

A DURABLE FIBRE CEMENT & STEEL

COMPOSITE BUILDING MATERIAL

DURASTEEL®

CEILINGS & PLENUMS

Intumex®
ASIA PACIFIC

Durasteel

Durasteel® is a composite panel of fibre reinforced cement mechanically bonded to punched steel sheets on both surfaces. It is classified as non-combustible in accordance with many national and international standards and is highly resistant to moisture even when saturated. It will not absorb combustible fluids and its fire resistant qualities are exceptional.

Durasteel® is highly impact and blast resistant, which enables it to withstand prolonged exposure to fire of the cellulose, hydrocarbon or jet fire types. It can also withstand hose stream actions and, because of its very low moisture absorption, it can be used externally and is not susceptible to the damage often caused by moisture during the early stages of delivery and installation of the system, or by sprinkler actuation.

Durasteel® is a fit and forget system, which requires virtually no maintenance.

Features/Advantages of Durasteel®

- Strong.
- Impact resistant.
- Moisture resistant.
- Maintenance free.
- Requires no foundations.
- Space saving.
- Engineered for fast track construction.
- Flexible installation.
- Offers up to 6 hours fire protection.
- Lightweight.
- Employs only dry trade installation methods.
- Relocatable and suitable for retro-installation.
- Proven 40-year design life.
- Tested to Hose Stream ASTM E119 to 5-bar pressure.
- Tested to DIN 4102 to 4000J hard body impact after fire test.
- Ducting available in 1, 2, 3 or 4-sided configurations with internal or external flanges, with up to 4 hours fire resistance.
- Non-combustibility with zero spread of flame.
- Non-toxic.
- Man made mineral fibre free.
- Modular or kit form construction.
- Loadbearing and non loadbearing constructions.
- Resistant to the most onerous fire curves, e.g. Hydrocarbon, Jet fire etc.

Typical Applications

.....Ventilation ducts:

- Smoke extract ducts
- Kitchen extract ducts
- Cable protection ducts
- Service ducts



.....Ceilings:

- Plenum chambers
- Loadbearing ceilings
- Membrane ceilings
- Suspended ceilings
- Lift or service shaft cappings



.....Walls:

- Partitions
- Service shafts
- Lift enclosures
- Cavity barriers



.....Industrials:

- Valve box enclosures
- Switch gear enclosures
- Doors
- Escape tunnels
- Storage systems
- Hatch covers
- Fuel pipe protection



General Technical Data

THICKNESS TYPE	Durasteel® 6.0mm	Durasteel® 9.5mm
SIZES	2500mm x 1200mm / 2400mm x 1200mm	2500mm x 1200mm / 2400mm x 1200mm
NOMINAL BOARD WEIGHTS AT AMBIENT CONDITIONS	16.8 kg/m ²	21.0 kg/m ²
THICKNESS TOLERANCE	+1.5 to -0.0 mm	+1.0 to -1.0 mm
LENGTH TOLERANCE	+2.0 to -2.0 mm	+2.0 to -2.0 mm
WIDTH TOLERANCE	+2.0 to -2.0 mm	+2.0 to -2.0 mm
FLEXURAL STRENGTH (BS EN 12467:2000)	109 Mpa	84 Mpa
FLEXURAL MODULUS (BS EN 12467:2000)	55 Gpa	40 Gpa
IMPACT STRENGTH (BS 5669: Part 1 / 1500mm drop)	No failure	No failure
IMPACT RESISTANCE (Projectile)	2793 J	2793 J
EFFECT OF 4000J HARD BODY IMPACT TEST AFTER FIRE TEST DIN 4120: Part 3		Pass
BENDING STRENGTH (BS 5669: Part 1: 1989)	>189.5 N/mm ²	>189.5 N/mm ²
NATURAL MOISTURE CONTENT BY WEIGHT	6%	6%
MOISTURE ABSORPTION (Weight from NORMAL MOISTURE CONTENT)	6~7%	6~7%
MOISTURE MOVEMENT (35~85% RH) (BS EN 318: 2002)	≤ 0.2%	≤ 0.2%
MOISTURE MOVEMENT (65% RH to saturated) (BS EN 318: 2002)	≤ 0.2%	≤ 0.2%
WATERTIGHTNESS (BS 4624: 1981)	Pass	Pass
PIPE RESISTANCE AFTER 24 HOURS WATER IMMERSION (BS 476: Part 24: 1987)		Satisfactory
THERMAL CONDUCTIVITY AT 20°C (ASTM C518: 1991)		0.129 W/m ² K
COEFFICIENT OF THERMAL EXPANSION (BS 1902: 1990)		15 x 10 ⁻⁶ K ⁻¹
MAXIMUM CONTINUOUS OPERATING TEMPERATURE (BS 7346: Part 2: 1990)	350°C	350°C
RADIANT HEAT REDUCTION THROUGH PANEL	9.30-2.53 (2948.0-802.0 Btu/ft ² hr°F)	9.30-2.53 (2948.0-802.0 Btu/ft ² hr°F)
SOUND REDUCTION INDEX	28.0 dB	29.7 dB
NON COMBUSTIBLE (BS 476: Part 4: 1970)	Yes	Yes
MATERIAL OF LIMITED COMBUSTIBILITY	Yes	Yes
BUILDING REGULATIONS CLASSIFICATION	Class 0	Class 0
SPREAD OF FLAME (BS 476: Part 7: 1987)	Class 1	Class 1
BBA (British Board of Agrément) CERTIFICATION NUMBER	93/2929	93/2929
AIRFLOW	Equivalent to Sheet Metal Ducting.	
SHEET FINISHES	Galvanised mild steel or stainless steel.	
SYSTEMS FINISHES	Galvanised steel or primed steelwork (special finished available upon request).	
DOORS FINISHES	Galvanised steel or primed steelwork (special finished available upon request).	

Durasteel

Introducing Durasteel® Ceilings & Plenums

Features

- Moisture resistance.
- Impact resistance.
- "Walk on" strength.
- Fire resistance up to 4 hours including insulation.
- Superior spanning capability.
- Pressure resistance.
- Demountable.
- Loadbearing systems available for up to 15 kN/m².
- Hose stream resistant.



General

Intumex Durasteel® ceilings can be formed to fulfil a multitude of functions. Horizontal constructions can be used not only as traditional suspended and membrane ceiling constructions, but can also be used as plenums, single sided enclosures to cables and services. Intumex Durasteel® ceilings can be designed as load bearing structures, and even standard Durasteel® ceilings can be used as trafficable constructions.



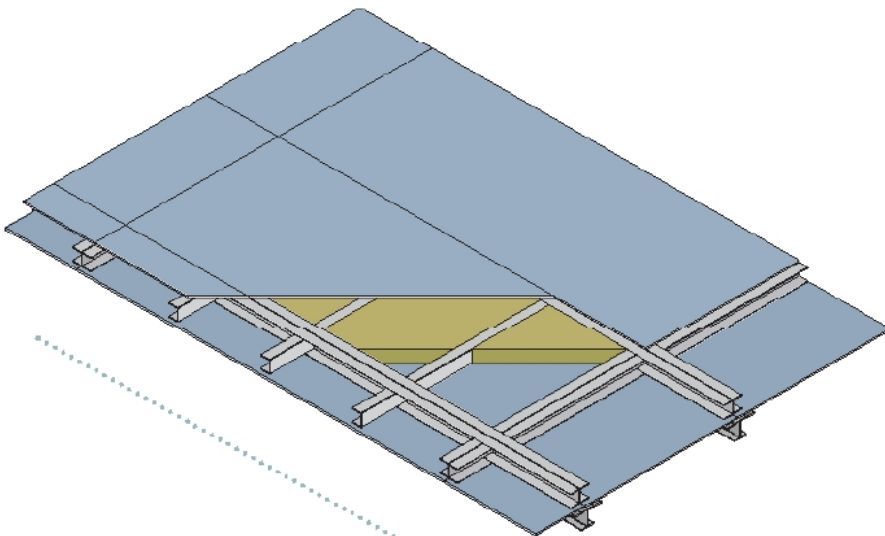
Durasteel® horizontal barriers have been fully tested to the requirements of BS 476: Parts 21 and 22: 1987. These barriers can withstand fire exposure from above, below or above AND below, dependent on the design and performance requirements.

The overall system design will depend on the performance characteristics, but typically would consist of Durasteel® panels, fixed to one of both sides of a steel supporting framework, with or without the cavity filled with rock wool.

Introducing Durasteel® Ceilings & Plenums

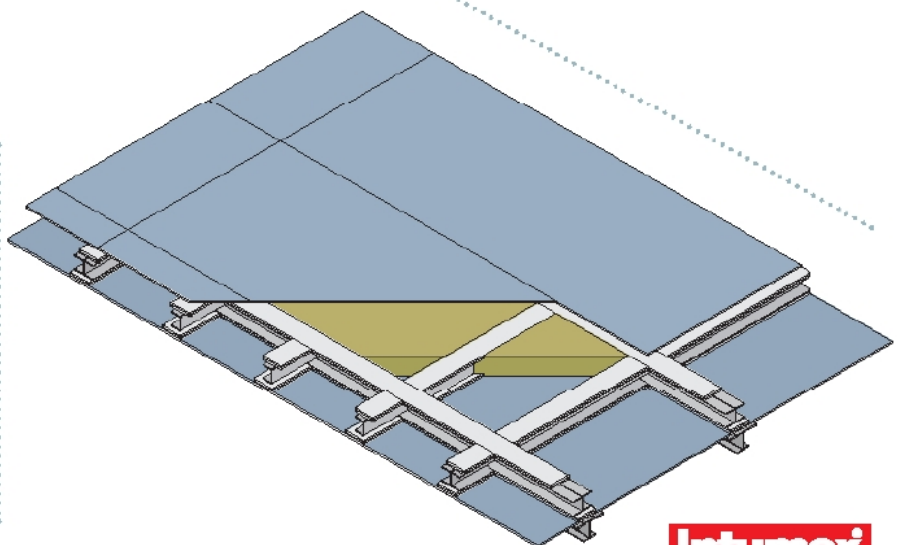
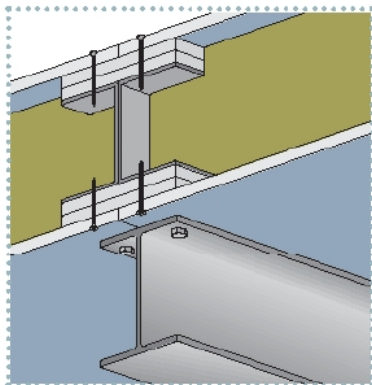
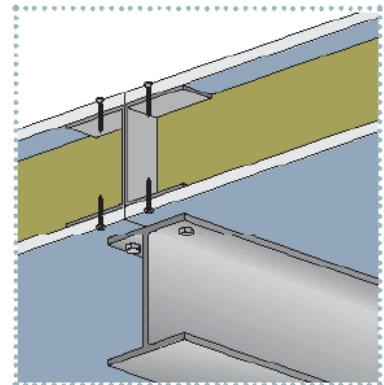
Durasteel® loadbearing ceilings can be constructed from simple readily available local materials. The fire performance of such systems can offer includes up to 240 minutes integrity and insulation, as well as loadbearing capacity, regardless of whether fire exposure is from above or below.

Depending on the loadbearing requirement, it may be necessary to include additional, protected, steel support sections beneath the ceiling construction.



Depending on the insulation performance requirements, it may or may not be necessary to include additional cover fillets over the steel sections to retard the conduction of heat through the ceiling construction.

The detail below shows the construction with two cover fillets either side of the support framing. The number and overall thickness of the fillets is dependant on the insulation performance required.



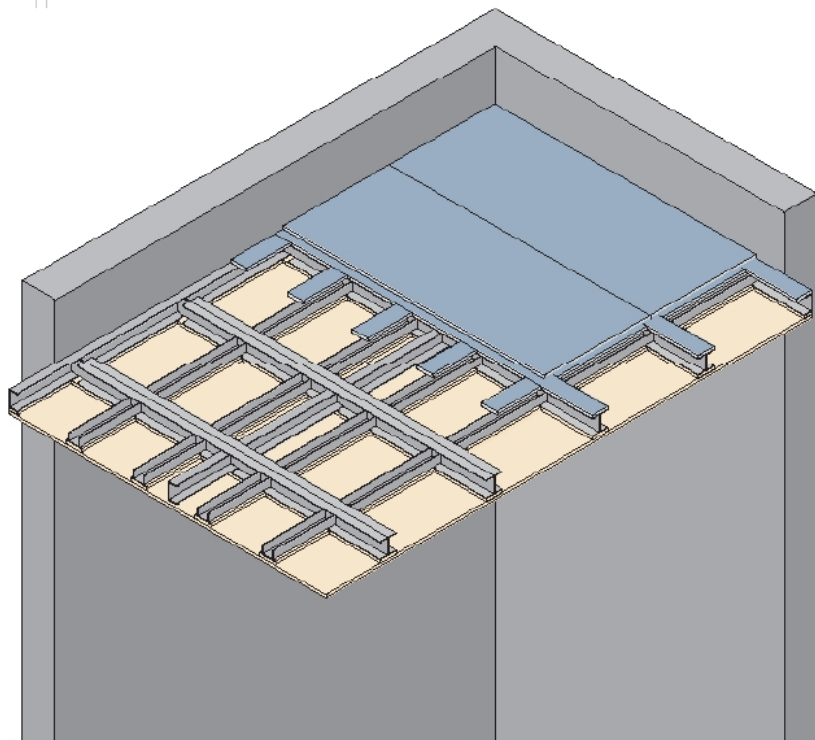
Durasteel® Ceilings & Plenums

Types of Application

Self-Supporting Membrane Ceiling With Supalux®

Intumex Durasteel® can be combined with Intumex Supalux® boards to provide a cost effective system, offering the same robustness and trafficable construction as the standard Durasteel® construction, but with the one side clad with Supalux® to provide a more aesthetic appearance.

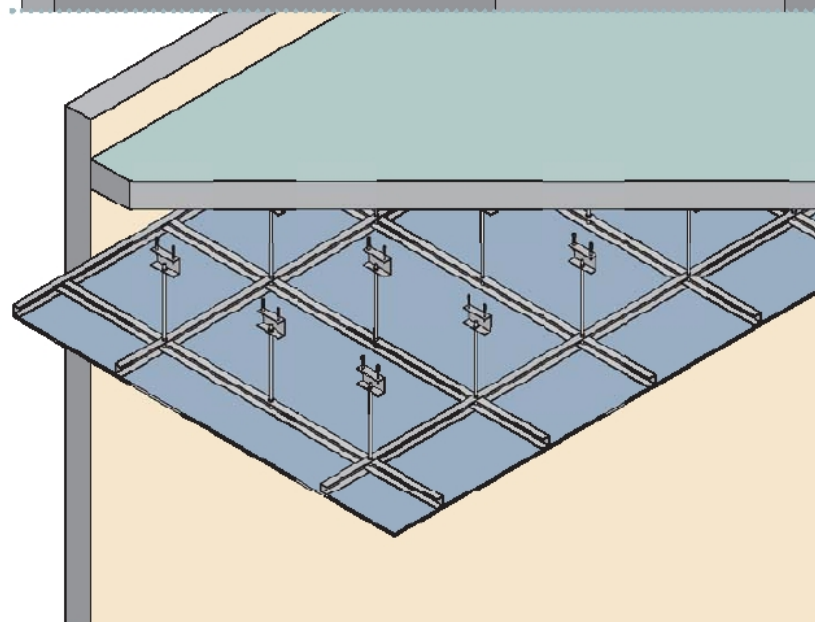
Durasteel® membrane ceilings can offer up to 240 minutes integrity and insulation.



Suspended Plenum Ceiling

Durasteel® suspended ceiling constructions can be used to act as Plenum chambers. Durasteel® is capable of withstanding very high positive and negative pressures. Durasteel® systems fully comply with the air leakage rates of DW144.

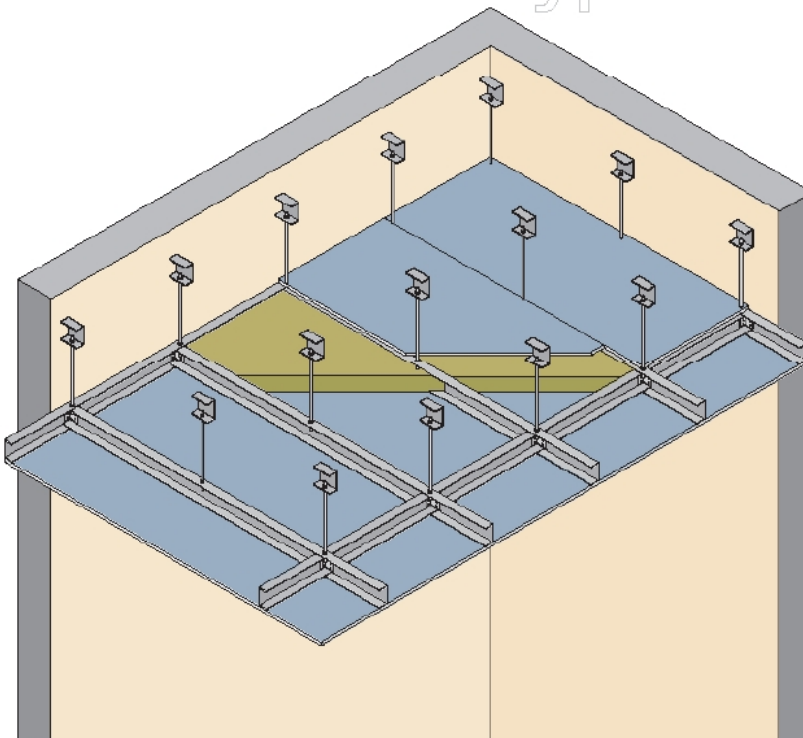
Durasteel® ceiling systems can cover extremely large spans, especially where internal hanger support systems are incorporated into the design. Please consult Intumex Asia Pacific for further details. Also see [page 60](#).



Durasteel® Ceilings & Plenums

Types of Application

Self-Supporting
Double Layer
Membrane Ceiling

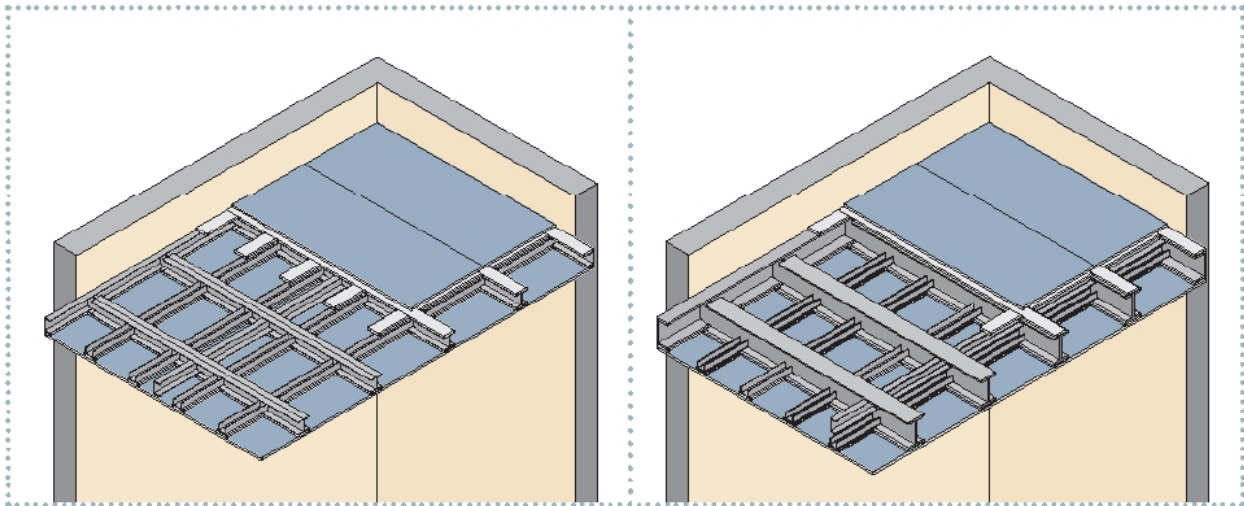


Similarly, double layer membrane ceiling systems can be constructed to cover large expanses with the introduction of additional hanger support systems. Inclusion of these additional supports can often allow a reduction in the dimensions of the support frame members, offering a lighter weight and more cost effective system.



Durasteel® Ceilings & Plenums Construction Details

The below details depict methods of constructing membrane ceiling systems without recourse to additional hanger support members. The section shape, type and dimension of the steel support structure is dependent on the span, the overall weight of the ceiling construction, the required performance in terms of fire and under normal operating conditions. E.g. loadbearing capacity. Please consult Intumex Asia Pacific for details.



Durasteel® ceiling constructions can be used to create one, two or three sided enclosures. These can be used as plenums, services enclosures or to provide compartmentation.

Construction details will differ from project to project and are dependant on a number of factors, please consult Intumex Asia Pacific for details. Also see [page 60](#).

