Recommended for external wall cladding, fire resisting external walls (30 and 60 minutes), in-fill panels, weather-boarding, fascias, barge boards, soffit linings, roof tile undercloaks.

DURASTEEL®

fire resistant systems

Intumex®

ASIA PACIFIC
DURASTEEL® - Features and Advantages

- Strong
- Impact resistant
- Moisture resistant
- Maintenance free
- Requires no foundation
- Space saving
- Engineered for fast track construction
- Flexible installation
- Offers up to 360 minutes fire protection
- Lightweight
- Utilises only dry trade installation methods
- Easily relocatable and suitable for retro-installation
- Proven 40 years design life
- Tested to Hose Stream ASTM E119 to 5 bar pressure
- Tested to 4000J hard body impact after fire test, according to DIN 4102
- Ducting available in 1, 2, 3 or 4-sided configurations with internal or external flanges, with up to 240 minutes fire resistance
- Non-combustibility with zero spread of flame
- Non toxic
- Free of man-made mineral fibres
- Modular or kit form construction
- Loadbearing or non loadbearing construction
- Resistant to onerous fire curves, e.g. hydrocarbon, jet fire etc

FIRE RATING PERFORMANCE

<table>
<thead>
<tr>
<th>TYPE</th>
<th>BUILDING &amp; CONSTRUCTION</th>
<th>OFFSHORE CONSTRUCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single skin Construction</td>
<td>60 minutes, 120 minutes or 240 minutes fire integrity</td>
<td>A0, H0</td>
</tr>
<tr>
<td>Double skin Construction</td>
<td>60 minutes, 90 minutes, 120 minutes, 180 minutes, 240 minutes or 360 minutes fire integrity</td>
<td>A60, A120 – Rating for standard fire tests. H60 and H120 – Rating for hydrocarbon fire tests.</td>
</tr>
</tbody>
</table>

Specials: Intumex DURASTEEL® has been designed and installed in many purpose built DURASTEEL® fire walls that provide performance characteristics beyond fire resistance. All structures should be independently assessed to ensure the required performance is achieved.

TYPICAL APPLICATIONS

<table>
<thead>
<tr>
<th>SPECIFIC APPLICATION</th>
<th>PRIMARY PERFORMANCE REQUIREMENT</th>
<th>FIRE PERFORMANCE (minutes)</th>
<th>ACOUSTIC PERFORMANCE (dB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public and service corridors</td>
<td>120 (integrity)</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Warehousing</td>
<td>240 (integrity)</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>Industrial buildings</td>
<td>240/60</td>
<td>42</td>
<td></td>
</tr>
<tr>
<td>Mass transit systems</td>
<td>240/120</td>
<td>47</td>
<td></td>
</tr>
<tr>
<td>Manufacturing facilities</td>
<td>240/240</td>
<td>52</td>
<td></td>
</tr>
<tr>
<td>Other areas subject to abnormally rough use</td>
<td>Impact resistance</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Offshore facilities
- Petrochemical industry
- Gas processing plant
- Other areas subject to projectile or explosion risk
- Blast resistance
- 120 minutes hydrocarbon fire
- 60 minutes jetfire
- 240 minutes GB/T9978

NOTE: Fire performance figures denote integrity and insulation performance respectively. Acoustic performance figures are established by direct testing or by assessment.

For specification and installation details, please consult an official local Durasteel® distributor or the nearest Intumex Asia Pacific office.
<table>
<thead>
<tr>
<th>THICKNESS TYPE</th>
<th>DURASTEEL® 6.0mm</th>
<th>DURASTEEL® 9.5mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIZES</td>
<td>2500mm x 1200mm / 2400mm x 1200mm</td>
<td>2500mm x 1200mm / 2400mm x 1200mm</td>
</tr>
<tr>
<td>NOMINAL BOARD WEIGHTS AT AMBIENT CONDITIONS</td>
<td>17.5 kg/m²</td>
<td>22.5 kg/m²</td>
</tr>
<tr>
<td>THICKNESS TOLERANCE</td>
<td>+1.5 to -0.0mm</td>
<td>+1.5 to -1.0mm</td>
</tr>
<tr>
<td>LENGTH TOLERANCE</td>
<td>+2.0 to -2.0mm</td>
<td>+2.0 to -2.0mm</td>
</tr>
<tr>
<td>WIDTH TOLERANCE</td>
<td>+2.0 to -2.0mm</td>
<td>+2.0 to -2.0mm</td>
</tr>
<tr>
<td>FLEXURAL STRENGTH</td>
<td>&gt; 220 MPa (UDL)</td>
<td>&gt; 185 MPa (UDL)</td>
</tr>
<tr>
<td>FLEXURAL MODULUS</td>
<td>96 GPa (UDL)</td>
<td>72 GPa (UDL)</td>
</tr>
<tr>
<td>NATURAL MOISTURE CONTENT BY WEIGHT</td>
<td>7.8%</td>
<td>8.7%</td>
</tr>
<tr>
<td>MOISTURE MOVEMENT</td>
<td>≤ 0.01%</td>
<td>≤ 0.01%</td>
</tr>
<tr>
<td>FIRE RESISTANCE AFTER 24 HRS WATER IMMERSION (S476: Part 20: 1987)</td>
<td>Satisfactory</td>
<td></td>
</tr>
<tr>
<td>SOUND REDUCTION INDEX</td>
<td>28.0 dB</td>
<td>29.7 dB</td>
</tr>
<tr>
<td>NON-COMBUSTIBLE (BS476: Part 4: 1970)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>BUILDING REGULATIONS CLASSIFICATION</td>
<td>Class 0</td>
<td>Class 0</td>
</tr>
<tr>
<td>SPREAD OF FLAME (BS476: Part 7: 1987)</td>
<td>Class 1</td>
<td>Class 1</td>
</tr>
<tr>
<td>AIRFLOW</td>
<td>Equivalent to Sheet Metal Ducting</td>
<td></td>
</tr>
<tr>
<td>SHEET FINISHES</td>
<td>Galvanised mild steel or stainless steel</td>
<td></td>
</tr>
<tr>
<td>DOORS FINISHED</td>
<td>Galvanised steel or primed steelwork (special finished available upon request)</td>
<td></td>
</tr>
<tr>
<td>ASBESTOS CONTENT</td>
<td>NO ASBESTOS</td>
<td>NO ASBESTOS</td>
</tr>
</tbody>
</table>

Properties and characteristics provided in the above statistics are mean values given for information and guidance only. If certain properties are critical for particular application, it is advisable to consult an official local Durasteel® distributor or the nearest Intumex Asia Pacific office.
Nuclear Power Station

The industry’s concern for environmental protection is matched only by increased demand for clean energy. Constant innovation and technological development in both conventional and new approaches to power generation mean that only a system such as DURASTEEL® has the strength and versatility to provide innovative and superior solutions.

APPLICATIONS

A. Penetration seals around steel pipes requiring flexible seals
B. Horizontal barrier in service shafts
C. Fire wall with fire resisting doors: Up to 240 minutes
D. Penetration seals around cables into control rooms
E. Cable tunnel cross barrier showing the fire wall, fire door and various seals
F. Smoke extract ducting system
G. Radiation seals to steam pipes
H. Seismic gap sealing between buildings
I. Cable tunnel splitter wall with cross barriers

Other DURASTEEL® applications may also be suitable for application in nuclear power stations: e.g. ceilings, trapdoors, sliding doors, cable trunking, transformer bay walls, personnel screens, staircase/lift enclosures and switchgear protection.
In today’s modern world, reliable electrical power is taken for granted in most countries. In most industrial settings, however, the risk of fire is ever present. Fortunately, tough systems like DURASTEEL® significantly mitigate this risk by ensuring compartmentation and continual functionality of energy generation. In the unfortunate and unwanted event of fire, power supplies are therefore almost guaranteed.

APPLICATIONS

A. Smoke extract ducting system
B. Fire doors
C. Fire wall
D. Penetration seals under control room
E. Cross barrier in cable tunnel
F. Modular cable corridor including cross barriers
G. Cable trunking system including splitters and access panels

Other DURASTEEL® applications that may also be suitable in fossil fuel FGD power stations include ceilings, trapdoors, sliding door, transformer bay walls, staircase/lift enclosures and switchgear protection.
Manufacturing & Warehouse Complexes

The need to optimise protection of personnel, plant, stores and property in military and industrial installations is vital. Tried and tested DURASTEEL® is proven to contain fire within compartments of production areas and storage facilities. In this way, the evacuation of personnel, as well as minimum disruption of processes or destruction of valuable products can be more or less assured.

DURASTEEL® is suitable for other applications in manufacturing and warehouse complexes. For example, riser shafts (DURADUCT®).
**Offshore Oil & Gas Production Platforms**

Lightweight, robust durability and strength -- combined with high levels of resistance to hydrocarbon fire, blast, impact, jet fire, water, corrosion and other natural forces -- make DURASTEEL® systems ideal for these potentially hazardous environments.

**APPLICATIONS**

A. Blast and fire protection to TSR and control rooms  
B. Penetration seals  
C. Flare tip heat shields  
D. Fire screens  
E. Egg boxes  
F. Fire walls  
G. Fire doors  
H. Blast and fire protection to pumps  
I. Helideck protection  
J. Galley area protection  
K. Internal accommodation doors  
L. Stairwell enclosures  
M. Exhaust ventilation ducting  
N. Blast and fire protection to emergency power supply generators  
O. Blast and fire protection to embarkation points/escape generator  
P. Blast and fire protection to fire water pump and ring main  
Q. Blast and fire protection to Emergency Shutdown Valve (ESV) system including actuator and cabling

Other DURASTEEL® applications may be suitable in offshore oil/gas production platforms: e.g. fire and blast control cables, PA systems and cabling.
Petrolchemical Plants

Intumex Asia Pacific use their considerable, specialist technical and engineering skills to create and install fire and blast protection systems for some of the world’s most vulnerable industries. For example, DURASTEEL® proactive fire and fire blast resistant systems fortify and protect hazardous, high risk areas in the petrochem industry, minimising the possibility of major disaster.

APPLICATIONS

A. Jetty and quayside protection
B. Valve actuator enclosures
C. Equipment separation
D. Fire screen/enclosure protecting personnel from hazardous areas
E. Stairwell enclosures
F. Protection of fuel pipes from fire underneath (e.g. vehicle fire)
G. Escape corridors
H. Transformer enclosures
I. Fire and blast resistant walls
DURASTEEL® fire and blast protection systems have successfully protected priceless human lives and valuable property for the past five decades. A particularly good indicator of this trusted status is the recent and continuing trend to install DURASTEEL® in electrical substations and power transformer plants. DURASTEEL® prevents the spread of fire and minimises the catastrophic damage caused by the possible explosion of vital equipment essential to most power grid networks.

Many large commercial and industrial buildings, shopping malls and housing estates have little choice but to install electrical substation and distribution transformers in densely populated built environments. The lubricants and fuels contained in or near transformers and power substations is in fact in close proximity to sources of high voltage electricity, increasing the risk of fire and explosion. Indeed, most insurance companies and corporate risk managers consider substations and electrical transformer facilities among the potentially most dangerous in any built environment.

On the other hand, power and distribution transformers have a service life of 25-50 years. In fact, many power transformers have already been in operation for more than five decades. Their increasing age exacerbates the risk of fire and explosion in the coming years.

In conventional design and installation systems, it is not uncommon for a number of adjacent transformers to be linked together into a single operational unit. In the event of explosion or fire, this configuration can easily lead to a disastrous “Domino Effect”, often resulting in a full range of transmission failure.

If DURASTEEL® is installed as fire and blast walls between transformers in a substation, for example, they isolate and insulate the individual transformers and in the event of explosion and fire dramatically reduce the risk to human life and expensive property in the immediate vicinity.

DURASTEEL® is recognised worldwide for its robust durability under the most onerous conditions. It defines toughness and resilience. DURASTEEL® is a strong matrix of a composite panel of fibre reinforced cement sandwiched between two layers of exceptionally hard, punched steel. These sheets of perforated patterned steel are mechanically bonded with considerable force to the fibre cement inner core. The end result is a protective, architectural board second to none in terms of survivability.

Despite its well-earned reputation for toughness, DURASTEEL® has a low cross-sectional profile and it is relatively light weight. This means it can be installed in locations were brickwork, cast-in place concrete and other protective, structural elements cannot go. This in turn creates time and cost savings, particularly where foundation, loadbearing or renovation job specifications mean little or no interference to existing structures is possible.

DURASTEEL® blast and fire protective walls are easily and quickly installed, removed and if necessary re-installed with few interruptions to routine substation and transformer operations.

DURASTEEL® explosion and fire resistant walls are silently and inconspicuously hard at work everywhere, quietly but assuredly increasing the safety quotient of today’s modern built environment. Landmark projects that confidently employ DURASTEEL® systems include the Jubilee Line extension of the London Underground, the British Museum, Heathrow Airport and the new Westfield London retail complex, and many others.
## DURASTEEL® - Comparison Between A Concrete Wall and A Durasteel® Fireblast™ Wall

<table>
<thead>
<tr>
<th>Comparison</th>
<th>DURASTEEL® FIREBLAST™ WALL</th>
<th>CONCRETE WALL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Structure</strong></td>
<td>9.5mm plate screw 120mm x 60mm x 3mm steel channel joist, mineralwool</td>
<td>C30 reinforce concrete</td>
</tr>
<tr>
<td><strong>Fire Resistance</strong></td>
<td>240 minutes</td>
<td>240 minutes</td>
</tr>
<tr>
<td><strong>Test Standard</strong></td>
<td>May not be necessary for other countries</td>
<td>Fire design specification</td>
</tr>
<tr>
<td><strong>Thinness</strong></td>
<td>139mm</td>
<td>240mm</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>74 kg/m²</td>
<td>576 kg/m²</td>
</tr>
<tr>
<td><strong>Moistureproof</strong></td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Anti-Shock</strong></td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Blast Resistance</strong></td>
<td>Pass 1,000Kpa Explosion test</td>
<td>No information</td>
</tr>
<tr>
<td><strong>Resists Hydrocarbon Flame</strong></td>
<td>Yes</td>
<td>No information</td>
</tr>
<tr>
<td><strong>Resists Fuel Jet Flame</strong></td>
<td>Yes</td>
<td>No information</td>
</tr>
<tr>
<td><strong>Foundation</strong></td>
<td>No</td>
<td>Need heavy Foundation and structure support</td>
</tr>
<tr>
<td><strong>Electromechanical Equipment</strong></td>
<td>Just a saw and fire protection sealant are required</td>
<td>With heavy digging machinery material and special blocking materials.</td>
</tr>
<tr>
<td><strong>Modification</strong></td>
<td>Very easy</td>
<td>Need to demolish and reconstruct</td>
</tr>
<tr>
<td><strong>Recycling</strong></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td><strong>Construction</strong></td>
<td>Can be installed simultaneously as other trades and work</td>
<td>Other trades and work cannot installed or done simultaneously, and site condition is more messy due to wet construction works.</td>
</tr>
<tr>
<td><strong>Speed of Construction</strong></td>
<td>Four workers need just one day to install 150m²</td>
<td>Many people required to complete just 200m² in one week</td>
</tr>
</tbody>
</table>

**Notes:** Size and specification of structural steel changes with installed height. Please consult Intumex Asia Pacific for further information.
FIREBLAST™ WALL
Designed specifically to protect property, equipment and personnel from the effects of explosion, fire and impact. Also very effective against smoke and fumes in high risk environments such as offshore platforms, petrochemical installations, chemical plants, military establishments, civil defence facilities and hazardous

INSULATED FIRE WALL
Tested to the criteria of BS476: Part 22 Standard, 240 minutes fire resistance.

1. DURASTEEL® of 9.5mm thick
2. Steel channel of 120mm x 60mm x 3mm at 1200mm centres
3. Top and bottom channel of 120mm x 60mm x 3mm
4. Horizontal steel channel 120mm x 60mm x 3mm at 1200mm centres
5. 120mm x 140kg/m³ mineral wool
6. Self drilling, self tapping screws at 200mm centres

LOW RADIATION FIRE WALL
Based on BS476: Part 22 Standard, 240 minutes fire resistance.

1. DURASTEEL® of 6mm or 9.5mm thick
2. Steel channel of 60mm x 80mm x 60mm x 3mm at 1200mm centres
3. Horizontal steel channel of 60mm x 80mm x 60mm x 3mm at 2400mm centres
4. Self drilling, self tapping screws at 200mm centres

NOTES: For profiles greater than 6mm, please consult Intumex Asia Pacific.

NOTES: FIREBLAST™ design is based on the different performance requirements of individual projects. For more details, please contact Intumex Asia Pacific.
DURASTEEL® VALVE ACTUATOR BOX

Intumex offers different DURASTEEL® methods for the protection of valves. In certain circumstances, it is sufficient to protect valves with a fire resistant shield. In other cases, more substantial protection may be required. For example, a valve can be fully enclosed in a DURASTEEL® Valve Actuator Box designed to ensure valve temperature does not rise by more than 30°C in 15 minutes — or 30°C in 30 minutes — depending on the type of DURASTEEL® protection applied.

1. DURASTEEL®
2. Steel angle
3. Hinges
4. Handle

NOTES: For details of these applications, please consult Intumex Asia Pacific.
SELF-SUPPORTING DUCTS

Based on BS476: Part 24 Standard, fire resistance 240 minutes.

2000P.a. – 6mm thick
2500P.a. – 9.5mm thick

According to work pressure leakproof test

1. DURASTEEL® of 9.5mm thick
2. Steel angle of 40mm x 40mm x 3mm
3. Steel angle of 50mm x 50mm x 1mm
4. Tek screw at nominal 200mm centres
5. M8 nuts and bolts at nominal 200mm centres
6. Duct hanger
7. Galvanised liner of 1mm thick; For ultra high pressure pipeline

NOTES: Above outlines air pipe specifications up to 1250m x1000mm. For duct design width specifications high than 10m, please contact Intumex Asia Pacific.

POST CLADDING STEEducts

Based on BS476: Part 24 Standard, fire resistance 240 minutes.

1. DURASTEEL® of 6mm thick
2. Mild steel ventilation duct
3. Steel channel of 60mm x 50mm x 2mm
4. Steel angle of 40mm x 40mm x 2mm
5. M5.5 tek screw, 200mm centres
6. Duct hanger

NOTES: For complete information about ducting and pipeline design, please contact Intumex Asia Pacific.
**SUSPENDED CEILING MEMBRANE**

BS476: Part 21 Standard, fire resistance 80 minutes.

1. DURASTEEL® of 6mm thick
2. Steel angle of 50mm x 50mm x 4mm, put in grid of 1200mm x 2400mm
3. Hanger bracket 60mm long, 50mm x 50mm x 4mm steel angle
4. ø12mm steel hanger rod
5. 2 layers of mineral wool, 50mm x 100kg/m³ and 50mm x 160kg/m³
6. Anchor bolts

**SELF-SUPPORTING CEILING MEMBRANE**

BS476: Part 21 Standard, 240 minutes fire resistance, bearing load 10Kpa.

1. DURASTEEL® of 9.5mm thick
2. Steel channel of 60mm x 80mm x 60mm x 3mm at 600mm centres
3. 1 layer of DURASTEEL® cover strips 9.5mm thick
4. Steel beam
5. 120mm x 140kg/m³ of mineral wool.
6. Anchor bolts
7. Self drilling, self tapping screws at 200mm centres

* Steel structure fire resistance scenario: fire resistance of steel structure should be the same or higher than the fire resistance of load floor. Complete information about the recommended materials and systems, please contact Intumex Asia Pacific.
DURASTEEL® - Durasteel® Doors

DURABLAST DBD FIRE DOORS

These can be used as a DURASTEEL® Fire System widget. They can be purchased in individual parts and their advantages are as follows:

- Range covers application in all types of construction.
- Non-standard design manufactured to special order.
- Complete range of finishes to suit every application.
- Extensive range of door furniture.
- Fire rating of up to 240 minutes.
- Supported by Intumex Asia Pacific’s CAD facility providing cost-effective bespoke solutions.
- Maintenance free.

NOTES: For further information about explosive pressure performance limits and other design specifications, please contact Intumex Asia Pacific.

1. DURASTEEL® of 9.5mm thick
2. Door handle
3. Door hinges

DURAFIRE DD 240 TRAP

Durafire DD 240 Trap can be supplied with standard ironmongery but the flexibility in design and manufacture allows for a range of options. Gas struts can be provided where controlled closure is required. Doors can also be designed to withstand light traffic loads and with a flush face and pivot hinge to avoid trip hazards.

4. DURASTEEL® Z2 layer x 9.5mm thick
5. Steel channel 55mm x 28mm x 3mm
6. Steel angle 55mm x 28mm x 3mm

NOTES: Basic structure listed above is only for reference. To learn more about door leaf design and for complete information, please contact Intumex Asia Pacific.
DURASTEEL® fibre cement and steel composite board is well known for its high impact performance. It is regularly employed in noteworthy projects throughout Europe and around the Asia Pacific region, such as the following:

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>PROJECT Description</th>
<th>APPLICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>Hydroelectric Power Station, Guangzhou</td>
<td>Fire blast wall</td>
</tr>
<tr>
<td>China</td>
<td>GUCCI Outlet, Shaanxi North Road, Shanghai</td>
<td>Fire blast wall</td>
</tr>
<tr>
<td>China</td>
<td>Western Corridor United inspection building, Shenzhen</td>
<td>Fire wall, services enclosure, fire door</td>
</tr>
<tr>
<td>China</td>
<td>Hercules Chemicals (Nanjing) Co. Ltd., Nanjing</td>
<td>Fire blast wall</td>
</tr>
<tr>
<td>China</td>
<td>Louis Vuitton boutique outlets in Beijing, Shanghai, Urumqi, Wuhan</td>
<td>Fire blast wall and doors</td>
</tr>
<tr>
<td>China</td>
<td>Shanghai Subway</td>
<td>Ventilation duct</td>
</tr>
<tr>
<td>China</td>
<td>Jingmao Building, Shanghai</td>
<td>Services enclosure, ceiling</td>
</tr>
<tr>
<td>China</td>
<td>Shanghai Stock Exchange building</td>
<td>Smoke extraction duct</td>
</tr>
<tr>
<td>China</td>
<td>Shanghai Le Plaza</td>
<td>Smoke extraction &amp; ventilation duct</td>
</tr>
<tr>
<td>China</td>
<td>Shanghai Grand Gateway</td>
<td>Services enclosure</td>
</tr>
<tr>
<td>China</td>
<td>Daya Bay Nuclear Power Plant</td>
<td>Fire &amp; blast resistant door</td>
</tr>
<tr>
<td>China</td>
<td>South Pacific Electronics (Shenzhen) Limited</td>
<td>Ventilation duct</td>
</tr>
<tr>
<td>China</td>
<td>Huangpu &amp; Huadu Power Plant, Guangzhou</td>
<td>Fire Wall</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>Ocean Park extension</td>
<td>Smoke extraction duct, services enclosure</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>K.C.R.C. railway extension</td>
<td>Smoke extraction &amp; ventilation duct, services enclosure, ceiling, fire door</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>Wanchai District Police Headquarters (phase 3)</td>
<td>LT duct for smoke extraction, plenum ceiling, services enclosure, town gas pipe enclosure, bulkhead for fire shutters, smoke barrier</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>M.T.R.C. stations improvement</td>
<td>Smoke extraction &amp; ventilation duct, services enclosure, ceiling, fire door</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>School improvement programme (phase 1, 2, 3 &amp; 4)</td>
<td>Services enclosure, fire barrier, ventilation ducts</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>Substations for HK Electric Company</td>
<td>Services enclosure, ventilation duct</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>Government Housing Development</td>
<td>Ventilation ducts, services enclosure</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>K.C.R.C. WestRail stations and tunnels</td>
<td>Smoke extraction duct, access doors, floor hatches, plenum ceiling, services enclosure, demountable fire barrier</td>
</tr>
<tr>
<td>Macao</td>
<td>The Venetian Macao Resort Hotel</td>
<td>Fire blast wall, services enclosure</td>
</tr>
<tr>
<td>Macao</td>
<td>City of Dreams</td>
<td>Load bearing ceiling</td>
</tr>
<tr>
<td>Macao</td>
<td>MGM Grand Macao</td>
<td>Ceiling, services enclosure</td>
</tr>
<tr>
<td>Macao</td>
<td>Sands Casino Hotel</td>
<td>Ceiling &amp; partitions</td>
</tr>
<tr>
<td>Macao</td>
<td>Bank of China Building</td>
<td>Smoke extraction duct</td>
</tr>
<tr>
<td>Singapore</td>
<td>Marina Bay Sands Integrated Resort</td>
<td>Floor, partition and plenum</td>
</tr>
<tr>
<td>Singapore</td>
<td>Labrador MRT Station</td>
<td>Partition</td>
</tr>
<tr>
<td>Singapore</td>
<td>Changi Airport Terminal 2 A&amp;A</td>
<td>Ceiling</td>
</tr>
<tr>
<td>Singapore</td>
<td>Raffles Place and Outram Park MRT</td>
<td>Ceiling</td>
</tr>
<tr>
<td>Singapore</td>
<td>Potong Pasir MRT Station</td>
<td>Partition, ceiling and ducts</td>
</tr>
<tr>
<td>Singapore</td>
<td>Kovan MRT Station</td>
<td>Ceiling and ducts</td>
</tr>
<tr>
<td>Singapore</td>
<td>Punggol MRT Station</td>
<td>Duct and partitions</td>
</tr>
<tr>
<td>Singapore</td>
<td>Harbourfront MRT Station</td>
<td>Duct, floor hatch and partitions</td>
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<tr>
<td>Singapore</td>
<td>Buangkok, Sengkang, Little India MRT Station</td>
<td>Duct</td>
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<tr>
<td>Taiwan</td>
<td>TSMC Seven Plant</td>
<td>Fire blast door</td>
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<tr>
<td>Taiwan</td>
<td>Hsinchu Dupont Chemical Limited</td>
<td>Fire blast wall &amp; door</td>
</tr>
<tr>
<td>The North Sea</td>
<td>Sea platforms for Shell, Esso and United Kingdom Oil</td>
<td>Fire blast walls &amp; Fire blast doors</td>
</tr>
<tr>
<td>Malaysia</td>
<td>KLCC Mall</td>
<td>Smoke extraction and ventilation duct, fire walls</td>
</tr>
<tr>
<td>Australia</td>
<td>Melbourne airport</td>
<td>Fire walls</td>
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<tr>
<td>Australia</td>
<td>(Kiwimana) power station</td>
<td>Fire walls, fire doors</td>
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<tr>
<td>Australia</td>
<td>Sydney Harbour Tunnel</td>
<td>Tunneling expansion joint fire protection</td>
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<tr>
<td>Australia</td>
<td>Westfield Central Sydney</td>
<td>Walls, penetration seals</td>
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<tr>
<td>Australia</td>
<td>City North Substation</td>
<td>Walls, penetration seals</td>
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QUALITY ASSURANCE
Intumex Asia Pacific is committed to highest standards of quality. DURASTEEL® board manufacturing and production systems operate under a rigorous quality management system, independently certified compliant with BS EN ISO 9000. This provides specifiers, contractors and end users with independent assurance of continuous and sustained quality control in production.

HEALTH & SAFETY
No special precautions are necessary in handling or working boards. When using power saws or sanders in a confined space, dust extraction equipment is recommended to control dust levels. DURASTEEL® will support its own weight and also can be used in load bearing situations; please consult Intumex Asia Pacific Technical Services Department for advice. Installers must ensure that they work from adequate and safe platforms where necessary. Health and Safety data sheets are available.

HANDLING & STORAGE
Carry boards on edge, and do not drop on their corners or on to trestles. All products should be stored under cover on a flat base, clear of the ground. If stored in the open, the stack should be fully protected from the weather. If stored on racks or dunnage, boards should be fully supported across their width at not more than 1m centres.

MAINTENANCE & CLEANING
Boards do not normally require any maintenance in use. DURASTEEL® boards will not crack or deteriorate with normal usage, as it is the most rugged board product available within the passive fire protection market. DURASTEEL® boards can be degreased with a mild solvent should painting or plastering be required (see DECORATING).

GENERAL
Care should be taken to prevent injury from sharp edges and corners. Do not leave boards lying around work sites, on scaffolding or in high traffic areas, where risk of damage or injury is increased. Ensure any misuse that might cause personal injury or damage to boards is minimised. In event of injury, obtain proper treatment immediately. Ensure materials and packaging used for distribution do not include substances considered hazardous to health.

WORKING
CUTTING & SAWING
Use a jig saw with a coarse blade. Diamond dusted blades are available in some countries and will assist in prolonging the life of the blades. In general, cutting with a jigsaw is only suitable for small cuts, e.g. scribing around services etc. For long cuts, a jigsaw blade can be used, but has limitations on its effectiveness, short life span of the jigsaw blades and straightness of cut also become issues. For many long cuts, use a grinder or a guillotine if available. Note that when cutting boards with a grinder, the edges are extremely sharp and thus extra care should be taken to avoid cutting of hands etc. See below for details on dressing of edges. Always wear suitable eye and hand protection. Ideally, masks should be worn to prevent inhalation of dust.

DRILLING
Use a hand drill or high speed power drill (not the percussion type); bits should have HSS tips and should be suitable for drilling steel and/or fibre cement. Always wear suitable eye and hand protection. Ideally, masks should be worn to prevent inhalation of dust.

EDGE TREATMENT
A file or grinder can be used to remove sharp or burred edges due to cutting of the sheets. Care should be taken not to remove large areas of the galvanised coating as this could possibly lead to corrosion of the steel. When cut, edges do not need to be coated in order to provide additional protection as galvanic reaction will prevent corrosion of the edges. However, this does depend on the location of the system and its exposure to inclement conditions. If in doubt, please consult Intumex Asia Pacific. Always wear suitable eye and hand protection. Ideally, masks should be worn to prevent inhalation of dust.

DECORATING
PLASTERING
If a skim finish is desired, it will be necessary to apply a grid of expanded metal lathing to provide a key for plaster or sand and cement render. Please consult Intumex Asia Pacific for specific recommendations for any particular project.

PAINTING & DECORATING
Any conventional paint can be used. Alkali resistant primers are not necessary. Water based paints (with a diluted first coat) or oil based paints can be applied to all products using proprietary primer / top coat systems as recommended by paint manufacturers. DURASTEEL® should be degreased with a solvent based cleaning agent. All paints should be compatible with application to:

1) the galvanised steel facing, and
2) the core material with its high alkali content.
Where
Fire
Stops

Intumex Asia Pacific

MALAYSIA
Unit 19-02-01, Level 2
PNB Damansara
No.19 Lorong Dungun
Damansara Heights,
50490 Kuala Lumpur.
Tel: +60 (3) 2095 5111
Fax: +60 (3) 2095 6111

AUSTRALIA
1 Scotland Road
Mile End South, SA 5031.
Tel: +61 (8) 8352 6759.
Fax: +61 (8) 8352 1014

HONG KONG
Room 1011, C.C. Wu Building
302-308 Hennessy Road
Wanchai.
Tel: +852 2895 0265
Fax: +852 2576 0216

SINGAPORE
10 Science Park Road,
#03-14 The Alpha
Singapore Science Park II
Singapore 117684.
Tel: +65 6292 7888
Fax: +65 6294 2576

www.intumex-ap.com

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You local supplier