

BLAST AND PRESSURE-RESISTANT PRODUCTS

A wide range of blast- and pressure-resistant door and fixed window systems.

OVERLY
DOOR COMPANY

AN ISO 9001 CERTIFIED COMPANY

OVERVIEW

For over 60 years, Overly Door, an ISO 9001 Certified Company, has been an industry leader in the design, testing and manufacture of Blast- and Pressure-Resistant Door and Window Systems. All of these products have been tested to the latest ASTM Standards or verified with structural analysis by our engineering group.

In addition to the blast- and pressure-resistant testing, many of these products have also been successfully fire tested to UL 10C (positive pressure) Standards for Safety.

LEED

Our blast- and pressure-resistant products may also be available with LEED certifications including one or more of the following:

- MR-4 Recycled Content
- MR-5 Regional Materials
- EQ 4.4 Low Emitting Materials

Consult factory with your defined project needs to see what performance requirements are available for the specific products required.

TYPICAL USES FOR BLAST- AND PRESSURE-RESISTANT PRODUCTS

They can be used in a variety of both public and private institutional installations where the need for blast- and pressure-resistant protection is required including:

- Chemical Plants
- Petrochemical Plants
- Pharmaceutical Manufacturing
- Refineries
- Research Facilities
- Manufacturing Environments
- Military Base Housing
- Processing Facilities
- Nuclear Plants
- DOD and DOE Facilities
- Modular Blast Buildings
- Fracking Sites



BLAST MITIGATION (BMD) SERIES

Overly's Blast Mitigation (BMD) series blast- and pressure resistant openings are lightweight, 1-3/4" thick personnel size doors that provide the appearance and user friendly features of standard hollow metal type doors.



These openings meet the requirements of Unified Facilities Criteria (UFC) 4-010-01, "DOD Minimum Anti-Terrorism Standards for Buildings." This criteria requires all exterior doors to be designed in accordance with ASTM F2927-12, "Standard Test method for Door Systems Subject to Air blast Loadings"

To accommodate these requirements, Overly has designed and tested several opening sizes and configurations to determine the door response damage category at various air blast pressure loads and impulses. These results can be seen in the chart below.

If fire ratings are required, flush, non-vision light BMD openings can be UL Labeled in accordance with UL Standard for Safety 10C, "Positive Pressure Fire Tests of Door Assemblies," when project parameters meet the construction requirements of our UL Procedures. Consult factory with your specific needs for availability.

Door Size	Door Thickness	Vision Lite Size	Charge Weight I Minimum Standoff (FT)	Charge Weight II Minimum Stand-off (FT)	ASTM F2927-12 Damage Rating	ASTM F2927-12 Damage Level Category	ASTM F2927-12 Glazing Hazard Level
3' x 7'-2"	1-3/4"	NA	88	56	III	Non-Catastrophic Failure	NA
3' x 7'-2"	1-3/4"	24" x 32"	109	69	II	Damaged but Openable	H1 - No Hazard
4' x 7'-2"	1-3/4"	5" x 20"	85	54	III	Non-Catastrophic Failure	H1 - No Hazard
6' x 7' Pair	1-3/4"	5" x 20"	118	74	II	Damaged but Openable	H1 - No Hazard
3' x 7" SCIF	1-3/4"	NA	135	85	III	Non-Catastrophic Failure	NA

Shock Tube Testing in accordance with ASTM F2927-12 conducted at Intertek-ATI, located in York, PA

ASTM DAMAGE CATEGORIES AND UFC LEVELS OF PROTECTION			
ASTM F2927-12 Damage Category	ASTM F2927-12 Damage Rating	Abridged ASTM F2927-12 Definitions	UFC 4-010-01 Levels of Protection
I	Undamaged	The door specimen is substantially unchanged after the airblast loading and is fully operable. The door can be secured.	High
II	Damaged but openable	The door panel, the frame, and / or the hardware has acceptable permanent deformation or damage however, the door remains openable. Door allows personnel ingress and egress.	Medium
III	Non-Catastrophic Failure	The door panel may get lodged into the frame from the blast force or the door may swing open in rebound. The door may be inoperable and may hinder personnel ingress or egress.	Low
IV	Limited Hazard Failure	The door panel becomes separated from the frame or the frame anchorage fails and the entire door panel and frame assembly become separated from the test structure wall and are thrown into the test structure witness area.	Very Low
V	High Hazard Failure	The door panel becomes separated from frame or the frame anchorage fails and the entire door panel and frame assembly become separated from the test structure wall and are thrown into the test structure witness area and strikes the witness panel above the "High Hazard Threshold".	Below AT Standards

VERY LOW (VLRB) AND LOW RANGE BLAST (LRB) SERIES

Overly's VLRB and LRB series blast- and pressure-resistant doors are personnel size 1-3/4" thick, lightweight doors that have the appearance and user friendly features of standard hollow metal type doors.

VLRB units are designed to utilize standard builder's hardware including hinges and mortise locksets or mortise panic devices to accommodate blast pressures defined as Very Low.

LRB units are "hardened" heavy-duty hollow metal doors with strategically placed reinforcing steel and incorporating proprietary modified mortise locksets or mortise panic device restraining hardware to accommodate blast pressures defined as Low.

Both series of product are available in single and double leaf swings. Horizontal sliding doors of similar construction and load ratings are also available.

These units are available fabricated from carbon steel for interior use; galvanized steel for exterior use; and, depending on the projects blast requirements, 316 and 316L stainless steel. Other features that may be incorporated into these openings include such items as vision lights up to 100 sq inches, door position indicators, lock/unlock sensors, insulation and weatherstripping.

For those openings requiring automatic power assist opening operation, Overly can incorporate devices to accommodate this need.

If fire ratings are required, all VLRB and LRB doors can be UL Labeled up to 3-hours in accordance with UL 10C, "Positive Pressure Fire Tests of Door Assemblies," when the project parameters meet the requirements of the UL procedures. Consult factory with your specific project requirement needs for availability.



Pre-Engineered Blast Door Selector Chart for VLRB and LRB Doors

Single Door Sizes...Double Leaf Pairs Available

DOOR MODEL	JAMB OPENING					DOOR THICK	LATCHING POINTS	UL FIRE LABEL
	3'-0" x 7'-0"	3'-0" x 8'-0"	3'-0" x 9'-2"	4'-0" x 7'-0"	4'-0" x 8'-0"			
VLRB	1.54 psi	1.06 psi	N/A	0.54 psi	N/A	1-3/4"	1	3 hr.
LRB	2.17 psi	2.08 psi	N/A	1.79 psi	1.56 psi	1-3/4"	1	3 hr.

The values listed above are the safe static load capacities for pressures acting to unseat the door from the frame.

MID RANGE BLAST (MRB) SERIES

Overly's MRB series products are 2-3/4" thick doors. These doors are equipped with Overly designed and tested hinges and latching/locking devices. These Overly designed hinges are specifically engineered to accommodate the weights of the doors for many years of trouble free service.

There are five levels of performance consisting of models MRB-0, MRB-1, MRB-2, MRB-3 and MRB-4.

The MRB-0 can be used when a ASTM F2927 Damage Category of III/U is specified or the door is permitted to rebound open during a blast event (0% rebound). The MRB-0 uses an ANSI grade 1 mortise lockset or exit device.



MID RANGE BLAST (MRB) SERIES (CONT.)

The MRB-1, MRB-2, MRB-3 and MRB-4 latching/locking devices are a proprietary design that incorporates one, two, three or four latching pins depending on the design pressures of the opening. The latching points can either be retracted by lever handle or panic device. All typical builders hardware locking functions are fully supported by this design. Panic hardware has been tested and passed all of the stringent requirements of UL Standard for Safety 305 to ensure its integrity and operating functionality.

MRB products are available in single and double leaf swings. Horizontal sliding doors of similar construction and load ratings are also available.

These units are available fabricated from carbon steel for interior use; galvanized steel for exterior use; and, depending on the projects blast requirements, 316 and 316L stainless steel. Other features that may be incorporated into these openings include such items as electric lock/unlock, electric latch retraction, door position indicators, lock/unlock sensors, insulation and weatherstripping.

For those openings requiring automatic power assist opening operation, Overly can incorporate devices to accommodate this need.

If fire ratings are required, flush/non-electrified MRB units can be UL Labeled up to 3-hours in accordance with UL standard for safety UL 10C, "Positive Pressure Fire Tests of Door Assemblies," when the project parameters meet the requirements of the UL procedures. Consult factory with your specific project requirement needs for availability.

Pre-Engineered Blast Door Selector Chart for MRB Doors								
Single Door Sizes...Double Leaf Pairs Available								
DOOR MODEL	JAMB OPENING					DOOR THICK	LATCHING POINTS	UL FIRE LABEL
	3'-0" x 7'-0"	3'-0" x 8'-0"	3'-0" x 9'-2"	4'-0" x 7'-0"	4'-0" x 8'-0"			
MRB-0*	60.0 psi	52.5 psi	45.8 psi	45.0 psi	39.4 psi	2-3/4"	1	3 hr.
MRB-1**	7.0 psi	6.1 psi	5.3 psi	5.2 psi	4.6 psi	2-3/4"	1	3 hr.
MRB-2**	20.0 psi	17.5 psi	15.3 psi	15.0 psi	13.1 psi	2-3/4"	2	3 hr.
MRB-3**	25.0 psi	21.9 psi	19.1 psi	18.7 psi	16.4 psi	2-3/4"	3	3 hr.
MRB-4**	30.0 psi	26.2 psi	22.9 psi	22.5 psi	19.7 psi	2-3/4"	4	3 hr.

* The values listed above for the MRB-0 door model are the safe static load capacities for pressures acting to seat the door from the frame with a 0% rebound and an ASTM F2927-21 Damage Category of III/U.

** The values listed above for the MRB-1, -2, -3, -4 door models are the safe static load capacities for pressures acting to unseat the door from the frame.

HIGH RANGE BLAST (HRB) SERIES

Custom High Range Blast Doors

Based on the desired structural response, pressures above 25 psi may require High Range Blast (HRB) Doors. Overly HRB Doors are custom designed on a job-specific basis and are generally made from varying thickness of monolithic steel plate. These doors are capable of withstanding high momentary explosions and other forces such as explosion-generated fragments and remain operable after the incident. The design of all HRBs are verified by calculations based on Unified Facilities Criteria (UFC) 3-340-02, "Structures to Resist the Effects of Accidental Explosions." Details and performance specifications for the HRB line can be obtained from Overly.





DYNAMIC "SHOCK TUBE" TESTING

Overly has done shock tube testing in order to determine the true dynamic performance of three of its blast- and pressure-resistant door models under blast load conditions.

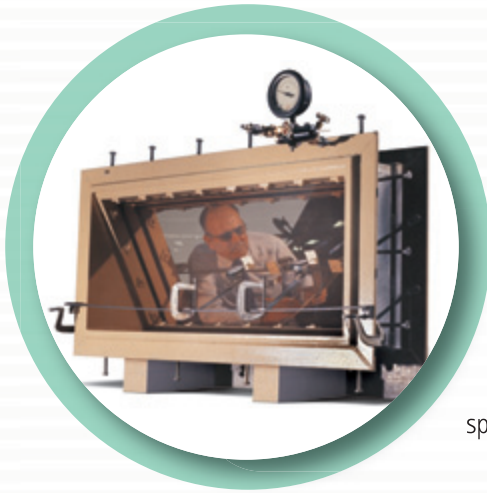
This research has allowed the true capacity of the doors at various acceptable damage levels. Through the use of the "shock tube", the door and frame assembly can be subjected to an actual blast and its true reaction can be witnessed and recorded. A shock tube is a device used to generate a blast load in a controlled environment by producing a shock wave from compressed air. The testing listed below performed was done by Baker Engineering and Risk Consultants of San Antonio, Texas or Intertek-ATI in York, PA. By incorporating this test method, lighter and more cost effective doors can be provided to resist the pressures specified.

Shock Tube – Dynamic Load Test Results

Door Size	Door Thickness	Overly Model	Vision Lite Size	Peak Reflected Pressure (PSI)	Duration	Positive Phase Impulse	ASTM F2927-12 Rating	ASTM F2927-12 Damage Level Category	ASTM F2927-12 Glazing Hazard Rating
3'x7'-2"	1-3/4"	BMD	NA	11.18	17.53	98.0	III	Non-catastrophic Failure	NA
3'x7'-2"	1-3/4"	BMD	24"x32"	7.63	13.63	52.0	II	Damaged but Openable	H1-No Hazard
4'x7'-2"	1-3/4"	BMD	5"x20"	11.98	18.03	108.0	III	Non-catastrophic Failure	H1-No Hazard
6'x7' Pair	1-3/4"	BMD	5"x20"	6.77	13.59	46.0	II	Damaged but Openable	H1-No Hazard
3'x7'	1-3/4"	SCIF	NA	5.47	15.36	42.0	III	Non-catastrophic Failure	NA
3'x7'	1-3/4"	LRB	NA	3.0	18.27	27.4	I	Undamaged	NA
3'x7'	1-3/4"	LRB	NA	4.8	70.38	168.9	II	Damaged but Openable	NA
3'x7'	1-3/4"	LRB	NA	6.0	16.97	50.9	III	Non-catastrophic Failure	NA
3'x7'	1-3/4"	LRB	NA	8.1	19.06	77.2	III	Non-catastrophic Failure	NA
3'x7'	2-3/4"	MRB-3	NA	11.4	21.46	122.3	I	Undamaged	NA
3'x7'	2-3/4"	MRB-3	NA	17.0	23.59	200.5	II	Damaged but Openable	NA
6'2"x7' Pair	2-3/4"	MRB-1	NA	6.0	12.57	37.7	I	Undamaged	NA
6'2"x7' Pair	2-3/4"	MRB-1	NA	9.4	15.68	73.7	III	Non-catastrophic Failure	NA
6'2"x7' Pair	2-3/4"	MRB-1	NA	13.0	20.00	130.0	III	Non-catastrophic Failure	NA

PRESSURE-RESISTANT DOORS

When only pressure-resistance is required, Overly can custom design and manufacture openings to meet your specific project requirements. Additionally, these units can incorporate a wide range of gasketing options capable of meeting a variety of air leakage and environmental requirements including corrosive atmospheres.

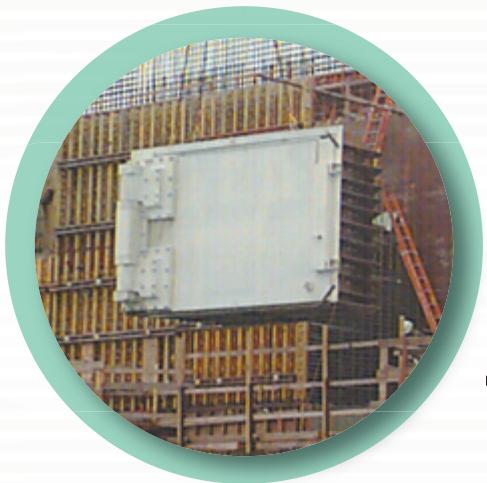


BLAST- AND PRESSURE-RESISTANT WINDOWS

To compliment its full line of door products, Overly also designs and manufactures blast- and pressure-resistant windows in a wide variety of configurations and glazing materials. In addition to the blast- and pressure-resistance, these window systems can also be designed to withstand fragmentation requirements. Consult Overly to review your specific project requirements for product availability.

AIRTIGHT/GASTIGHT DOORS

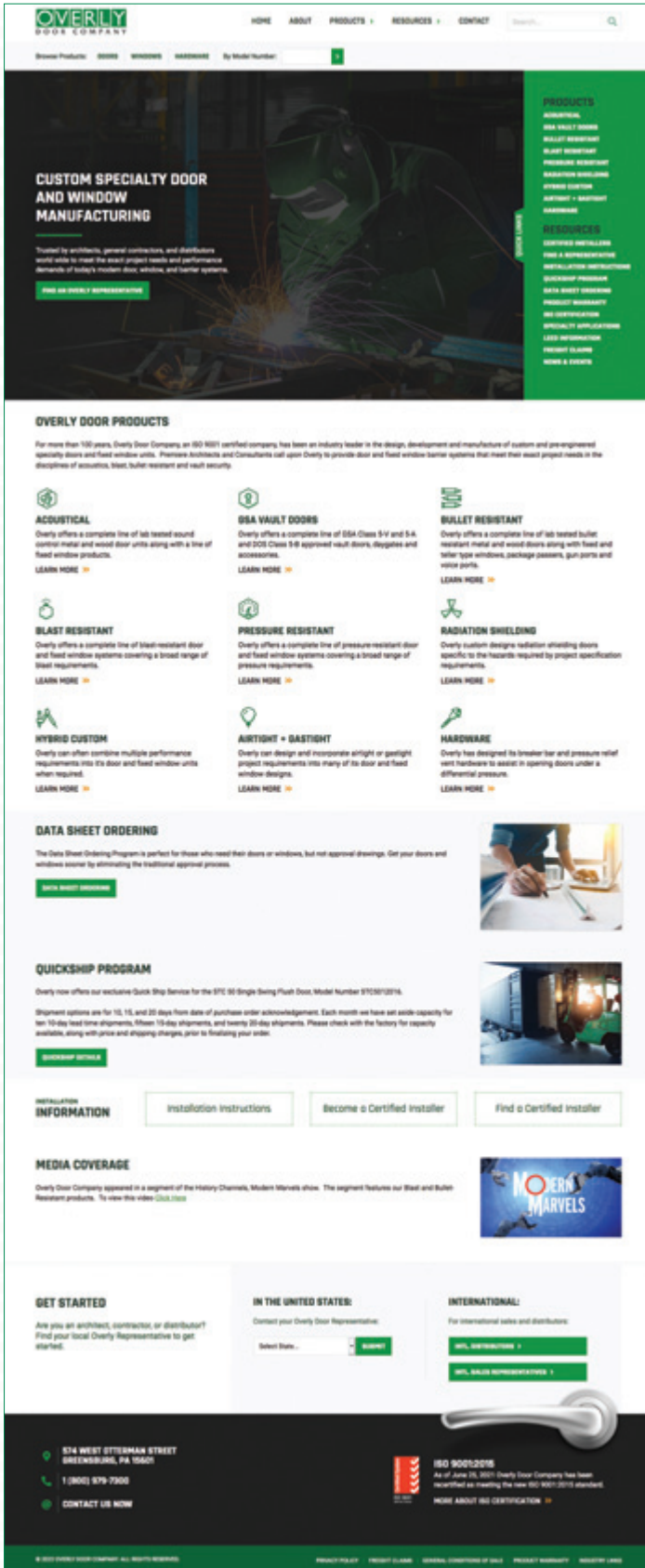
In addition to our blast and pressure resistant doors, Overly also can provide air- and gas-tight doors that are designed for applications where extremely low or zero leakage rates are a must despite relatively high differential pressures and/or exposure to extreme environmental conditions. These doors can be equipped with a variety of gasketing styles and materials specifically designed to meet project requirements. Consult Overly to review your specific requirements for product availability.



RADIATION SHIELDING DOORS

Overly custom fabricates an extraordinarily large range of shielding doors for installations such as research and test laboratories, hot cells, medical facilities, and communications centers. Depending upon the hazard, doors may be constructed of solid steel plate or supplied with cores of concrete or borated polyethylene. Additionally, power operation and special hardware, including electrical interlocks for controlled access, are available.

CHECK OUT OUR NEW, ENHANCED, MOBILE-FRIENDLY WEBSITE AT [WWW.OVERLY.COM](http://www.Overly.com)



Overly Door Company is pleased to announce the launch of the newly updated and expanded website for Overly Door. In addition to a pleasing new graphic interface, the site features easy navigation and a fully searchable database to help visitors to the site quickly find the information they need. www.Overly.com

Our new website is designed for viewing on the electronic device of your choice, so you can easily access the information you need regarding our products. If, however, you still have difficulty finding what you're looking for, or you wish to discuss the product information further, use the "Find a Representative" link to locate your local Sales Representative and obtain their contact information.



Please note: Overly will no longer provide the printed or online versions of its product binder. Now you can download the specific items and information you need for your project at www.Overly.com



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