



 **Explovent[®]**
Explosion Venting Systems

C/S EXPLOVENT® EXPLOSION VENTING SYSTEMS

If your facility is one where potentially explosive atmospheres, materials or processes exist, you know that it is critical for your building's pressure venting system to perform according to its design parameters as a means of limiting damage in the event of an explosion.

With C/S Explovent® you can field test the release parameters for the explosion vent panel at any time.

C/S Explovent® - the explosion vent that works every time.

- **TESTABLE**
- **RESETTABLE**
- **CODE COMPLIANT**

TYPES OF INDUSTRIES WHERE EXPLOSION VENTING IS USED AND REQUIRED:

- Pharmaceutical & Chemical Production
- Petroleum Industry
- Paint, Varnish Manufacturing
- Wood Products Processing and Manufacturing
- Energy/Mining Industry
- Recycling Centres
- Plastics manufacturing
- Sewage Treatment (by-product recycling)
- Automotive (air-bag, manufacturing plant lines)
- Grinding /Pulverising processes (airborne dust)
- Ink Manufacturers
- Paper Process (solvent use/storage)
- Hospitals (gas and/or flammable storage areas)
- Laboratory Test Facilities
- Brewery Facilities (grain storage/processing)
- Food Processing (airborne dust)
- University Labs (chemical lab store rooms)
- Nuclear Power Stations
- Printing Companies (solvent use/storage)

COMPANY PROFILE

Construction Specialties operates through 22 offices worldwide, and has key manufacturing locations or Sales Offices in most European countries.

The UK Head Office, based in Buckinghamshire, is the sales and manufacturing hub for servicing markets across the UK, Ireland, Nordic Countries, Latvia, Estonia and Malta, through a network of experienced and professional technical sales representatives.

Our product ranges include wall protection systems, entrance matting systems, specialist coatings for walls and floors, expansion joint covers, solar shading, cubicle curtain track, louvres and pressure relief systems.

These have been successfully installed in many of the world's most prestigious buildings, across a spectrum of business sectors including healthcare, transport, retail, leisure and commercial offices.

EXPLOSIONS: DEFLAGRATIONS vs DETONATIONS



Explovent has been designed to protect a structure of a building during deflagration.

Deflagration is an explosion that propagates at a velocity less than the speed of sound. The risk surrounding high explosive compounds is generally one of **detonation**, i.e. an explosion that propagates at a velocity greater than the speed of sound. High explosives therefore fall outside the parameters to which Explovent has been designed.

FEATURES AND BENEFITS

The only field testable and resettable explosion and pressure relief venting system.

Explovent wall panels are engineered and fully calibrated at the factory to release at very low design pressures.

The panels are lightweight in order to react quickly to pressure build up. They are also testable at any time and resettable after an event.

CODE COMPLIANCE

- Compliant with ATEX 95 (Directive 94/9/EC of the European Parliament and the Council Concerning Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres)
- Explovent® meets the guidelines of N.F.P.A. 68 'Standard on Explosion Protection by Deflagration Venting'
- Explovent® meets the guidelines of FM 1-44 and includes FM tested and approved models, which are listed on the online FM APPROVAL GUIDE www.approvalguide.com



EXPLOVENT vs OTHER EXPLOSION VENTING SOLUTIONS

EXPLOVENT WALL VENTING PANELS

The only venting system that can be tested at any time to ensure that panels are functioning as intended

Re-settable after testing and do not need to be replaced after an event occurs, leading to reduced plant downtime and customer savings

Explovent has ATEX and Factory Mutual (FM) approved models and is labelled accordingly

Lightweight and engineered in accordance with NFPA 68 guidelines

Panels arrive on site fully calibrated - ready to install

Panels are fully restrained during operation, eliminating the potential damage to property and persons in the event of an explosion

BLOW OUT WALL PANELS

Cannot be field tested to verify working conditions outside of an explosion

Can only be used once and must be replaced after opening, leading to extended plant downtime

Cannot be non-destructively tested and are often not labelled

Typically larger and heavier than NFPA guidelines recommend

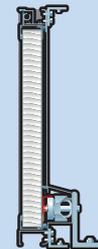
Panels employ shear bolts & fasteners and thus are highly dependent on proper installation on site

Likelihood of damage to surrounding structure/s, property and persons when panels 'blow off' the building

HOW EXPLOVENT WORKS:

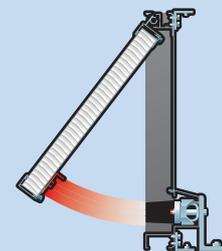
NORMAL CONDITION

Explovent's patented release mechanism is factory calibrated for release at very low pressures, yet keeps panels closed until an event occurs.



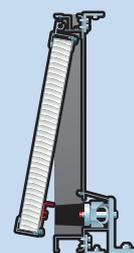
DURING AN EXPLOSION

ATEX compliant Explovent panels are lightweight to release quickly during an explosion.



AFTER AN EXPLOSION

Once the pressure of an explosion has been relieved the panels return to a near closed position allowing air to return into the room to address implosion concerns.



WALL VENTING PANELS

Explovent® Wall Panels are suitable for applications in facilities where potentially explosive atmospheres exist and require explosion venting.

The panels are designed to be the weakest part of the external structure. As the explosion vent experiences pressure rise, it opens quickly allowing the rapidly expanding heated gasses to be released to the outside, and thereby diffuses a potential explosion.

FEATURES

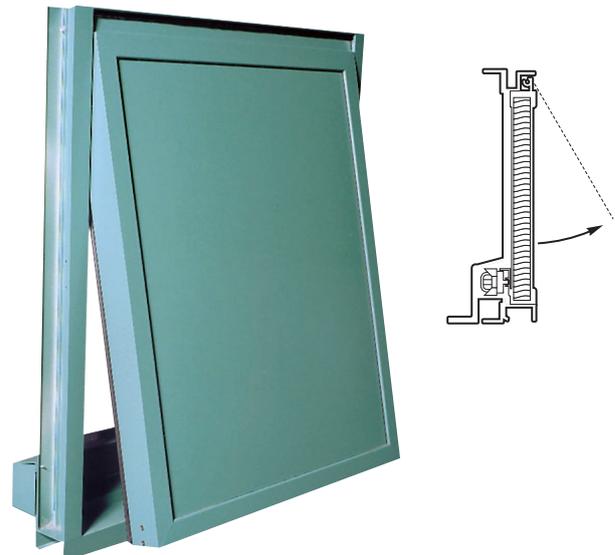
- Code compliant
- Lightweight, low inertia panel design, allows quick venting and the protection of the facility
- System can be field tested for release through non-destructive means
- Explovent, with its unique hinged design and resettable latch, can handle frequent cycling. Minor wind driven activation will not compromise the system
- Smooth bevelled surfaces on the panel reduce dust accumulation and allow for ease of cleaning, a key to eliminating secondary dust explosions
- Our rotating hold open device protects the structure from implosion forces as super heated gases begin to cool

PRODUCT OPTIONS

ERP-IC – INSULATED ALUMINIUM PANEL

Insulated and well sealed panel to provide a draft free environment. The panel comprises 50mm polystyrene core with 0.81mm aluminium sheet facing both sides, set within an aluminium frame.

- ATEX compliant and CE marked
- FM tested and approved
- Designed in accordance with NFPA 68 guidelines and all fire codes



CHOOSING THE CORRECT DESIGN OPTION



Top hinged



Bottom hinged

Top hinged panels are the most commonly specified system. If they open, they will come to a near closed position once the internal and external pressure has equalised. In this position, the canopy effect offers the facility protection from wind, rain and snow.

Bottom hinged panels will remain open at approximately 60 degrees from vertical, thus allowing easy entry for the elements. Typically they would be specified when panels are located at ground or at roof level where snow drifting may be a concern. It is much easier for a bottom-hinged panel to open downward on top of the snow than have a top hinged unit power through the snow.

DESIGN OPTIONS

- Top Hinged (ERP-T-IC)
- Bottom Hinged (ERP-B-IC)

PANEL ORIENTATION AND SIZES

- Portrait or landscape orientations are available
- Maximum panel size: 1220mm in one direction x 2440mm in the other direction

RELEASE SETTING

Panels can be calibrated to release at pressures between 0.0072 bar and 0.02 bar as standard. Consult our Technical Department should you require the release pressure to be set outside of this range.

OPTIONAL EXTRAS

Proximity Switches and Burglar Bars can be supplied with panels if required.

COLOURS AND FINISHES

Aluminium extrusions are finished with Kynar 500 fluorocarbon polymeric coating, providing superior resistance to chalking and ultraviolet deterioration. There is a choice of 15 standard and 5 premium colours. Colour cards are available on request.

ROOF VENTS

Explovent® Roof Vents are designed for buildings where the exterior wall area is insufficient (internal rooms), or where exterior walls are obstructed, thus preventing the use of wall vents.

ERP-PC - TRANSLUCENT POLYCARBONATE PANEL

Translucent panels include high strength polycarbonate inserts and reduce the need for artificial lighting. The 16mm thick, translucent polycarbonate insert is set within an aluminium frame.

- ATEX compliant and CE marked
- Designed in accordance with NFPA 68 guidelines and all fire codes



DESIGN OPTIONS

- Top Hinged (ERP-T-PC)
- Bottom Hinged (ERP-B-PC)

PANEL ORIENTATION AND SIZES

- Portrait or landscape orientations are available
- Maximum panel size: 1220mm in one direction x 2440mm in the other direction

RELEASE SETTING

Panels can be calibrated to release at pressures between 0.0072 bar and 0.02 bar as standard. Consult our Technical Department should you require the release pressure to be set outside of this range.

OPTIONAL EXTRAS

Proximity Switches and Burglar Bars can be supplied if required.

COLOURS AND FINISHES

Aluminium extrusions are finished with Kynar 500 fluorocarbon polymeric coating (15 standard and 5 premium colours available), providing superior resistance to chalking and ultraviolet deterioration.

Translucent polycarbonate sheet is supplied clear as standard. White and bronze tinted cores are available to special order and subject to longer lead times.

FEATURES

- Aluminium insulated cover can reduce energy costs and heat loss
- Compliant with ATEX and major building and fire codes
- Designed in accordance with NFPA 68 guidelines
- Includes FM approved explosion relief fasteners
- Responsiveness to pressure shocks: the XRV-IC roof vent releases within 12-18 milliseconds
- Tandem and cluster units available for large venting area requirements
- Vents are constructed with a prefabricated insulated aluminium kerb
- Restraint cables are designed to prevent the unit from becoming a dangerous projectile

XRV-IC ROOF VENTING PANELS

The explosion relief metal lid is held in place by FM approved explosion relief fasteners, which are designed to collapse under the force of an explosion, releasing the lid and allowing the pressure to vent.



PANEL SIZES

- Maximum panel size: 1220mm in one direction x 2440mm in the other direction; minimum: 1220mm x 1220mm

RELEASE SETTING

Panels can be calibrated to release at pressures between 0.005 bar and 0.02 bar as standard. Consult our Technical Department should you require the release pressure to be set outside of this range.

COLOURS AND FINISHES

Aluminium extrusions are mill finished as standard. Panels can also be finished with Kynar 500 fluorocarbon polymeric coating, available in 15 standard and 5 premium colour options. Colour cards are available on request.

TECHNICAL INFORMATION

FREQUENTLY ASKED QUESTIONS

HOW DO I SIZE MY VENTS?

VENT AREA CALCULATION

Under NFPA 68 guidelines the minimum required vent area for low-strength enclosures is determined by the following equation:

$$A_v = \frac{C(A_s)}{\sqrt{P_{red}}}$$

where:

A_v = vent area (m²)

C = venting parameter

A_s = internal surface area of enclosure (m²)

P_{red} = maximum pressure developed in a vented enclosure during a vented deflagration (bar)

Note: Vent area can also be calculated using FM 1.44 guidelines. Please contact us for details.

ENSURING ATEX 95 COMPLIANCE

In order to comply with ATEX 95 each panel must weigh less than 10kg/m² and satisfy the following equation:

$$AV^{0.753} < 0.07$$

where:

A = geometric vent area of vent (m²)

V = volume of enclosure to be protected by explosion venting (m³)



CAN EXPLOVENT BE USED TO VENT ROOMS CONTAINING HIGH EXPLOSIVES?

The risk surrounding high explosive compounds is one of detonation, i.e. an explosion that propagates at a velocity greater than the speed of sound.

Whilst Explovent may still be found to work in a detonation condition, it is likely that the panel would suffer permanent damage and may even be torn out of the wall by the speed and ferocity of the explosion. As such, we cannot formally recommend Explovent for this type of application.

WHEN I CALCULATE THE VENT AREA, IT TURNS OUT THAT I DON'T HAVE ENOUGH WALL SPACE AVAILABLE. WHAT CAN I DO?

- In a new design situation, consider re-orientating your room so that the long wall is an exterior wall, or locate the room as an extension off an exterior wall to allow for three exterior walls
- Relocate the process to an outside corner room so that two exterior walls are available
- Locate the room as an extension off an exterior wall to allow for three exterior walls
- Consider venting through the roof as well as the wall(s)
- As room surface area plays a key role in the vent area calculation, consider reducing size or height
- Similarly, within the vent area formula, if the strength of the pressure resistant structure is increased the required vent area is reduced

WHAT ABOUT SECURITY? HOW EASY ARE THE EXPLOVENT PANELS TO OPEN?

The latch of a 1220mm x 2440mm panel specified to release at 0.01bar would require a force of 145kgs to prise it open. This is fairly significant and difficult, especially when considering the smooth exterior finish of the system. Explovent panels are also usually installed at higher levels, making the application of this point load even more difficult.

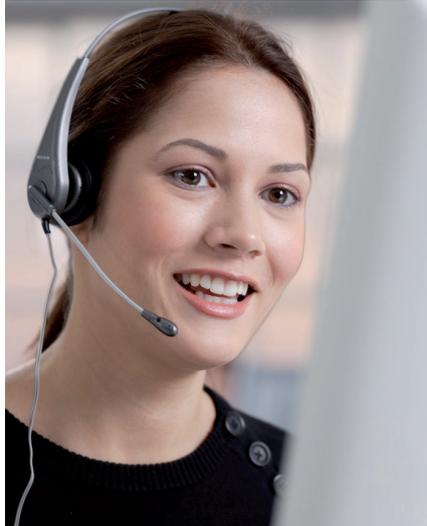
Consideration may also be given to specifying factory applied burglar bars or other electronic measures of detection.



For further information on C/S Explosion Venting watch our video on:

www.c-sgroup.co.uk

OUR SERVICE



C/S TECHNICAL SUPPORT

We look forward to assisting you with any queries which you may have and ensuring that you have made the right selection for your project. Call us on +44 (0)1296 652800 to speak with our Customer Service Team, Technical Team or Area Representatives.

MAINTENANCE SERVICE

Periodic testing and re-calibration service is available, if required. Please contact our Customer Service Team for details.

INSTALLATION SERVICE

Construction Specialties offer a complete installation package through our sister company, Conspec Contracts Ltd. They provide full site surveys, implement installation programmes and advise upon suitability of material. Conspec's experienced installation teams are CSCS, SAFEcontractor and CHAS accredited.

C/S SPECIFICATION SUPPORT

Should you require specification assistance please contact us on +44 (0)1296 652800.



Specification clauses for our products are also available on NBS Plus.

WARRANTY POLICY

Construction Specialties (UK) Ltd (the Company) warrants to its customers that all Explovent panels sold by it will be free from any defects in materials and workmanship and will meet the product criteria noted in our brochures when properly installed and maintained. If, in the sole opinion of the Company, a product covered by this warranty is defective, the Company will replace it free of charge. This warranty shall extend for a period of two years following shipment by the Company. This is in lieu of all warranties expressed or implied, and is the sole warranty extended by the Company. The liability of the Company under this warranty is limited to replacement only, and does not include any responsibility for consequential or other damage of any nature.

Disclaimer

The Company reserves the right to make design changes for the purpose of product improvement, or to withdraw any design without notice.

PROJECT REFERENCE LIST

- | | |
|-----------------------------------|---|
| BD Diagnostics – Plymouth | Constant Air Systems Ltd – High Wycombe |
| United Biscuits (UK) Ltd – London | Convatec – Deeside |
| St Fergus Laboratory – Peterhead | BMW – Oxford |
| Sony DADC (UK) Ltd – Southwater | Doosan Babcock Ltd - Renfrew |
| PPG Industries – Wigan | Coca-Cola Enterprises Ltd – East Kilbride |
| Middlesex University – London | RAF Brize Norton – Carterton |
| GlaxoSmithKline – Montrose | Reiter UK Ltd – Wolverhampton |



C/S PRODUCT RANGE



C/S Acrovyn® Wall, Door and Corner Protection



C/S Wallglaze® Specialist Coatings



C/S Pedisystems® Entrance Flooring Systems



C/S Allway® Expansion Joint Covers

C/S Supertrak® Plus Cubicle Curtain Track

C/S Solarmotion® and Airfoil® Solar Shading

C/S Explovent® Explosion Venting Systems

C/S Louvres



for more information visit our website www.c-sgroup.co.uk



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ITS05ATEX15081



BS EN ISO 9001:2008
Certificate No. FM21206



Construction Specialties (UK) Limited

1010 Westcott Venture Park, Westcott

Aylesbury, Buckinghamshire HP18 0XB

Tel: +44 (0)1296 652800 Fax: +44 (0)1296 652888

Email: info@c-sgroup.co.uk



www.c-sgroup.co.uk



<http://info.c-sgroup.co.uk>



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C/S WORLDWIDE OPERATIONS:

- UK (also servicing:
 - Italy
 - Singapore
- Republic of Ireland,
 - Spain
 - India
- Malta, Latvia, Estonia and Nordic Countries)
 - Poland
 - Malaysia
- USA
 - China
- France
 - Thailand
- Germany
 - U.A.E.
- Canada
 - Australia