



Commercial & Data Center

High Performance Product Solutions



Tate[®]

Access Floors



*BASF North American Headquarters
Florham Park, NJ*

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ConCore® Panels

ConCore Access Floor panels are epoxy coated unitized shells consisting of a flat steel top sheet welded to a formed steel bottom sheet filled with a highly controlled mixture of lightweight cement. Manufactured to exacting tolerances, these non-combustible, rigid, solid panels deliver the ultimate in strength, durability, and acoustic performance.

Applications

With six standard load performance grades and an extensive selection of understructure supports and floor finishes, it is recommended that you visit our website: www.tateinc.com for further information on product details, finish options, architectural details, system specifications, and selecting the proper panel to meet the needs of your specific application.



Champaign Public Library
Champaign, IL

Value Act Capital
San Francisco, CA

ConCore® Performance Selection Chart

System Performance Criteria* (Tested on Actual Understructure)								
Panel	Understructure	System Weight lbs/ft ²	Static Loads			Rolling Loads		Impact Loads lbs
			Design Loads ¹ lbs	Minimum Ultimate Loads lbs	Safety Factors ² min 2.0	10 Passes lbs	10,000 Passes lbs	
ConCore® 1000	PosiLock®	8.0 (39kg/m ²)	1000 (4.4kN)	2000 (8.9kN)	PASS	800 (3.6kN)	600 (2.7kN)	150 (68kg)
ConCore® 1250	PosiLock®	8.5 (42kg/m ²)	1250 (5.6kN)	2500 (11.1kN)	PASS	1125 (5.0kN)	875 (3.9kN)	150 (68kg)
ConCore® 1500	PosiLock®	9.0 (44kg/m ²)	1500 (6.7kN)	3000 (13.3kN)	PASS	1250 (5.6kN)	1000 (4.4kN)	150 (68kg)
ConCore® 1000	Bolted Stringer	9.0 (44kg/m ²)	1000 (4.4kN)	2000 (8.9kN)	PASS	800 (3.6kN)	600 (2.7kN)	150 (68kg)
ConCore® 1250	Bolted Stringer	10.0 (49kg/m ²)	1250 (5.6kN)	2500 (11.1kN)	PASS	1000 (4.4kN)	800 (3.6kN)	150 (68kg)
ConCore® 1500	Bolted Stringer	10.5 (51kg/m ²)	1500 (6.7kN)	3000 (13.3kN)	PASS	1250 (5.6kN)	1000 (4.4kN)	150 (68kg)
ConCore® 2000	Bolted Stringer	11.5 (56kg/m ²)	2000 (8.9kN)	4000 (17.8kN)	PASS	1500 (6.7kN)	1250 (5.6kN)	200 (91kg)
ConCore® 2500	Bolted Stringer	12.0 (59kg/m ²)	2500 (11.1kN)	5000 (22.2kN)	PASS	2000 (8.9kN)	2000 (8.9kN)	200 (91kg)
ConCore® 3000	Bolted Stringer	13.0 (63kg/m ²)	3000 (13.3kN)	6000 (26.7kN)	PASS	2700 (12.0kN)	2400 (10.7kN)	200 (91kg)

All tests are performed using CISCA's Recommended Test Procedures for Access Floors with the exception of Design Load

1. System Design Load is based on permanent set $\leq 0.010"$ and is verified by loading panels in accordance with the CISCA concentrated load method but with panels installed on actual understructure instead of steel blocks. (Testing on blocks does not represent performance of an actual installation.) Ultimate, Rolling, and Impact Load tests are performed using CISCA Test Procedures.
2. Safety Factor is Ultimate Load divided by Design Load.

All Steel Panels

All Steel Access Floor panels are epoxy coated unitized shells consisting of a flat steel top sheet welded to a formed steel bottom sheet. Manufactured to exacting tolerances, these non-combustible rigid, solid panels deliver the ultimate in strength and durability with the convenience of lightweight construction.

Panel Features

- The safe working load or design load for the panels is equal to the concentrated load
- Lightweight for ease of handling
- Excellent grounding and electrical continuity
- Full range of factory applied finishes
- Completely non-combustible
- Interchangeable with ConCore, Perforated, and Grate panels
- Available in 24" and 60cm sizes



Applications

With three standard load performance grades and complete interchangeability with ConCore, Perforated and Grate airflow panels, these panels coupled with an extensive selection of understructure supports and floor finishes are suitable for a wide range of applications from typical data/computer centers to telecommunication rooms, mission critical facilities, electronic assembly areas, and other general purpose equipment rooms.



Starlight Casino,
Queensborough, BC



Engberg Anderson Design Partnership
Milwaukee, WI

Engberg Anderson Design Partnership, Milwaukee, WI,
18,800 ft², LEED Gold

All Steel Performance Selection Chart

System Performance Criteria* (Tested on Actual Understructure)								
Panel	Understructure	System Weight lbs/ft ²	Static Loads			Rolling Loads		Impact Loads lbs
			Design Loads ¹ lbs	Minimum Ultimate Loads lbs	Safety Factors ² min 2.0	10 Passes lbs	10,000 Passes lbs	
All Steel 1000	Bolted Stringer	6.0 (29kg/m ²)	1000 (4.4kN)	2000 (8.9kN)	PASS	400 (1.8kN)	400 (1.8kN)	150 (68kg)
All Steel 1250	Bolted Stringer	7.0 (34kg/m ²)	1250 (5.6kN)	2500 (11.1kN)	PASS	500 (2.2kN)	500 (2.2kN)	150 (68kg)
All Steel 1500	Bolted Stringer	8.5 (42kg/m ²)	1500 (6.7kN)	3000 (13.3kN)	PASS	600 (2.7kN)	600 (2.7kN)	150 (68kg)

All tests are performed using CISCAs Recommended Test Procedures for Access Floors with the exception of Design Load

1. System Design Load is based on permanent set ≤ 0.010" and is verified by loading panels in accordance with the CISCAs concentrated load method but with panels installed on actual understructure instead of steel blocks. (Testing on blocks does not represent performance of an actual installation.) Ultimate, Rolling, and Impact Load tests are performed using CISCAs Test Procedures.

2. Safety Factor is Ultimate Load divided by Design Load.

Understructure Systems

for ConCore and All Steel Systems

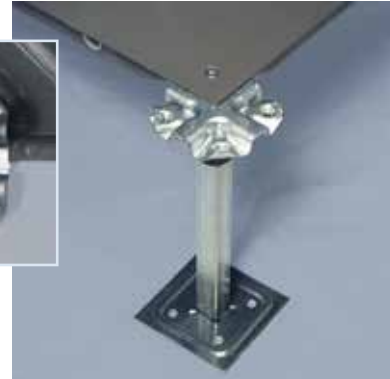
PosiLock®

Understructure Features

- PosiLock® design provides self-engagement and positioning of floor panels.
- Self-capturing fastener remains within the panel - will not get lost.
- Steel pedestal head provides maximum strength.
- Pedestal nut provides anti-vibration and locking features.
- Seismic force-resistant pedestals are available that limit or eliminate the need for special bracing.
- Typical floor heights from 6" - 16" (15cm-40cm).



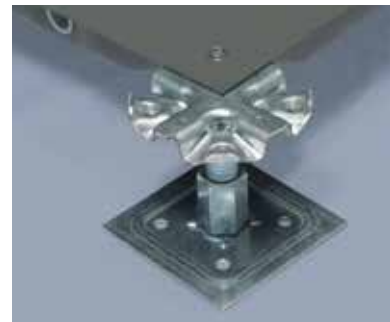
Panel engagement feature viewed from underside



Low Finished Floor Height PosiLock®

Understructure Features

- Available in floor heights from 2⁷/₈" to 4" (7cm-10cm).
- PosiLock® design provides self-engagement and positioning of floor panels.
- 2⁷/₈" (7cm) finished floor height is ideal for renovation applications while providing enough space under the floor to allow for easy cable management.
- Excellent for classroom renovations and the creation of training areas.
- Easily levels uneven floors.

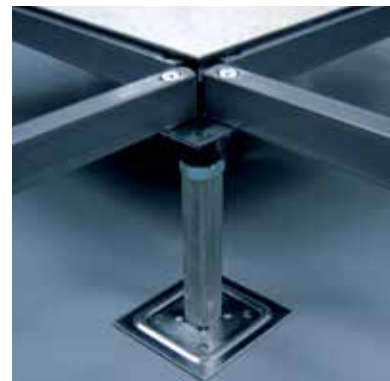


PosiLock® pedestal for low floor height systems

Bolted Stringer

Understructure Features

- Designed for computer rooms, data centers, industrial applications, and heavy rolling load areas.
- Allows floors to be built over 24" (60cm) high.
- Panels can be gravity-held in understructure for fast removal and replacement.
- Stringers provide lateral resistance to heavy rolling loads and seismic loading.
- Seismic force-resistant pedestals are available that limit or eliminate the need for special bracing.
- Typical floor heights from 12" - 36" (30cm-90cm).



Hot Dipped Galvanized Pedestals

Seismic Pedestals

Understructure Features

- Available with standard and fillet welded base assembly.
- Steel pedestal head provides optimum strength.
- Seismic force-resistant pedestals are available that limit or eliminate the need for special bracing.
- Vertical supports ranging from 17 gauge 7/8" (2.2cm) galvanized tubing to Schedule 40 pipe.
- Pedestals can accommodate finished floor heights over 36" (90cm).
- Easily levels uneven floors.



Woodcore Panels

Woodcore panels consist of high density composite wood core glued to and encased in hot dipped galvanized formed steel sheets. These panels are ULC Listed for flame spread and smoke development and provide excellent rigidity, durability, and acoustic performance.



Panel Features

- No added urea formaldehyde wood is available.
- High strength to weight performance.
- Full range of factory laminated finishes.
- Finishes available with Integral Trim® edge.
- Internally grounded.
- Wide range of understructure support systems available

Woodcore Performance Chart

System Performance Criteria* (Tested on Actual Understructure)								
Panel	Understructure	System Weight lbs/ft ²	Static Loads			Rolling Loads		Impact Loads lbs
			Design Loads lbs	Minimum Ultimate loads lbs	Safety Factors min 2.0	10 Passes lbs	10,000 Passes lbs	
WC5000	ComerLock	6.9 (34kg/m ²)	1000 (4.4kN)	2000 (8.9kN)	PASS	1000 (4.4kN)	700 (3.1kN)	150 (68kg)
WC5000	Snap-Tite/Bolt-Tite	7.4 (36kg/m ²)	1000 (4.4kN)	2000 (8.9kN)	PASS	1000 (4.4kN)	700 (3.1kN)	150 (68kg)
WC5000	Heavy Duty Stringer	7.6 (37kg/m ²)	1250 (5.6kN)	2500 (11.1kN)	PASS	1250 (5.6kN)	875 (3.9kN)	150 (68kg)

All tests are performed using CISCA's Recommended Test Procedures for Access Floors with the exception of Design Load

1. System Design Load is based on permanent set $\leq 0.010"$ and is verified by loading panels in accordance with the CISCA concentrated load method but with panels installed on actual understructure instead of steel blocks. (Testing on blocks does not represent performance of an actual installation.) Ultimate, Rolling, and Impact Load tests are performed using CISCA Test Procedures.

2. Safety Factor is Ultimate Load divided by Design Load.

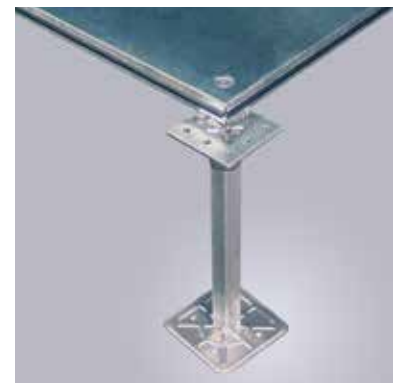
Understructure



Snap-Tite and Bolt-Tite Stringer
understructure system used primarily for gravity held panels with Integral Trim® edge in computer room or equipment rooms. This system allows for quick and easy access to the underfloor area.



Heavy Duty Stringer
The heavy duty stringer is designed for installations requiring additional design and rolling load capacities. Panels are gravity-held in the understructure for fast removal and replacement.



Comerlock
understructure system. Used primarily for office environments with modular carpet tile. Panels are locked down using 1/4"-20 fasteners in each corner.

Accessories for Raised Floors

Swirl Diffuser

Designed for use with an Underfloor Air Distribution system, Tate's swirl diffuser provides complete flexibility and personal comfort control. Tate's swirl diffuser provides greater personal comfort control over thermostatically controlled variable-air-volume ceiling diffusers by allowing the occupant the ability to control the volume and placement of the airflow in their space.



UFAD Grommets

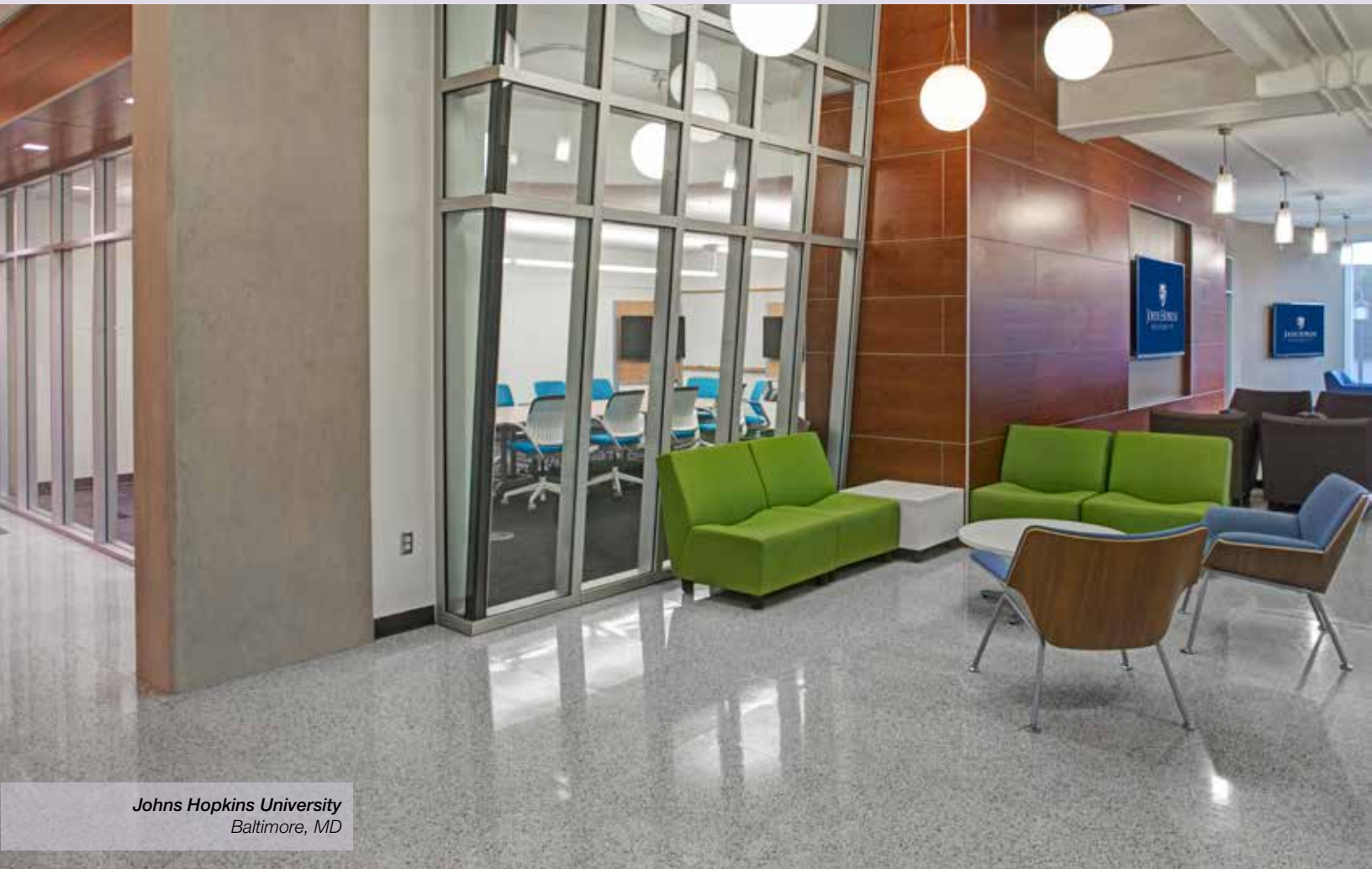
Tate's Under Floor Air Distribution (UFAD) grommets are designed to nearly eliminate air leakage in buildings with Under Floor Air Distribution systems. We offer many different sizes to seal openings in an access floor panel. Our grommets are made from fire resistant ABS or brushed aluminum grommets to complement your décor. These grommets are for use in office areas only.



Tate offers a variety of accessories to complete your raised floor installation. From ramps and steps to fascia and plenum dividers, we supply everything required to make your project a success. If you need something you don't see here or are looking for a modification to fit the specific needs of your project, please contact us at 800-231-7788 or e-mail technical services at technical@tateinc.com.



Architectural Finishes



*Johns Hopkins University
Baltimore, MD*

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Classic Concrete

The simple beauty of concrete

Tate's new line of classic concrete access floor panels offer the ultimate combination of appearance and functionality. The concrete panel consists of a controlled mixture of cement and aggregate which is cured and then honed for an exposed aggregate finish, and is available in both white and grey options. The edge of the panel is factory laminated with a plastic banding which creates a faux grout line and provides protection during removal. As the panel is made from natural products, moderate shade and color tone differences will occur and is the reason this product is assigned a V2 Moderate Variation rating.

Key Performance Characteristics

- Honed to showcase an exposed aggregate finish
- Controlled mix design for a light-weight panel with superior strength
- Supported by a bolted stringer system
- Edge banding provides a consistent seam appearance that protects the edge during removal.
- Sealed in the field after installation for a long lasting, durable finish
- Classic Concrete is available in white and grey options



Ford
Palo Alto, CA

Terrazzo

Create completely customized looks

Tate's beautiful terrazzo finish is manufactured from natural or recycled marble or crystal chips embedded in a flexible resin that is extremely durable and provides an easy to care for finish. Each panel has a protective edge banding available in unlimited colors for contrasting or blended seams customized for each application.

Key Performance Characteristics

- Available in recycled marble, natural marble, or recycled glass
- Laminated to composite board panel supported by a bolted stringer system
- Precise sizing allows for interchangeable panels
- Sealed and polished in the field after installation for a long lasting, durable finish
- Recycled Marble and Recycled Glass contains up to 70% post-industrial recycled material
- Maintains accessibility, as opposed to poured in place terrazzo
- Protective edge banding protects the surface edge from chipping



*Tulsa Cancer Center
Tulsa, OK*

Wood

Natural luxury finish for access floors

Tate's wood panels offer a long-lasting and versatile finish that enhances the look of your application. Tate's wood finishes are available in plank and stacked designs in a variety of species to meet any of your application requirements.

Stacked Wood

Stacked wood is a series of thin wooden fillets that are in a staggered layout, similar to traditional hardwood floors. The staggered fillets are 1/8" thick hardwood on 7/16" backer board, for an overall thickness of 7/16". The surface is comprised of 3/4" to 1" wide by 10" to 14" random length fillets, coated with a high solids natural oil finish.

Plank Wood

Tate's plank design consists of 1/8" thick hardwood laminated to a 5/16" backer board, for an overall thickness of 7/16". The surface is comprised of 4" wide by 24" long planks, coated with a UV cured acrylic varnish finish.

Key Performance Characteristics

- Available in a variety of species and designs
- Long-lasting natural architectural finish
- Laminated to composite board panel supported by a bolted stringer system
- Protective edge banding protects the surface edge from chipping



350 Mission Street
San Francisco, CA

Porcelain

The ultimate combination of aesthetics and flexibility

Tate's line of laminated porcelain raised floor panels offer the ultimate combination of aesthetics and flexibility. With a variety of aesthetics and colors to choose from, these tiles can enhance the architectural form and space of a building. The porcelain panels come in two primary designs: One-Piece and Multi-Piece, and the factory laminated porcelain access floor panels come with an edge banding that produces clean even lines that appear more like grouted tiles.

One-Piece Design

The one-piece layout design is a common grid with a single factory laminated porcelain tile. This design can utilize any aesthetic or be combined in conjunction with other aesthetics to produce a unique tiled appearance.

Multi-Piece Design

The multi-piece design contains multiple pieces of porcelain of any aesthetic and color combination on a single panel. Each piece of porcelain has been individually edge banded to create a unique look that helps blend the access floor grid to look as a custom tiled surface.

Key Performance Characteristics

- Available in single and multi-piece design
- Available in a variety of colors and aesthetics
- Supported by a bolted stringer system
- Tiles designed to meet precise specifications
- Edge banding protects against chipping
- Easy to clean maintenance



Northwestern University
Kellogg School of Management
Evanston, Illinois

Resilients

Smooth application of our most popular finishes

Resilient tiles are a durable and easily maintained finish and are available in an almost unlimited selection of colors, styles, and textures. Tate works with dozens of manufacturers who offer a wide range of Resilients finishes from linoleum and vinyl to cork, rubber, and HPL.

Key Performance Characteristics

- Can offer specific acoustical, conductive, and slip resistant qualities
- Laminated to composite board to provide a smoother surface
- Supported by a bolted stringer system
- Tapered edge allows for easy accessibility to underfloor areas
- Wide range of finish options with a variety of styles and colors
- Protective edge banding protects the surface edge



IRS Service Center
Kansas City, MO

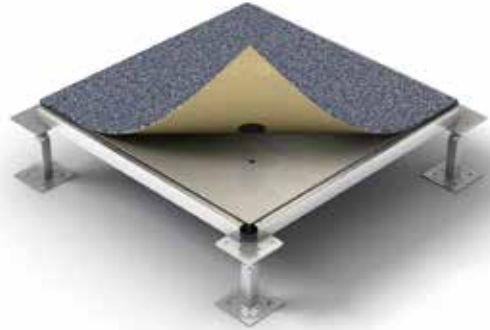
Carpet

PosiTile® maintains easy accessibility and reduces waste

Each PosiTile® carpet module is engineered to match one-to-one with Tate ConCore® and All Steel access floor panels. The combination of carpet and panel preserve the flexibility of the underfloor service distribution system and allow for the reuse of carpet tiles during layout changes.

Key Performance Characteristics

- Reduces move time
- No Additional Attic Stock
- Eliminates Waste Due to Churn
- One-to-one fit with ConCore® & All Steel access floor panels
- Supported by a bolted stringer system



*Public Safety Complex
Tallahassee, FL*

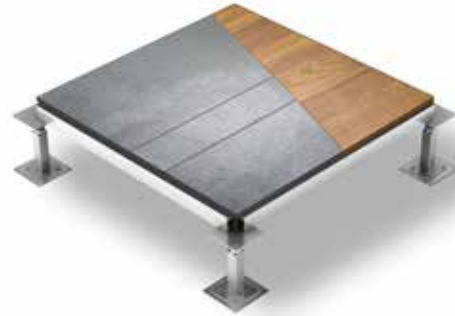
Custom Panels & Designs

Customize projects even further

Tate's state-of-the-art engineering and manufacturing capabilities allow us to customize our customer's projects even further. Increased design aesthetic and transition capabilities allow for more raised floor finish options than ever before, and help ensure you truly capture your project's signature style. Four ultrasonically welded buttons on the underside of the tile provide precise indexed alignment with four matching holes in the panel. Now anyone can rearrange their work area quickly and easily. For designers, Tate has partnered with different carpet tile manufacturers to offer a wide range of carpet options and styles.

Key Performance Characteristics

- Able to blend multiple finishes on single panel
- Customized Inlays, designs, corporate logos and more
- Maintains accessibility
- Supported by a bolted stringer system



350 Mission
San Francisco, CA

Data Center Solutions

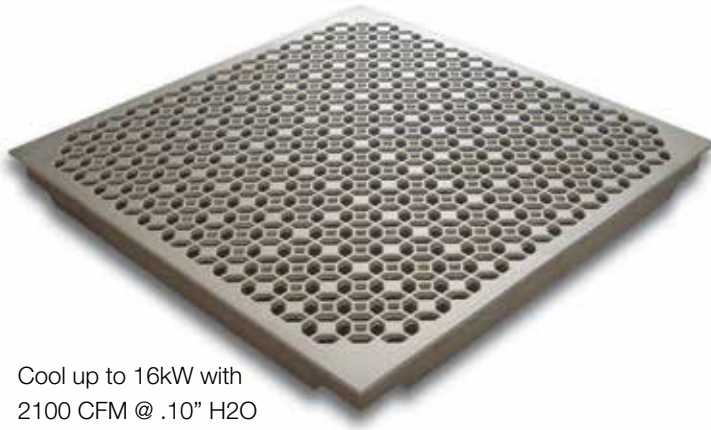


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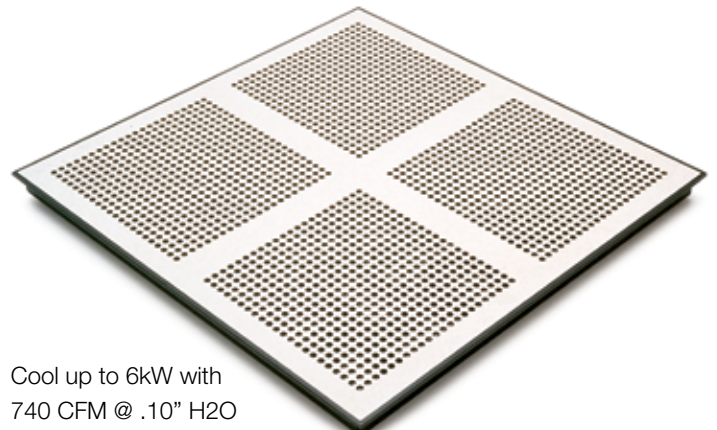
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GrateAire & Standard Perf Panels

Physical Aisle Level Containment Airflow Panels



Cool up to 16kW with 2100 CFM @ .10" H2O in a contained aisle.



Cool up to 6kW with 740 CFM @ .10" H2O in a contained aisle.

GrateAire® Panels

Tate's aluminum GrateAire offers high volume airflow for physically contained aisles with high heat densities. With 56% open area the lightweight aluminum panel is ideal for areas that need high airflow and load capacity.

Panel Features

- GrateAire® die-cast aluminum panels are compatible with any 24" or 60cm bolted stringer systems.
- Cools up to 16kw per rack in a contained aisle
- 56% open area
- High rolling load capacity (1000 lbs/800 lbs).
- Available with top surface adjustable damper.
- Available with an unpainted textured surface or epoxy powder coatings.
- Interchangeable with Tate's full line of laminated raised floor panels in a stringer system.

Perforated Panels

Tate's perforated steel panels are available with a range of load performance characteristics. They represent the most economical approach to supplying air in a contained cold aisle.

Panel Features

- Compatible with any 24" or 60cm stringer systems.
- 25% open area
- Strong design loads with safety factors of 2.
- Available with top surface adjustable damper.
- Steel perforated panels are available with High Pressure Laminate, vinyl and rubber floor coverings.
- Interchangeable with laminated ConCore, All Steel and Woodcore panels in a stringer system.
- Aluminum perforated panels are available for use with a bolted stringer aluminum system.

Load Performance Chart*

Airflow Panel	Understructure	System Weight lbs/sqft	Static Loads lbs			Rolling Loads lbs		Impact Load lbs	Capture Index*	%Open Area
			Design Load	Safety Factor	Ultimate Load	10 Passes	10,000 Passes			
GrateAire	Bolted Stringer	6.25 (30kg/m ²)	1000 (4.4kN)	Min. > 2	>2000 (8.9kN)	1000 (4.4kN)	800 (3.6kN)	100 (45kg)	50%	56%
Perf 800	Bolted Stringer	7.0 (34kg/m ²)	800 (3.6kN)	Min. > 2	>1600 (7.1kN)	-	-	150 (68kg)	50%	25%
Perf 1000	Bolted Stringer	7.5 (37kg/m ²)	1000 (4.4kN)	Min. > 2	>2000 (8.9kN)	-	-	150 (68kg)	50%	25%
Perf 1250	Bolted Stringer	8.25 (40kg/m ²)	1250 (5.6kN)	Min. > 2	>2500 (11.1kN)	-	-	150 (68kg)	50%	25%

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1. System Design Load is based on permanent set ≤ 0.010" and is verified by loading panels in accordance with the CISCA concentrated load method but with panels installed on actual understructure instead of steel blocks. (Testing on blocks does not represent performance of an actual installation.) Ultimate, Rolling, and Impact Load tests are performed using CISCA Test Procedures.
2. Safety Factor is Ultimate Load divided by Design Load.

DirectAire

Strong, Efficient, High Capacity Airflow Panels



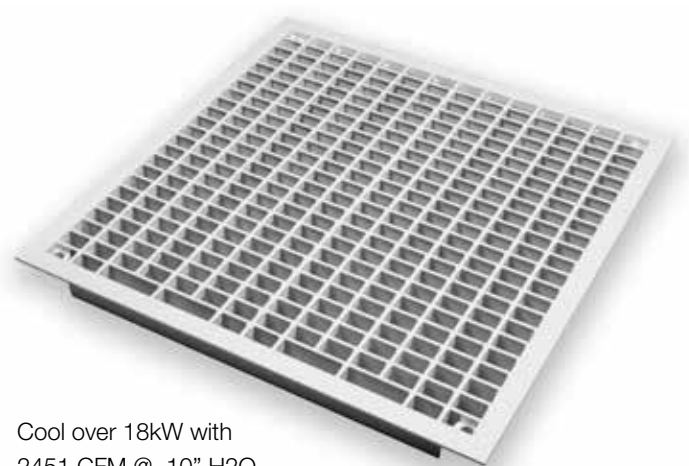
Cool over 19kW with
2594 CFM @ .10" H2O

DirectAire® & DirectAire® X2 Panels

Ideal for creating a virtual containment system, the steel DirectAire panel directs the airflow toward the server rack to significantly reduce bypass air. DirectAire is designed to evenly distribute airflow across the full height of a standard 42U rack. DirectAire X2 is designed to divide the airflow evenly in two directions to provide even distribution to racks on both sides of a cold aisle.

Panel Features

- Reduce capital expenditures on cooling infrastructure by up to 40%
- Save up to 40% in annual fan energy without the use of containment
- 68% open area provides 2,594 CFM @ .1" H2O
- Cool over 19kW per rack @ .1" H2O
- DirectAire X2 cools up to 10kW per rack @ .1" H2O
- 2,500 lbs design load
- 1,500 lbs 10 pass rolling load capacity
- Available in 24" and 60cm panel sizes



Cool over 18kW with
2451 CFM @ .10" H2O

DirectAire® AI Panels

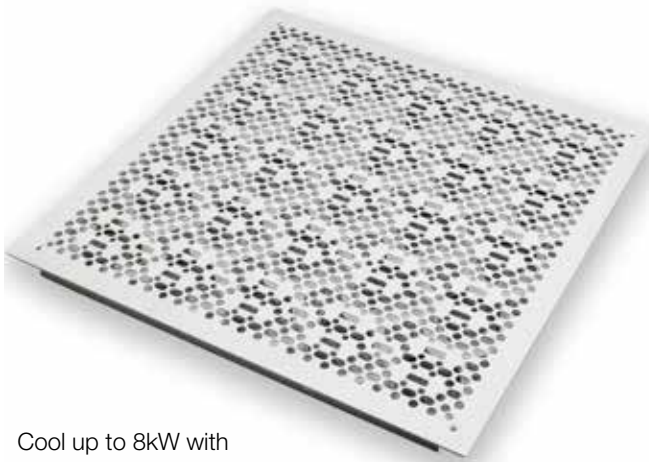
The DirectAire AI is an all aluminum airflow panel that provides the same directional airflow benefits of the steel DirectAire. This allows the panel to provide similar cooling capacities with a panel that is 40% lighter.

Panel Features

- Die-cast aluminum construction
- 40% lighter than a steel DirectAire
- 60% open area provides 2,451 CFM @ .1" H2O
- Cools over 18kW per rack @ .1" H2O
- 1,500 lbs design load
- 1,250 lbs 10 pass rolling load capacity
- Surface adjustable and automatic damper options
- Available in 24" and 60cm panel sizes

DirectPerfs

Cool the Same Load as Vertical Plume Panels with Half the Airflow



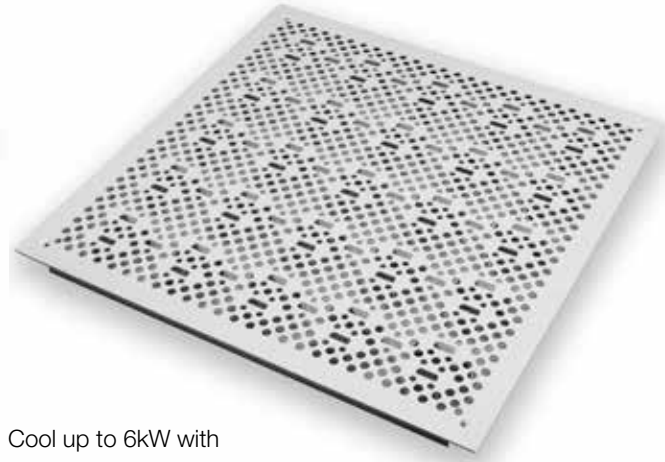
Cool up to 8kW with
1121 CFM @ .10" H2O

DirectPerf 32% Panels

In uncontained spaces DirectPerf 32% provides nearly the same cooling capacity as a standard 56% open area grate using about half the airflow.

Panel Features

- Same kW cooling capacity as GrateAire
- 32% open area delivers 1,121CFM @ .1" H2O when installed without a damper.
- Directional air flow achieves a 88% capture index.
- Cools up to 8kW per rack.
- Can save over 40% in annual fan energy without the use of containment
- Easily integrates into an existing 24" and 60cm raised floor systems



Cool up to 6kW with
765 CFM @ .10" H2O

DirectPerf 25% Panels

Directional Perf 25% directs the airflow toward the server rack to significantly improve energy efficiency and reduce bypass air.

Panel Features

- 25% open area delivers 765CFM @ .1" H2O when installed without a damper.
- Directional air flow achieves a 93% capture index.
- Cools up to 6kW per rack.
- Can save over 40% in annual fan energy without the use of containment
- Easily integrates into an existing 24" and 60cm raised floor systems

Load Performance Chart*

Airflow Panel	Understructure	System Weight lbs/sqft	Static Loads lbs			Rolling Loads lbs		Impact Loads lbs	Capture Index	Open Area
			Design Load	Safety Factor	Ultimate Load	10 Passes	10,000 Passes			
DirectAire	Bolted Stringer	13.0 (63kg/m ²)	2500 (11.1kN)	Min. > 2	>5000 (22.2kN)	1500 (6.67kN)	1500 (6.67kN)	200 (91kg)	93%	68%
DirectAire X2	Bolted Stringer	13.0 (63kg/m ²)	2500 (11.1kN)	Min. > 2	>5000 (22.2kN)	1500 (6.67kN)	1500 (6.67kN)	200 (91kg)	93%	68%
DirectAire AI	Bolted Stringer	7.4 (36kg/m ²)	1500 (6.7kN)	Min. > 2	>3000 (13.3kN)	1250 (5.6kN)	1000 (4.4kN)	150 (68kg)	93%	60%
DirectPerf 32	Bolted Stringer	6.25 (30kg/m ²)	1250 (5.6kN)	Min. > 2	>2500 (11.1kN)	-	-	150 (68kg)	88%	32%
DirectPerf 25	Bolted Stringer	6.85 (33kg/m ²)	1250 (5.6kN)	Min. > 2	>2500 (11.1kN)	-	-	150 (68kg)	93%	25%

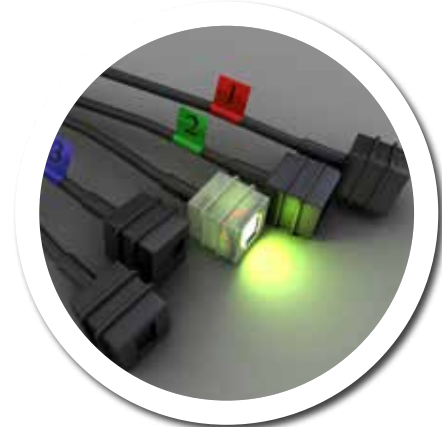
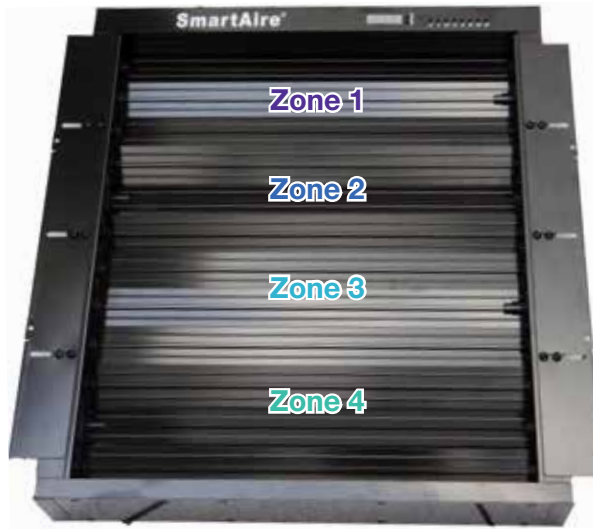
All tests are performed using CISCAs Recommended Test Procedures for Access Floors with the exception of Design Load

1. System Design Load is based on permanent set $\leq 0.010"$ and is verified by loading panels in accordance with the CISCAs concentrated load method but with panels installed on actual understructure instead of steel blocks. (Testing on blocks does not represent performance of an actual installation.) Ultimate, Rolling, and Impact Load tests are performed using CISCAs Test Procedures.

2. Safety Factor is Ultimate Load divided by Design Load.

SmartAire® MZ

Automatic Airflow Controls for Virtual Aisle Containmentment

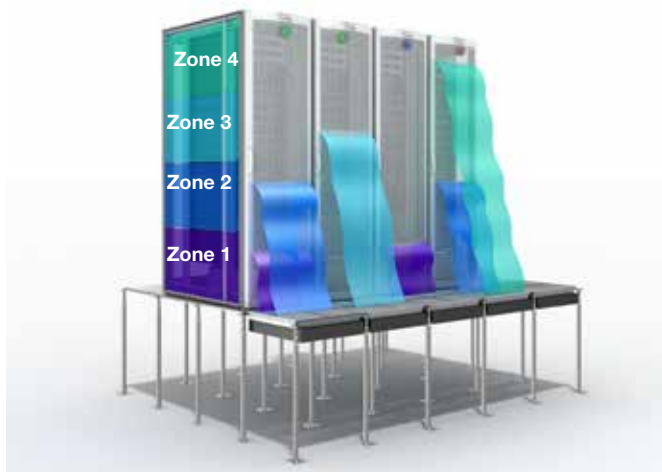


Temperature probes control 4 individual zones with a single LED status indication.

SmartAire® MZ

The new SmartAire MZ automatic variable-air-volume damper offers the most granular airflow control available in the data center. The unit adjusts cooling independently to 4 separate zones to allow for variable loads and partially deployed areas within a rack. The damper automatically opens and closes to adjust the amount of airflow and ensure the proper inlet temperature is maintained. During equipment changes the unit automatically rebalances the airflow in the facility without manual control adjustments.

A SmartAire MZ Basic option is also available. The SmartAire MZ Basic is a manual variable-air-volume damper with a single temperature probe and rack-mounted LED temperature status indicator.



Key Performance Characteristics

- Automatically re-balances airflow during equipment refresh or tenant changes
- 0-22kW supported IT load with DirectAire panel
- Fail safe operation, opens 100% during failure
- Quick and easy installation
- 12 vane damper for large open area
- Four zone damper positions are variable from 0-100%
- Multiple control options available
 - Quad - 4 rack mounted temperature sensor each controlling an individual zone
 - Dual - zones 1&2 and 3&4 are controlled together
 - Single - entire unit acts a single zone
 - P - pressure differential sensor
 - T - technician activated unit
- Included SNMP and TCP/IP
- User programmable set point
- High Precision, Quick Response Temp Measurement
- Rack-Mounted LED Temperature Status Indicator
- E-mail alerts for alarm conditions

Manual Airflow Controls

Manual Zone Control for Diverse and Partially Loaded Racks



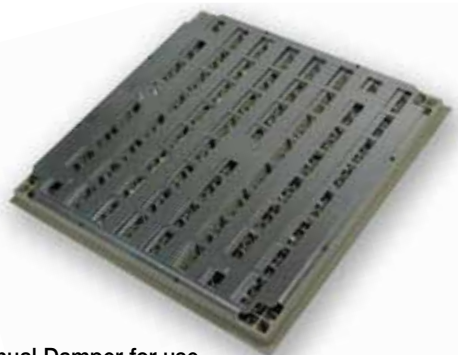
Opposed Blade Damper for use with DirectAire®, DirectAire AI, DirectPerf 32% and GrateAire® Panels



Multi-zone Opposed Blade Damper for use with DirectAire®, DirectAire AI or DirectPerf 32% Panels



Dual-zone Opposed Blade Damper for use with DirectAire X2 Panels



Manual Damper for use with GrateAire® and Perf Panels

Opposed Blade Damper (OBD)

Tate's opposed blade damper allows the user infinite airflow adjustability with very little airflow resistance. Easily adjustable through the top surface of the panel for balancing airflow to IT equipment with fixed requirements.

Key Performance Characteristics

- Provides more airflow at 100% open than slide dampers
- Easily adjustable from above without panel removal
- Drop in design allows for easy retrofits under Tate airflow panels

Multi-Zone Opposed Blade Damper

Tate's multi-zone opposed blade damper enables the airflow delivery to be balanced based on the specific load in the rack. The damper allows data center operators to individually adjust airflow to three zones within the rack - top, middle and bottom.

Key Performance Characteristics

- Reduces cooling energy usage.
- For use with full or partial loaded racks.
- Provides the most granular airflow control available
- Easily adjustable from above without panel removal

Dual-zone Opposed Blade Damper

The dual-zone damper allows the user to control the airflow through each half of a panel independently so that racks on opposite sides of the aisle can receive the right amount of cooling for the load in the rack.

Key Performance Characteristics

- Provides more airflow at 100% open than slide dampers
- Easily adjustable from above without grate removal
- Drop in design allows for easy retrofits, with DirectAire X2 in a Tate bolted stringer systems.

Slide Damper

Tate's slide damper is used to manually control airflow under a GrateAire or Perforated panel. The slide damper is mechanically attached to the panel to provide airflow control.

Key Performance Characteristics

- Easily adjustable from above without panel removal
- Mechanically attached to panel for easy underfloor access

PowerAire®

Fan Assisted Airflow Controls



PowerAire® Quad

The PowerAire Quad fan is equipped with 4 fans connected in parallel to provide built-in redundancy. This unit is only 4" deep making it ideal for retrofit situations with finished floor heights as low as 7.5". This unit can cool up to 0-16kW of supported IT load per PowerAire Quad/DirectAire @ 0.0" H2O.

Key Performance Characteristics

- Zero maintenance
- Installation can be carried out by IT staff
- Multiple control options available
- User programmable set point
- EC fan technology is variable from 0-100%
- Available in 100-120V or 200-240V power options
- Viewable Peak Temp for walk-through check of racks
- Available Auto Transfer Switch offers A/B power feed
- 24" and 60cm raised floor compatible



Airflow Performance Information

CFM & kW Capacity Chart

Airflow Panel	0.02" H ₂ O (5 Pa)		0.04" H ₂ O (10 Pa)		0.06" H ₂ O (15 Pa)		0.08" H ₂ O (20 Pa)		0.10" H ₂ O (25 Pa)	
	CFM (L/s)	(kW/Rack)	CFM (L/s)	(kW/Rack)	CFM (L/s)	(kW/Rack)	CFM (L/s)	(kW/Rack)	CFM (L/s)	(kW/Rack)
DirectAire										
w/o Damper	1151 (543)	8.5	1626 (767)	12.0	2007 (947)	14.8	2318 (1093)	17.1	2594 (1224)	19.1
w/ OBD	986 (465)	7.3	1427 (673)	10.5	1789 (844)	13.2	2056 (970)	15.2	2331 (1100)	17.2
w/ SmartAire MZ	939 (443)	6.9	1312 (619)	9.7	1595 (753)	11.8	1833 (865)	13.5	2041 (963)	15.1
w/ PowerAire	3378 (1594)	24.9	3432 (1620)	25.3	4395 (1650)	25.8	3512 (1658)	25.9	3555 (1678)	26.2
w/ PA Quad	2012 (950)	14.9	2061 (973)	15.2	2111 (996)	15.6	2158 (1018)	15.9	2199 (1038)	16.2
DirectAire AI										
w/o Damper	1123 (528)	8.3	1572 (753)	11.6	1913 (906)	14.1	2200 (1062)	16.3	2451 (1167)	18.1
w/ OBD	857 (404)	6.3	1293 (610)	9.5	1546 (730)	11.4	1745 (824)	12.9	1951 (921)	14.4
w/ SmartAire MZ	869 (410)	6.4	1208 (570)	8.9	1465 (691)	10.9	1679 (792)	12.4	1867 (881)	13.8
w/ PowerAire	3258 (1538)	24.0	3360 (1586)	24.8	3390 (1600)	25.0	3453 (1630)	25.5	3564 (1682)	26.3
w/ PA Quad	2018 (952)	14.9	2110 (996)	15.6	2140 (1010)	15.8	2130 (1005)	15.7	2158 (1019)	15.9
DirectPerf 32%										
w/o Damper	531 (251)	3.7	744 (351)	5.2	890 (420)	6.2	1010 (477)	7.1	1121 (529)	7.8
w/ OBD	480 (227)	3.4	693 (327)	4.8	822 (388)	5.7	963 (454)	6.7	1063 (502)	7.4
DirectPerf 25%										
w/o Damper	357 (168)	2.6	496 (234)	3.7	602 (284)	4.4	689 (325)	5.1	765 (361)	5.6
w/ Slide damper	260 (123)	1.9	367 (173)	2.7	447 (211)	3.3	515 (243)	3.8	574 (271)	4.2
GrateAire										
w/o Damper	916 (432)	3.6	1320 (623)	5.2	1608 (759)	6.4	1860 (878)	7.4	2096 (989)	8.3
w/ OBD	810 (382)	3.2	1121 (529)	4.5	1386 (654)	5.5	1595 (753)	6.3	1785 (842)	7.1
w/ Slide damper	504 (238)	2.0	712 (336)	2.8	876 (413)	3.5	1008 (476)	4.0	1128 (532)	4.5
Standard Perf										
w/o Damper	332 (152)	1.3	476 (224)	1.9	584 (275)	2.3	666 (314)	2.6	746 (352)	3.0
w/ Slide damper	237 (112)	0.9	328 (155)	1.3	402 (190)	1.6	461 (218)	1.8	515 (243)	2.0

Cooling capacity per rack is based on: CFM x Capture Index % / 126 (CFM needed to cool 1kW @ 25° ΔT)
 Tests Conducted with fans operating at 100% power and dampers 100% open.

ContainAire®

Aisle Containment Solutions for Data Centers

Dual & Single Sliding Doors

- Full perimeter compression gaskets efficiently seal and minimize air leakage
- No threshold design prevents tripping
- Sturdy aluminum framing
- Multiwall panel option adheres to new NFPA codes
- Ergonomically designed with angled handles to reduce pinch points
- Easy installation with integrated door slide locks



Hinged Door

- Full perimeter compression gaskets efficiently seal and minimize air leakage
- Right or left hinged option for easy maintenance and installation
- No threshold design prevents tripping
- Sturdy aluminum framing
- Multiwall panel option adheres to new NFPA codes
- Ergonomically designed with angled handles to reduce pinch points

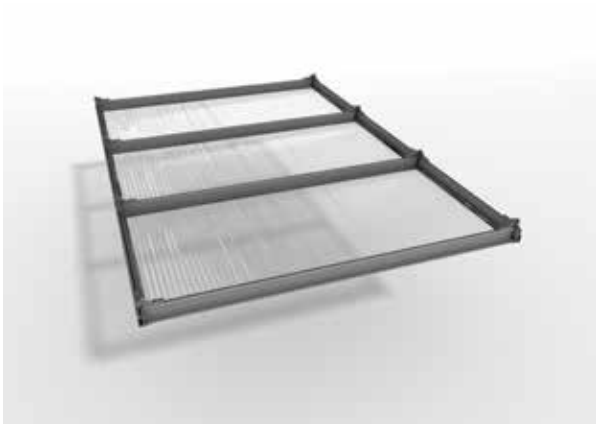


Strip Door

- Unique Pivot and Grip installation method for vinyl allows for any location any time installation or adjustment
- Modular design (field adjustable)
- UL listed fusible links
- 360 degree ceiling attachment
- Overlapping vinyl
- Temperature release point
- Tool-less assembly



ContainAire® Aisle Containment



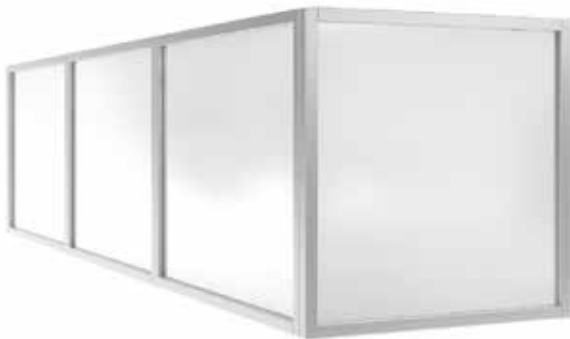
Hard Roof

- Pre-assembled sections for quick and easy installation
- Drop away tiles allow for use under water sprinkler system when permitted by code
- 4' and 6' foot aisle widths
- Thin profile to prevent overhead obstructions
- Modular design works with any aisle length



Soft Partitions

- Unique Pivot and Grip installation method for vinyl allows for any location any time installation or adjustment
- Modular design (field adjustable)
- Overlapping design for improved air sealing
- 360 degree mounted fire suppression link equipped hanger
- UL listed Fusible Links



Hard Partitions

- Pre-assembled for easy installation
- Modular design (all parts screw together)
- Transparent or semi-transparent panel
- Compression gaskets efficiently seal and minimize air leakage

Structural Grid

Continuous Threaded Slot for Maximum Flexibility

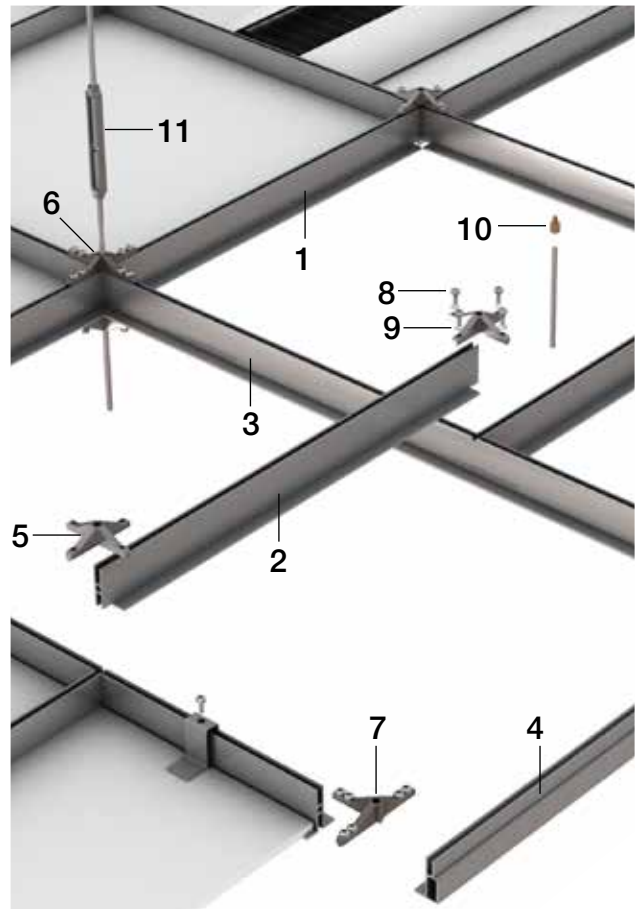
Tate's Structural Ceiling Grid is the ideal solution for any application where large heavy items need to be suspended within a building. Replacing custom-built on-site structural support systems such as unistrut, with Tate's Structural Ceiling Grid can offer many advantages. A structural ceiling allows you to pre-design and specify the support solution in advance and, best of all it's less expensive and faster to install.

Benefits of Tate's Structural Ceiling Grid:

- Faster and easier to install than other grid systems
- 24" grid accepts standard 600mm ceiling tiles and lights
- Eliminates the need for multiple trades on-site
- Experienced data center product manufacturer and contracting teams

Structural Ceiling Grid Component List:

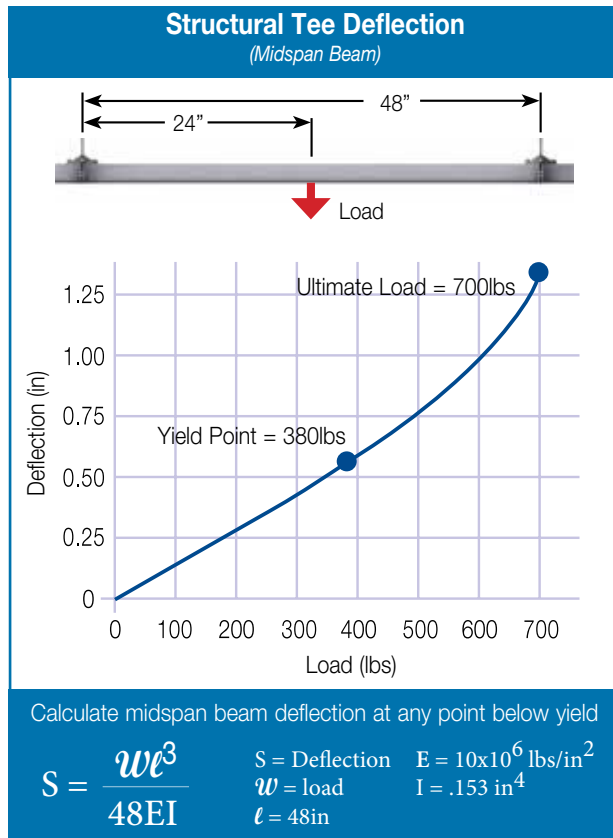
- | | |
|----------------------------------|--|
| 1. 144" or 360cm Main Runner | 7. Perimeter Connector |
| 2. 24" or 60cm Structural Tee | 8. 1/4"-20 x 1-1/4" Screws |
| 3. 48" or 120cm Structural Tee | 9. 1/4" Lock washer |
| 4. 144" or 360cm Perimeter Angle | 10. 1/4"-20 to 3/8"-16 or 1/4"-20 to M10-1.5 adapter |
| 5. Field Connector | 11. 3/8"-16 x 7" or M10-1.5 x 18cm Turnbuckle Assembly |
| 6. XL Field Connector | |



**DATA CENTER AIRFLOW
MANAGEMENT SOLUTIONS**

Performance Criteria

The bottom side of the structural grid has a continuous threaded 1/4"-20 slot for mounting items directly to the grid. In many cases the configuration of the equipment may require the use of 3/8"-16 or M10-1.5 all thread. There are two options for these instances. First we offer a field adapter that simply screws into the grid and has a female connection point for a 3/8"-16 or M10-1.5 threaded bolt. Second is the use of a standard perimeter connector. This is best for mounting very heavy equipment to the ceiling. Refer to the table below for load performance details on the grid and connections.



System Performance Criteria			
Hanging Method	Grid Load Performance (with building connections 4'x4' on centers)	1/4"-20 Connection to Grid (Adapters for 1/4"-20 to 3/8"-16 or M10-1.5 are also available)	Perimeter Connector (In line with building connection)
Point Load (lbs)	380 lbs* (1.7 kN)	380 lbs* (1.7 kN)	800 lbs (3.6 kN)
Uniform Load (lbs/ft ²)	50 lbs/ft ² (2.4 kN/m ²)	-	-
Ultimate Point Load (lbs)	700 lbs (3.1 kN)	760 lbs (3.4 kN)	1600 lbs (7.1 kN)

*Max point load no less than 4' (120cm) apart in any direction.

Air Sealing Grommets

By-pass air, which is any air delivered into the data center that is not consumed by the equipment and exhausted as waste heat, can have a significant impact on the cooling capacity of a data center.

Tate's air sealing grommets are designed to improve the energy efficiency and air sealing performance of your data center by preventing leakage from the raised floor plenum when penetrations are required for power and data cables above the floor.

Tate has identified a standard cut-out location that works with any rack to ensure that the cutout is always in the proper location inside the back door. Tate's unique standardization option means that the time and mess associated with field cutting is eliminated.

Standard Integral

A heavy duty grommet with a removable lid. The grommet uses a double layer gasket system made of a flexible rubber membrane below a brush to deliver airtight seals around cables.



Mini

Designed to seal small cable openings in the raised floor of new or existing computer rooms. The 5" x 2.5" opening offers flexibility for data centers that have multiple cable opening sizes.



Surface Mount

Provides a quick and easy way to seal existing cable cutouts without the need to disconnect cables. Installs using adhesive tape on the underside of the grommet and screws.



Round

The Split feature of the Round 4" allows product installation or removal without disturbing cables. Designed to seal openings in new and existing raised floor cutouts to block bypass airflow and maximize cooling system efficiency.



Extended

Designed to seal a variety of existing larger openings, with the added flexibility of modification for unique openings. Can be modified to seal unique cable openings and areas such as gaps around CRAC & CRAH units.



Grommet Name	Area	Imperial (Inches)	Metric (mm)
Standard Integral	Usable Cable Area	7.25 x 4.75	184 x 120
Surface Mount	Usable Cable Area	6.5 x 6.5	165 x 165
Mini	Usable Cable Area	5 x 2.5	127 x 64
Round	Usable Cable Area	4 Dia.	102 Dia.
Extended	Usable Cable Area	22 x 2.5	559 x 64

Rack Level Management

Snap In Blanking Panels

Blanking panels eliminate the migration of hot and cold air through unoccupied areas of an IT equipment rack. Ergonomically designed for simple tool free installation. Also available with quick view temperature strips that display a temperature range from 50°- 102° F (10° - 38.8° C)



Pass Through Blanking Panels

This innovative aluminum and Hybrid Brush Technology panel cost effectively controls airflow. Designed to provide an effective airflow sealing solution when used in conjunction with pullout switches or servers that may be occasionally extracted.



Full Rack Blanking Panels

Designed to seal up to 42U of opening in the server rack, the Full Rack Blanking Panel Kit greatly reduces bypass airflow by eliminating the gaps in the server rack and creating a contained server rack environment.



Aisle Level Management

Under Rack Panels

Designed to seal large and unique openings found under various sized racks and cabinets, the Under Rack Panel allows easy modifications for new and retrofit applications.



Ceiling Return Grille

Tate's high volume ceiling return grille directs large volumes of hot exhaust air into the drop ceiling plenum enabling the hot air to exit freely minimizing mixing with the cooling air flow.



IsoFlo[®] Cabinet

Fully Contained Cabinet Improves Cooling Efficiency

Tate's IsoFlo cabinet completely isolates the IT cooling from the rest of the facility. Automated airflow controls reduce energy costs and provide the most efficient use of the data centers IT cooling capacity. The dedicated airflow path for equipment cooling aids in the implementation of fully economized or passive airflow cooling designs.

Cabinet Benefits

- **Efficient** - Cabinet level containment allows for increased inlet air temperatures and completely eliminates bypass airflow.
- **Operationally Cost Effective** - The ability to incrementally increase the equipment inlet air temperature or use passive airflow supply allows IsoFlo to provide a very cost effective data center cooling platform.
- **Capital Cost Effective** - IsoFlo cabinets are more cost effective than cabinets with aisle containment, and offer mechanical equipment savings in new build.
- **Flexible** - There is no requirement for hot/cold aisle layout. The isolated airflow paths and standard module sizes of the chimney and airflow panel allow the cabinet to be deployed in any new or existing pod or cage configuration.
- **Monitoring and Control** - Automatic airflow controls allow for simple integration with the building management system and DCIM can provide real time information to the data center manager.



The hot and cold airflow paths within the cabinet are shared when a row of IsoFlo cabinets are installed together. Optional partition walls are available that allow airflow between cabinets but restrict access for colocation environments.



ContraFlo® Cabinet

Reverse Flow Cabinet for Raised Floor Data Centers

The ContraFlo cabinet turns airflow upside down to offer an alternative to hot aisle containment or chimney designs. Using a raised floor plenum as the return path, ContraFlo can simplify the isolation of hot exhaust air. Using any flooded room approach the cool air is supplied to the IT equipment through a typical perforated front cabinet door. ContraFlo then uses a solid roof and rear doors to channel the exhaust air down through a high volume airflow panel into the raised floor plenum, isolating it from the cool air in the room. Pressure differential monitoring is used at the rack level to maintain accurate airflow delivery at all times, ensuring no more energy than required is used for cooling the space.

Advantage over other hot air containment

Hot air containment requires additional components and considerations to realize the benefits. ContraFlo reduces costs and eliminates the obstructions created by chimneys or aisle containment systems and ductwork to air handling equipment simplifying the distribution of other services.

Benefits:

- No chimneys, rigid barriers or additional air handling ductwork required
- Eliminate potential service distribution coordination conflicts
- Allows for simple retrofit into existing raised floor down-flow spaces
- Low cost design compared to other rack and containment configurations
- Utilizes raised floor plenum for exhaust path maintaining data center flexibility
- Efficient design that prevents intermixing of exhaust air and supply air
- Multiple options for rack level pressure monitoring to efficiently manage airflow volume



Slab Design

Slab designs limit the flexibility and adaptability of a data center. By using aisle or chimney containment on a slab wire & cable service distribution becomes challenging due to the many overhead obstructions.



Reverse Flow Cabinet

Using a reverse flow cabinet with a raised floor offers many advantages over a slab design. A raised floor return plenum and reverse flow cabinet is more cost effective than a cabinet with a hot air containment solution. In addition, raised floors simplify the maintenance and distribution of other services.



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