall be justified and approved in accordance with 6.303 and 6.304.

(A) If only a portion of the acquisition is for a brand-name product or item peculiar to one manufacturer, the justification and approval is to cover only the portion of the acquisition which is brand-name or peculiar to one manufacturer. The justification should state it is covering only the portion of the acquisition which is brand-name or peculiar to one manufacturer, and the approval level requirements will then only apply to that portion;

(B) The justification should indicate that the use of such descriptions in the acquisition or portion of an acquisition is essential to the Government’s requirements, thereby precluding consideration of a product manufactured by another company; and

(C) The justification shall be posted with the solicitation (see 5.102(a)(6)).

(2) Brand-name or equal descriptions, and other purchase descriptions that permit prospective contractors to offer products other than those specifically referenced by brand-name, provide for full and open competition and do not require justifications and approvals to support their use.

d) Limitations.

(1) Contracts awarded using this authority shall be supported by the written justifications and approvals described in 6.303 and 6.304.

(2) For contracts awarded using this authority, the notices required by 5.201 shall have been published and any bids, proposals, quotations, or capability statements must have been considered.

6.302-2 Unusual and compelling urgency.

a) Authority.

(1) Citations: 10 U.S.C. 2304(c)(2) or 41 U.S.C. 3304(a)(2).

(2) When the agency’s need for the supplies or services is of such an unusual and compelling urgency that the Government would be seriously injured unless the agency is permitted to limit the number of sources from which it solicits bids or proposals, full and open competition need not be provided for.

b) Application. This authority applies in those situations where—

(1) An unusual and compelling urgency precludes full and open competition; and

(2) Delay in award of a contract would result in serious injury, financial or other, to the Government.

c) Limitations.

(1) Contracts awarded using this authority shall be supported by the written justifications and approvals described in 6.303 and 6.304. These justifications may be made and approved after contract award when preparation and approval prior to award would unreasonably delay the acquisition.
(2) This statutory authority requires that agencies shall request offers from as many potential sources as is practicable under the circumstances.

d) Period of Performance.
(1) The total period of performance of a contract awarded or modified using this authority—
   (i) May not exceed the time necessary—
      (A) To meet the unusual and compelling requirements of the work to be performed under the contract; and
      (B) For the agency to enter into another contract for the required goods and services through the use of competitive procedures; and
   (ii) May not exceed one year, including all options, unless the head of the agency determines that exceptional circumstances apply. This determination must be documented in the contract file.

(2)
   (i) Any subsequent modification using this authority, which will extend the period of performance beyond one year under this same authority, requires a separate determination. This determination is only required if the cumulative period of performance using this authority exceeds one year. This requirement does not apply to the exercise of options previously addressed in the determination required at (d)(1)(ii) of this section.
   (ii) The determination shall be approved at the same level as the level to which the agency head authority in (d)(1)(ii) of this section is delegated.

(3) The requirements in paragraphs (d)(1) and (d)(2) of this section shall apply to any contract in an amount greater than the simplified acquisition threshold.

(4) The determination of exceptional circumstances is in addition to the approval of the justification in 6.304.

(5) The determination may be made after contract award when making the determination prior to award would unreasonably delay the acquisition.

6.302-3 Industrial mobilization; engineering, developmental, or research capability; or expert services.

a) Authority.
(2) Full and open competition need not be provided for when it is necessary to award the contract to a particular source or sources in order—
   (i) To maintain a facility, producer, manufacturer, or other supplier available for furnishing supplies or services in case of a national emergency or to achieve industrial mobilization;
   (ii) To establish or maintain an essential engineering, research, or development capability to be provided by an educational or other nonprofit institution or a federally funded research and development center; or
   (iii) To acquire the services of an expert or neutral person for any current or anticipated litigation or dispute.

b) Application.
(1) Use of the authority in paragraph (a)(2)(i) of this subsection may be appropriate when it is necessary to—
   (i) Keep vital facilities or suppliers in business or make them available in the event of a national emergency;
   (ii) Train a selected supplier in the furnishing of critical supplies or services; prevent the loss of a supplier’s ability and employees’ skills; or maintain active engineering, research, or development work;
   (iii) Maintain properly balanced sources of supply for meeting the requirements of acquisition programs in the interest of industrial mobilization (when the quantity required is substantially larger than the quantity that must be awarded in order to meet the objectives of this authority, that portion not required to meet such objectives will be acquired by providing for full and open competition, as appropriate, under this part);
   (iv) Create or maintain the required domestic capability for production of critical supplies by limiting competition to items manufactured in—
      (A) The United States or its outlying areas; or
      (B) The United States, its outlying areas, or Canada.
   (v) Continue in production, contractors that are manufacturing critical items, when there would otherwise be a break in production; or
   (vi) Divide current production requirements among two or more contractors to provide for an adequate industrial mobilization base.

(2) Use of the authority in paragraph (a)(2)(ii) of this subsection may be appropriate when it is necessary to—
   (i) Establish or maintain an essential capability for theoretical analyses, exploratory studies, or experiments in any field of science or technology;
   (ii) Establish or maintain an essential capability for engineering or developmental work calling for the practical application of investigative findings and theories of a scientific or technical nature; or
   (iii) Contract for supplies or services as are necessary incident to paragraphs (b)(2)(i) or (ii) of this subsection.

(3) Use of the authority in paragraph (a)(2)(iii) of this subsection may be appropriate when it is necessary to acquire the services of either—
   (i) An expert to use, in any litigation or dispute (including any reasonably foreseeable litigation or dispute) involving the Government in any trial, hearing, or proceeding before any court, administrative tribunal, or agency, whether or not the expert is expected to testify. Examples of such services include, but are not limited to:
      (A) Assisting the Government in the analysis, presentation, or defense of any claim or request for adjustment to contract terms and conditions, whether asserted by a contractor or the Government, which is in litigation or dispute, or is anticipated to result in dispute or litigation before any court, administrative tribunal, or agency; or
      (B) Participating in any part of an alternative dispute resolution process, including but not limited to evaluators, fact finders, or witnesses, regardless of whether the expert is expected to testify; or
(ii) A neutral person, e.g., mediators or arbitrators, to facilitate the resolution of issues in an alternative dispute resolution process.

Limitations. Contracts awarded using this authority shall be supported by the written justifications and approvals described in 6.303 and 6.304.

Factory Certified Installation
Mitigation Technologies sells installs and services Safetydrape® and other proprietary technologies direct to the federal Government. In accordance with the requirements set forth by the Department of Homeland Security SAFETY Act, only professional factory trained technicians will be performing the installation. Most certified installers have installed well over 100,000 sq. ft. of Safetydrape®. Only factory certified technicians may install this life-saving technology to maintain warranties. (If not installed by certified installers, the factory warranty and all coverage under the Department of Homeland Security (DHS) becomes immediately VOID. Mitigation Technologies reserves the right to inspect the systems upon notification to the customer to assure that the anchorage has not been tampered with and the system is in working order.)

Proprietary Patent
Safetydrape® is a patented (U.S. Patent No. 5,915,449) bomb blast curtain designed to mitigate glass shards propelled by an explosion. Safetydrape® has been subjected to extensive testing using various types of explosives and has passed the GSA, Level 3, Glass Hazard Mitigation Criteria. It is translucent and allows visibility yet effectively mitigates the hazards of flying glass shards.

Safetydrape® will vent blast pressures allowing a minimal amount of blast energy to transfer to the mounting hardware. This venting will allow Safetydrape® to effectively mitigate glass shards through a wide range of blast pressures without having to reinforce or restructure the existing window frames, anchorage or building.

Safetydrape® is a product specific trademark. Most resources will reference Safetydrape® by the generic term blast curtain. When running searches, you will have greater success when searching for blast curtain(s) as well as Safetydrape®.

SAFETY Act Approved Product
Safetydrape® has been granted coverage as “designated” and “certified” as a QATT (Qualified Anti-terrorism Technology) under the SAFETY Act by the Department of Homeland Security. Safetydrape® is listed on “Approved Product List for Homeland Security” pursuant to 6 U.S.C. § 442(d)(3) (the Support Anti-terrorism by Fostering Effective Technologies Act of 2002, or “SAFETY Act”) and 6 C.F.R. § 25.7(j) (2004) (Regulations to Support Anti-terrorism by Fostering Effective Technologies). Safetydrape® is currently the only glass hazard mitigation technology covered under the SAFETY Act. For a list of approved technologies and more information visit www.safetyact.gov

Test Data
- ASTM F-1642-96
  - Safetydrape® exceeds Test Criteria ASTM F-1642-96, please see test ARA-TR-98-4626.1-2
  - Safetydrape® obtained the required condition 3 rating of Hazard Level –Low, Protection Level –High
- Other Tests and Standards
  - ASTM D 5034-95
  - ASTM D 2256-97
• ASTM D 6797-02
• ASTM F 1642-96
• Flame Rating NFPA 701
• Flame Rating State of California (Title 19 and Bulletin 117)
• AATCC 96 IV A
• AATCC 16 Class 5
• Warranty – Fabric (Defender II): 20 Years; Hardware: 30 Years

Demonstrations
• Force Protection Equipment Demonstration V, Quantico Marine Base, Virginia – April 2005: This demonstration showed the effectiveness of the Safetydrape® when impacted with blast pressures exceeding 55psi for over 37psi/msec using C4 set back 10 feet. View video footage here.

References and Excerpts
• Excerpts from a Construction Specifications Institute article published April 28, 2004 titled, “Security Glazing Options” written by Tom Harpole: Within a few months of the Murrah building bombing, the General Services Administration (GSA) recommended the installation of Mylar film on exterior windows of federal buildings. Dr. Norville says he was surprised that GSA regarded window films as offering blast resistance. “Based on years of comparative blast testing on glazing configurations, including dozens of tests that refuted manufacturers’ claims for window-film performance, I’d have to say that the phrase ‘security film’ is an oxymoron,” he insists.
• Excerpts from the Statement of Robert A. Peck, Commissioner, Public Buildings Service, General Services Administration, before the Subcommittee on Public Buildings and Economic Development Committee on Transportation and Infrastructure U.S. House Of Representatives, June 4, 1998: “In 1996, we asked the National Institute of Standards and Technology (NIST) to evaluate the shatter protection performance of polymer film. NIST found no evidence that polymer film measurably reduces the possibility of damage caused by flying glass from explosive blasts. Given this analysis, we asked the U.S. Army Corps of Engineers to conduct blast tests to determine the performance of polymer film and other glazing configurations. The strength of the glazing units was primarily related to the thickness of the glass. The test results focused our attention on the importance not just of the capacity of the window glazing material itself, but also the supporting structural walls, the anchorage (bite retention), and the window framing in order to maximize total window system strength. GSA uses the ISC draft security design criteria for new construction and for retrofitting windows in our existing buildings. As the Corps’ blast tests suggest, we determine the most appropriate retrofit solution (e.g., polymer film, laminates, blast curtains, or polycarbonate panels) by examining each individual building, using security risk assessments, engineering recommendations, cost benefit analyses, and, of course, the recommendations of our tenant agencies. To make a cost-effective decision, we consider the life cycle of the building, the life cycle of the alternative glazing solutions, and their life-cycle costs.”
• Excerpts from the ISC Security Design Criteria for New Federal Office Buildings and Major Modernization Projects: A Review and Commentary http://www.nap.edu/catalog/10678.html: Window assemblies can be designed to respond to many anticipated blast loads. For new construction, it may be best to specify laminated glass; for existing glazing, a fragment-retention film might be applied. Although these approaches do little to improve the strength of the glass (failure will occur), they can hold the shards of glass together to better protect occupants from hazardous debris.
• Excerpts from Karagozian & Case study, To Film Or Not To Film: Effects Of Anti-Shatter Film on Blunt Trauma Lethality From Tempered Glass, 2002: "...application of film thus may actually increase lethality by holding the glass sheet together, producing a more massive object that impacts the human and causing more severe blunt trauma." [The research presented in this paper was funded by the Combating Terrorism Technology Support Office Technical Support Working Group (TSWG). The tests were executed by the Albuquerque Operations branch of the Defense Threat Reduction Agency (DTRA) in New Mexico.]

• Excerpts from Steven M. Bryant, Dept. of State, Antiterrorism Assistance Program course on Preventing Attacks on Soft Targets (PAST), 2006: “FRF must be used with blast curtains. FRF will not work if a bomb goes off next to it.”

Safetydrape® Resources

• US Army Corp of Engineers. BMAG (Blast Mitigation Action Group) Safetydrape® can be found on this site by looking under the company MitiTech, LLC http://bmag.pecp1.nwo.usace.army.mil/window_shades_curtains_drapes.php

• Unified Facilities Criteria UFC 4-010-01: Blast curtains are identified as a solution for existing and leased DoD facilities. This makes blast curtains eligible for use in most DoD buildings.

• TM5-853 Vol. 1 & Vol. 2 Security Engineering Manual (US Army and US Air Force) Blast Curtains are referenced several times as a protective measure. To quickly find these references search the documents for, “blast curtain”. The documents are FOUO and can be downloaded from the following USACE web site (Password and User Name required) https://forge1.pecp1.nwo.usace.army.mil/

• PBS P100 Chapter 8 Security Design (Facilities Standards for the Public Building Service) Blast curtains listed as a “preferred system” http://www.gsa.gov/Portal/gsa/ep/programView.do?pageTypeId=8195&ooid=18742&programPage=%2Fep%2Fprogram%2FgsaDocument.jsp&programId=10814 &channelId=-17304

• USAF Force Protection Battelab. (Military Network Only) This is an online resource center assisting AT/FP personnel. Safetydrape® information is available on the Force Protection Battelab. The following link is for the Battelab group but not the online resources. These online force protection resources are not available outside the military network. http://afsf.lackland.af.mil/Battlelab/ContactInfo.asp


• DTRA JSIVA Teams. They are well versed in most force protection technologies and can provide good information on Safetydrape®. Common Table of Allowances (US Army) CTA 50-909.

• Listed on J34 Joint Staff. Standoff Weapons Resource Guide.

• Naval Facilities Engineering Command. hosted an Anti-Terrorism and Force Protection Considerations in Facility Design Seminar. This seminar and subsequent handouts were prepared and contributed to by the Naval Facilities Engineering Service Center, NAVFAC Center of Expertise for Physical Security, Atlantic Division. Blast Curtains were presented as a system that must be used when windows are protected with daylight application window film. This information is available upon request by writing info@mitigationtechnologies.com In addition, video clips of Safetydrape® blast curtain testing were shown during the portion of the seminar dedicated to window protection.


• RKB MIPT – Responder Knowledge Base and National Memorial Institute for the Prevention of Terrorism. This knowledge base was created to provide Emergency Responders, purchasers, and planners with a trusted, integrated, online source of information on
products, standards, certifications, grants, and other equipment-related information.
http://www.rkb.mipt.org/contentdetail.cfm?content_id=98259

1. Go to http://www.rkb.mipt.org/
2. Click “Login as Guest”
3. Click “Search the RKB” Under the heading Major Programs
4. Click the “SAFETY Act” link. This will pull up a web page with SAFETY Act information.
5. On the right of the page is a box titled, “Knowledge Links”.
6. In that box click the “SAFETY Act Designated and Certified Products” link.
7. Listed as a SAFETY Act designated and certified product is Safetydrape®.

- **FEMA - Federal Emergency Management Agency**
  Blast Curtains listed as a protection system.
  4. Click here for a list of FEMA documents regarding Terrorism Prevention.
     http://www.fema.gov/library/prepandprev.shtm#terrorprev

- **Anti-Terrorism: Criteria, Tools & Technology**
  http://www.protectiveglazing.org/references/Anti-Terrorism%20-%20Criteria,%20Tools%20and%20Technology.pdf This document outlines various technologies for window protection. Information on blast curtains is presented in this document. Written by Joseph Smith, a nationally known security and blast consultant with 22 years of experience in security engineering and explosion effects. Most recently, he has assisted in the development of the US Interagency Security Committee Security Criteria. He holds a BSCE from the USAF Academy and an MSCE from Columbia University. Safetydrape® testing, took place at the Defense Special Weapons Agency test site, Kirtland AFB.
Safetydrape® allows for the use of windows in an “at risk” building which meets LEED® requirements 8.1 and 8.2 for Daylighting and Views.

- Manufactured within a 500 mile radius
- Energy conserving—reduces heat transfer by 20%
- Long life cycle of 20 years
- Recyclable at end of life
- Antimicrobial treatment blocks the spread of indoor contaminants
- Certified by GSA as an “Energy Conserving Product”

**SAFETYDRAPE®**

- **SAVES MONEY**
- **REDUCES HEAT TRANSFER BY UP TO 20%**

<table>
<thead>
<tr>
<th>Specimen</th>
<th>Net BTU/HR</th>
<th>U*</th>
<th>System R-Value</th>
<th>% Reduction Heat Transfer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test with SG WES base</td>
<td>523.5</td>
<td>.87</td>
<td>1.15</td>
<td>20%</td>
</tr>
</tbody>
</table>

A 20% Heat Transfer reduction on all windows would significantly improve a facility’s HVAC expenses.

<table>
<thead>
<tr>
<th>Fullness</th>
<th>Ts Solar Transmittance</th>
<th>Rs Solar Reflectance</th>
<th>As Solar Absorption</th>
<th>Tv Visible Light Transmittance</th>
<th>SC Shading Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-1/2</td>
<td>42%</td>
<td>42%</td>
<td>17%</td>
<td>33%</td>
<td>0.55%</td>
</tr>
</tbody>
</table>

*U-values expressed in BTU/HR FT 2 F
Source: Architectural Testing Inc
FAQ

Can I get my product or service LEED certified?

The U.S. Green Building Council does not certify, endorse or promote products, services or companies, nor do we track, list or report data related to products and their environmental qualities. LEED is a certification system that deals with the environmental performance of buildings based on overall characteristics of the project. We do not award credits based on the use of particular products but rather upon meeting the performance standards set forth in our Rating Systems. It is up to project teams to determine which products are most appropriate for credit achievement and program requirements. For more information on how you can get involved, please visit the Resources for Product Manufacturers and Service Providers page.

Where can I learn more about green materials, manufacturers, and products?

The USGBC does not certify, endorse or promote products, services or companies, nor do we track, list or report data related to products and their environmental qualities. However, using green products and materials may contribute to a building’s LEED Certification. See our Green Building Links for information from other green building organizations.

Defining Standards When Feasible

Our tactic with the GreenSpec directory is to identify quantifiable, easily verifiable, standards where those could be defined, then base other decisions about what should be included on the collective wisdom of our editorial staff. In a few product categories, such as energy-consuming appliances and VOC-emitting paints, specific thresholds can be established relatively easily. But for many criteria, the lines are much fuzzier and judgment calls are required.

It is important also to note that multiple criteria often apply—in other words, a product may be considered green for more than one reason. Take recycled plastic lumber, for example; it’s made from recycled waste, it’s highly durable, and it can obviate the need for pesticide treatments. Straw particleboard products are made from agricultural waste materials, and they are free from formaldehyde offgassing. A product with multiple benefits could qualify for GreenSpec on the basis of its overall environmental performance, even if it doesn’t meet a threshold in any one category alone. Conversely, a product with one or more green attributes might not qualify if it also carries significant environmental burdens. For example, wood treated with toxic
preservatives has advantages in terms of durability, but it would not be listed in GreenSpec due the health and environmental hazards it represents.

This article reviews the criteria—not listed in any order of priority—used to designate building products as green and therefore suitable for inclusion in our GreenSpec directory.

1. **Products Made with Salvaged, Recycled, or Agricultural Waste Content**

   The materials used to produce a building product—and where those materials came from—is a key determinant of green.

   **1a. Salvaged products** — Whenever we can reuse a product instead of producing a new one from raw materials—even if those raw materials are recycled—we save on resource use and energy. Many salvaged materials used in buildings (bricks, millwork, framing lumber, plumbing fixtures, and period hardware) are sold on a local or regional basis by salvage yards. Fewer salvaged materials are marketed widely, and it is generally only these that are profiled in a national directory such as GreenSpec. Local and regional green product directories can really shine when it comes to finding salvaged materials.

   **1b. Products with post-consumer recycled content** — Recycled content is an important feature of many green products. From an environmental standpoint, post-consumer is preferable to pre-consumer recycled content, because post-consumer recycled materials are more likely to be diverted from landfills. For most product categories, there is currently no set standard for the percentage of recycled content required to qualify for inclusion in GreenSpec, but such standards will increasingly be developed in the future.

   In some cases, products with recycled content are included with caveats regarding where they should be used. Rubber flooring made from recycled automobile tires is a good example—the caveat is that these products should not be used in most fully enclosed indoor spaces due to offgassing concerns.

   In certain situations, from a life-cycle perspective, recycling has downsides. For example, energy consumption or pollution may be a concern with some collection programs or recycling processes. Also, closed-loop recycling is generally preferable to downcycling, in which a lower-grade material is produced. As more complete life-cycle information on recycled materials—and the process of recycling—becomes available, we intend to scrutinize recycled products more carefully.

   **1c. Products with pre-consumer recycled content** — Pre-consumer (also called “post-industrial”) recycling refers to the use of industrial by-products, as distinguished from material that has been in consumer use. Iron-ore slag used to make mineral wool insulation, fly ash used to make concrete, and PVC scrap from pipe manufacture used to make shingles are examples of post-industrial recycled materials. Usually excluded from this category is the use of scrap within
the same manufacturing process from which it was generated—material that would typically have gone back into the manufacturing process anyway. While post-consumer recycled content is better than pre-consumer recycled content, the latter can still qualify a product for inclusion in GreenSpec in many product categories—especially those where there are no products available with post-consumer recycled content.

1d. Products made from agricultural waste material — A number of products are included in GreenSpec because they are derived from agricultural waste products. Most of these are made from straw—the stems left after harvesting cereal grains. Citrus oil, a waste product from orange and lemon juice extraction, is also used in some green products, but such products usually include other agricultural oils as well and are lumped under 2d – Rapidly renewable products.

2. Products That Conserve Natural Resources

Aside from salvaged or recycled content, there are a number of other ways that products can contribute to the conservation of natural resources. These include products that serve a function using less material than the standard solution, products that are especially durable and therefore won’t need replacement as often, products made from FSC-certified wood, and products made from rapidly renewable resources.

2a. Products that reduce material use — Products meeting this criteria may not be distinctly green on their own but are included in GreenSpec because of resource efficiency benefits that they make possible. For example, drywall clips allow the elimination of corner studs, engineered stair stringers reduce lumber waste, pier foundation systems minimize concrete use, and concrete pigments can turn concrete slabs into attractive finished floors, eliminating the need for conventional finish flooring.

2b. Products with exceptional durability or low maintenance requirements — These products are environmentally attractive because they need to be replaced less frequently, or their maintenance has very low impact. Sometimes,
durability is a contributing factor to the green designation but not enough to
distinguish the product as green on its own. This criterion is highly variable by
product type. Included in this category are such products as fiber-cement
siding, fiberglass windows, slate shingles, and vitrified-clay waste pipe.

2c. Certified wood products — Third-party forest certification, based on
standards developed by the Forest Stewardship Council (FSC), is the best way to
ensure that wood products come from well-managed forests. Wood products
must go through a chain-of-custody certification process to carry an FSC stamp.
Manufactured wood products can meet the FSC certification requirements with
less than 100% certified wood content through percentage-based claims. With a
few special-case exceptions, any nonsalvaged solid-wood product and most
other wood products must be FSC-certified to be included in GreenSpec. A few
manufactured wood products, including engineered lumber and particleboard
or MDF, can be included if they have other environmental advantages—such as
absence of formaldehyde binders. Engineered wood products in GreenSpec do
not qualify by virtue of their resource efficiency benefits alone (for more on this,
see EBN Vol. 8, No. 11).

2d. Rapidly renewable products — Rapidly renewable materials are
distinguished from wood by the shorter harvest rotation—typically 10 years or
less. They are biodegradable, often (but not always) low in VOC emissions, and
generally produced from agricultural crops. Because sunlight is generally the
primary energy input (via photosynthesis), these products may be less energy-
intensive to produce—though transportation and processing energy use must
be considered. Examples include linoleum, form-release agents made from
plant oils, natural paints, geotextile fabrics from coir and jute, cork, and such
textiles as organic cotton, wool, and sisal. Note that not all rapidly renewable
materials are included in GreenSpec—non-organic cotton, for example, is highly
pesticide-intensive. In some cases, even though a product qualifies for
GreenSpec by virtue of its natural raw materials, it may have negatives that
render it inappropriate for certain uses—such as high VOC levels that cause
problems for people with chemical sensitivities.

3. Products That Avoid Toxic or Other Emissions

Some building products are considered green because they have low
manufacturing impacts, because they are alternatives to conventional products
made from chemicals considered problematic, or because they facilitate a
reduction in polluting emissions from building maintenance. In the GreenSpec
criteria, a few product components were singled out for avoidance in most
cases: substances that deplete stratospheric ozone, and those associated with
ecological or health hazards including mercury and halogenated compounds.
In a few cases, these substances may be included in a "green" product if that product has significant environmental benefits (for example, low energy or water use).

These substitutes for products made with environmentally hazardous components may not, in themselves, be particularly green (i.e., they may be petrochemical-based or relatively high in VOCs), but relative to the products being replaced they can be considered green. Most of the products satisfying this criterion are in categories that are dominated by the more harmful products—such as foam insulation categories in which most products contain HCFCs. We have created several subcategories here for green products:

3a. Natural or minimally processed products — Products that are natural or minimally processed can be green because of low energy use and low risk of chemical releases during manufacture. These can include wood products, agricultural or nonagricultural plant products, and mineral products such as natural stone and slate shingles.

3b. Alternatives to ozone-depleting substances — Included here are categories where the majority of products still contain or use HCFCs: rigid foam insulation and compression-cycle HVAC equipment.

3c. Alternatives to hazardous products — Some materials provide a better alternative in an application dominated by products for which there are concerns about toxic constituents, intermediaries, or by-products. Fluorescent lamps with low mercury levels are included here, along with form release agents that won’t contaminate water or soils with toxicants. Also included here are alternatives to products made with chlorinated hydrocarbons such as polyvinyl chloride (PVC) and brominated fire retardants.

3d. Products that reduce or eliminate pesticide treatments — Periodic pesticide treatment around buildings can be a significant health and environmental hazard. The use of certain products can obviate the need for pesticide treatments, and such products are therefore considered green. Examples include physical termite barriers, borate-treated building products, and bait systems that eliminate the need for broad-based pesticide application.

3e. Products that reduce stormwater pollution — Porous paving products and green (vegetated) roofing systems result in less stormwater runoff and thereby reduce surface water pollution. Stormwater treatment systems reduce pollutant levels in any water that is released.

3f. Products that reduce impacts from construction or demolition activities — Included here are various erosion-control products, foundation products that eliminate the need for excavation, and exterior stains that result in lower VOC
emissions into the atmosphere. Fluorescent lamp and ballast recyclers and low-mercury fluorescent lamps reduce environmental impacts during demolition (as well as renovation).

3g. Products that reduce pollution or waste from operations — Alternative wastewater disposal systems reduce groundwater pollution by decomposing organic wastes or removing nutrients more effectively. Masonry fireplaces burn fuel-wood more completely with fewer emissions than conventional fireplaces and wood stoves. Recycling bins and compost systems enable occupants to reduce their solid waste generation.

4. Products That Save Energy or Water

The ongoing environmental impacts that result from energy and water used in operating a building often far outweigh the impacts associated with building it. Many products are included in GreenSpec for these benefits. There are several quite distinct subcategories:

Sample GreenSpec Standards for Selected Equipment

<table>
<thead>
<tr>
<th>Product Type</th>
<th>GreenSpec Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic water heaters</td>
<td>Energy Factor = 0.80 or higher</td>
</tr>
<tr>
<td>Residential clothes washers</td>
<td>Minimum modified Energy Factor of 1.8 and maximum Water Factor of 1.5 (as defined by the Consortium for Energy Efficiency)</td>
</tr>
<tr>
<td>Residential refrigerators</td>
<td>Exceed 2004 National Energy Standard by 20% (full-size) or 25% (compact)</td>
</tr>
<tr>
<td>Residential dishwashers</td>
<td>Energy Factor = 0.67 or higher</td>
</tr>
<tr>
<td>Central AC and heat pumps</td>
<td>Product line must have at least one model with a SEER rating of 16 or greater.</td>
</tr>
</tbody>
</table>

4a. Building components that reduce heating and cooling loads — Examples include structural insulated panels (SIPs), insulated concrete forms (ICFs), autoclaved aerated concrete (AAC) blocks, and high-performance windows and glazings. As these energy-saving products gain market acceptance, our threshold for inclusion in GreenSpec may become more stringent. For example, we may begin including only SIPs and ICFs with steady-state R-values above a certain threshold or with other environmental features, such as recycled-content foam insulation. Some products, such as insulation, clearly offer environmental benefits but are so common that they need other environmental features to qualify for GreenSpec.

In the case of windows, the base standard for energy performance of windows is an NFRC-rated unit U-factor of 0.25 or lower for at least one product in a listed product line. If the windows are made from an environmentally attractive material (e.g., high recycled content or superb durability), the energy standard is less stringent: U-factor of 0.30 or lower. If the frame material is
nongreen, such as PVC (vinyl), the energy standard is more stringent: U-factor of 0.20 or lower. There are a few exceptions to these standards, such as high-recycled-content windows made for unheated buildings.

4b. Equipment that conserves energy and manages loads — With energy-consuming equipment, such as water heaters and refrigerators, we have good data on energy consumption and can set clear standards accordingly. In most product categories—e.g., refrigerators, dishwashers, and clothes washers—we set higher thresholds than Energy Star®: for example, exceeding those standards by 10% or 20%. With lighting and lighting control equipment, certain generic products qualify, such as compact fluorescent lamps and occupancy/daylighting controls, while in other categories only a subset of products qualify. (See table for GreenSpec standards for certain types of equipment.) In some cases, products that meet the energy efficiency requirements are excluded, because of evidence of poor performance or durability. Microturbines are included here because of the potential for cogeneration (combined heat and power) that they offer. Ice- or chilled-water thermal energy storage (TES) equipment is also included because it helps reduce peak loads, which in turn can reduce energy costs and lower the impact of electricity generation.

4c. Renewable energy and fuel cell equipment — Equipment and products that enable us to use renewable energy instead of fossil fuels and conventional electricity are highly beneficial from an environmental standpoint. Examples include solar water heaters, photovoltaic systems, and wind turbines. Fuel cells are also included here, even though fuel cells today nearly always use natural gas or another fossil fuel as the hydrogen source—they are considered green because emissions are lower than combustion-based equipment and because the use of fuel cells will help us eventually move beyond fossil fuel dependence.

4d. Fixtures and equipment that conserve water — All toilets and most showerheads today meet the federal water efficiency standards, but not all of these products perform satisfactorily. With toilets and showerheads we include products that meet the federal standards and have dependably good performance. We include in GreenSpec only toilets that offer at least 20% water savings, compared with the federal standard of 1.6 gallons per flush (gpf), and we have adopted the Maximum Performance (MaP) standard for the performance of most toilets—requiring a minimum rating of 65 grams of test media removal per liter of flush volume. Some other products, such as rainwater catchment systems, are also included.
5. Products That Contribute to a Safe, Healthy Built Environment

Buildings should be healthy to live or work in and around, and product selection is a significant determinant of indoor environment quality. Green building products that help to ensure a healthy built environment can be separated into several categories:

5a. Products that do not release significant pollutants into the building —
Included here are zero- and low-VOC paints, caulks, and adhesives, as well as products with very low emissions, such as nonformaldehyde manufactured wood products. Just how low the VOC level needs to be for a given product to qualify for inclusion in GreenSpec depends on the product category. Ideally those standards should be based not on simple VOC content, but on resultant VOC concentrations in the space after a given period of time—EPA is working on such data for paints (including a way to factor in higher impacts for more toxic VOCs), but this information is not yet available.

5b. Products that block the introduction, development, or spread of indoor contaminants —
Certain materials and products are green because they prevent the generation or introduction of pollutants—especially biological contaminants—into occupied space. Duct mastic, for example, can block the entry of mold-laden air or insulation fibers into a duct system. “Track-off” systems for entryways help to remove pollutants from the shoes of people entering. Coated ductboard—compared with standard rigid fiberglass ductboard—prevents fiber shedding and helps control mold growth. And linoleum helps to control microbial growth because of the ongoing process of linoleic acid oxidation.

5c. Products that remove indoor pollutants —
Qualifying for inclusion here are certain ventilation products, filters, radon mitigation equipment, and other equipment and devices that help to remove pollutants or introduce fresh air. Because ventilation equipment is now fairly standard, only products that are particularly efficient or quiet, or that have other environmental benefits are included.

5d. Products that warn occupants of health hazards in the building —
Included here are carbon monoxide (CO) detectors, lead paint test kits, and other IAQ test kits. Because CO detectors are so common, other features are needed to qualify such products for GreenSpec, such as evidence of superb performance.

5e. Products that improve light quality —
There is a growing body of evidence that natural daylight is beneficial to our health and productivity (see EBN Vol. 8, No. 9). Products that enable us to bring daylight into a building, including tubular skylights, specialized commercial skylights, and fiber-optic daylighting systems, are included in GreenSpec. Some other products, such as full-spectrum lighting systems and highly reflective ceiling panels, could also be included in GreenSpec under this criterion.

5f. Products that help control noise —
Noise, both from indoor and outside sources, adds to stress and discomfort. A wide range of products are available to help absorb noise, prevent it from spreading, masking it, and even reducing it with sound-cancellation technologies.

5g. Products that enhance community well-being —
Looking beyond the walls of a building, many products can contribute to safer neighborhoods, increasing walkability and making high-density communities appealing.
**FINAL THOUGHTS**

The primary intent with any green building products directory is to simplify the product selection process. Such directories, including GreenSpec, are designed to save you time. For a directory to properly serve your needs, you must be able to trust it—you must have confidence that the process used to select products for inclusion is logical and based on good information and careful analysis. In this article, we have attempted to lay out our process for selecting products for the GreenSpec directory.

**Sidebar:**

**Summary of Product Standards for GreenSpec**

1a. Salvaged products  
1b. Products with post-consumer recycled content  
1c. Products with pre-consumer recycled content  
1d. Products made with agricultural waste material  
2. Products That Conserve Natural Resources  
2a. Products that reduce ma...

We are also providing this information so that you can critique it. We print updated copies of GreenSpec periodically, and we update the online version every week. That means not just ensuring that we have up-to-date contact information and product descriptions, but also regularly reexamining our standards for what should (and should not) be included. In the next edition of GreenSpec certain products will be kicked out—not because they have gotten worse from an environmental standpoint, but because we have reevaluated our standards for inclusion. As more low-VOC paints reach the market, we will likely tighten our standards because we want to include only the very best products. As we consider modifying our standards, we’d like to hear from users of this information. Are our standards too tight in a given area? Are they too lax? What other criteria should we consider adding to our product-evaluation process? We welcome your suggestions and comments by e-mail at: greenspec@BuildingGreen.com.

Finally, we have laid out our standards for GreenSpec to advance the development of new, greener products. We want to make it as easy as possible for manufacturers to understand what we consider to be green—so that they can strive to meet those criteria. Doing so will make more green building products available to us all and help to reduce the overall impacts of construction.

– Alex Wilson