AUS & NZ





Residential Pavements

# **PaveX**<sup>TM</sup>

# **Joint Systems**

**Product Guide** 



PaveX™ Crack-A-Joint™

125mm

**SMART:** Fully integrated pavement system.

**EFFECTIVE: Reduces maintenance & repair costs.** 

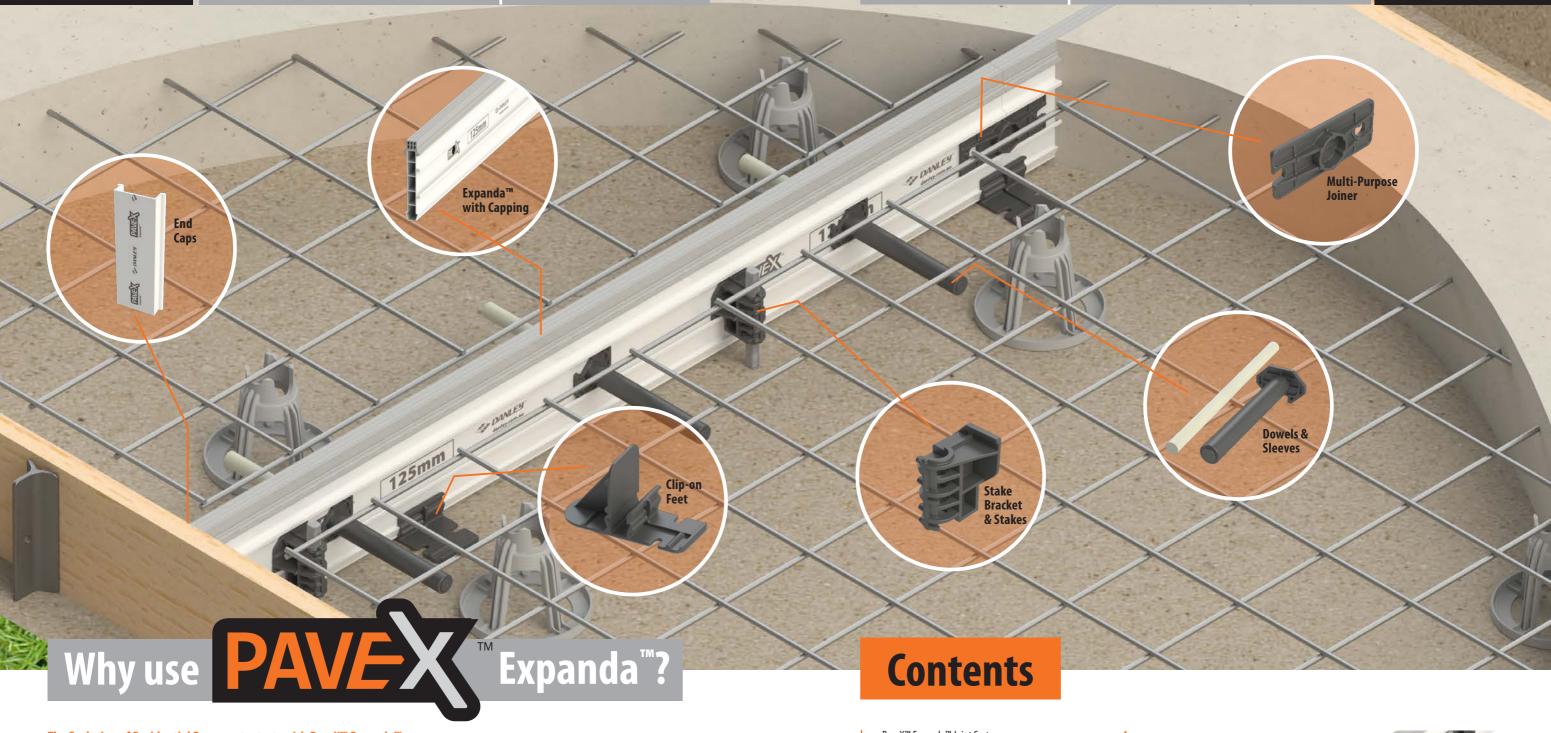
**SAFE:** Mitigates trip hazards and public liability exposure.

www.danley.com.au

Refer to the back of this booklet for contact information.



PaveX™ Expanda™



### The Evolution of Residential Pavements starts with PaveX™ Expanda™

Designed and developed in conjunction with councils and concrete contractors alike, PaveX™ Expanda™ raises the bar in jointing systems for footpaths, bikeways and urban streetscapes.



Complies with the requirements of AS 3727.1:2016 **Residential Pavements** 



Corrosion-Free & UV Stable uPVC



Limits deflection and spalling that may cause tripping hazards.



Stay in place, load bearing capping provides a smooth & low noise transition over the joints.

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# PaveX™ Expanda™ Joint System

### **Product Description**

PaveX<sup>™</sup> Expanda<sup>™</sup> is a core component of the broader PaveX<sup>™</sup> Residential Pavement eco-system. Designed and developed in conjunction with councils and concrete contractors alike, PaveX™ Expanda™ is a lightweight, corrosion-free and modular expansion joint system that is quick & easy to install.

Available in 75mm, 100mm and 125mm profiles, PaveX<sup>™</sup> Expanda<sup>™</sup> complies with the requirements of Australian Standard AS 3727.1:2016 Residential Pavements. Innovative 14mm diameter Glass Fibre Reinforced Polymer dowels and sleeves provide load transfer between pavement sections. The unique design of the uPVC extruded PaveX™ Expanda™ sacrificial formwork profiles provide up to 10mm of thermal expansion of concrete and are job site tough.

Proudly designed and developed in Australia, PaveX™ Expanda™ is supported by best-in-class specification detail and installation guidelines. PaveX™ Expanda™ can be easily added to Council Master Specifications and is intuitive to use on site



### **Y** Features & Benefits

- Complies with the requirements of AS 3727.1:2016 Residential
- Corrosion-free design, uPVC formwork profiles extruded to 3 metres in length
- Available in 75mm, 100mm and 125mm profiles.
- Supplied in kits 15 lineal metres of joint, complete with all
- · 14mm diameter GFRP dowels and sleeves provide load transfer.
- PaveX™ Expanda™ joint formwork provides for 10mm thermal expansion of concrete.

- Innovative formwork channel engages the stake bracket, dowel sleeves and joiner.
- Drive-n-Twist stake and stake bracket for levelling of formwork. Joiner doubles as a stake tool.
- Clip-on feet help position and support the formwork during installation & pour.
- Formwork supplied with pre-fitted, stay-in-place capping.
- PaveX™ Expanda™ load supporting capping features a removable strip, if joint fillers are specified.
- Supplied to site in a simple 3 pack kit.





SMART: Fully integrated pavement system.

**EFFECTIVE:** Reduces maintenance & repair costs.

SAFE: Mitigates trip hazards and public liability exposure.

### **Applications & Environments**

Footpaths

Bicycle Paths

Driveways

Urban Streetscapes

### **Councils/Specifiers:**

- Complies with the requirements of AS 3727.1:2016 Residential Pavements.
- Corrosion-free design, suitable for coastal or marine environments, chlorinated or salt-water swimming pool surrounds, pavements exposed to diesel fuels or wastewater treatment plants.
- Technical and Installation support tools are available

### **Contractors:**

- Intuitive design easy to use.
- Self-supporting design.
- Supplied to site in a simple 3 pack kit.
- Kits include components for 15 lineal metres of PaveX™ joint.
- Pour-through capability.
- Technical and Installation support tools are available.

### **Distributors:**

- Complies with the requirements of AS 3727.1:2016 Residential Pavements.
- Technical and Installation support tools are available.
- · Supplied to site in a simple 3-piece kit.

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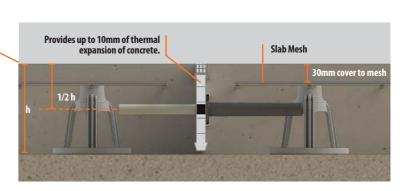
· Simplified pack & kit code naming convention and packaging.



### **Compliance & Technical Data**

### AS 3727.1:2016 Expansion Joint Detail

- · Load bearing expansion joint capping prevents concrete spalling.
- Dowel placed centrally. 1/2 the slab thickness (h). Dowel limits differential deflection, provides for load transfer and thermal expansion of concrete.
- Mesh to terminate at a minimum of 40mm from the Construction Joint.
- Compressible PaveX™ Expanda™ profiles provide up to 10mm of thermal expansion of concrete.



### PaveX™ Expanda™ complies with the load requirements of AS 3727.1:2016 Residential Pavements (✓)



### PaveX™ Expanda™ GFRP Dowel Performance Data

Pavement Thickness	Concrete Strength AS 3727.1:2016	Vehicle Load AS 3727.1:2016	PaveX™ Dowel and Spacing	Estimated Wheel Load (kN)	Load on Critical Dowel (kN)	PaveX™ Dowel Design Capacity (kN)	Load Safety Factor
75mm	20MPa	3 tonne light vehicle	GFRP 14mm @ 300mm	2.0	0.4	2.0	5.0 🤡
100mm	25MPa	3 tonne light vehicle	GFRP 14mm @ 300mm	9.0	2.7	4.3	1.6 🤡
125mm	*25MPa	*5 tonne vehicle (estimated)	GFRP 14mm @ 300mm	15.0	4.1	6.5	1.6 🔗

### PaveX™ Expanda™ GFRP Dowel Performance vs Round Steel Dowels

Pavement Thickness	Concrete Strength AS 3727.1:2016	Round Dowel AS 3727.1:2016	Load on Critical Dowel (kN)	Round Steel Dowel Design Capacity (kN)	Load Safety Factor	PaveX™ Dowel Design Capacity (kN)
75mm	20MPa	Not required	N/A	N/A	N/A	2.0
100mm	25MPa	R12 at 400mm spacing	3.1	4.0	1.3	4.3
125mm	*25MPa	R16 at 300mm spacing	4.1	6.5	1.6	6.5

<sup>\*</sup> AS 3727.1:2016 does not specify concrete strength or vehicle loads for 125mm pavements. R16 dowel capacity is based on the weight of a city delivery truck (5 tonnes). AS 3727.1:2016 does not specify dowels for 75mm pavement however dowels are included in PaveX™ kits as best practice for load transfer, particularly in pavement remedial works. The load on the critical dowel is calculated using standard default sub-base values.





At ramsetreid, we set-up, pour and destroy hundreds of panels every year in the pursuit of developing high performance systems for the concrete construction industry. Fig A: The innovative PaveX™ GFR Polymer dowels shear cone test. Fig B: Comparative shear testing of R16 Steel dowels. In both cases a concrete shear cone has developed during testing to failure, so the dowel itself is not the limiting factor and both systems give similar results.

### **Product Trials & Validation:**

PaveX™ Expanda™ joint system was developed with the support of leading councils and concrete contractors across Australia and New Zealand. So when it came to validating the functionality of the system, whom better to put PaveX™ to the test in the real world, than the experts that pour pavements everyday?



### Installation Guidelines PaveX<sup>TM</sup> Expanda<sup>TM</sup>

PaveX™ Expanda™ complies with the requirements of AS 3727.1:2016 Residential Pavements ✓





#### Set up of PaveX™ Expanda™ Profiles.

Ensure the subgrade is prepared and timber formwork is in place. For pavements less than 3 metres wide, cut PaveX™ Expanda™ profile to the required length with a saw. For pavements greater than 3 metres wide, use the supplied Multi Purpose Joiner to connect profiles together.



#### Attaching PaveX™ Expanda™ Clip-on Feet.

Locate the PaveX™ Clip-on feet in carton labelled PXSET. Use 1 foot per metre (4 Clip-on feet per 3 metre length). Place the braced side of the foot to the on-channel side of the PaveX<sup>™</sup> profile. Clip-on feet are compatible with 100mm & 125mm profiles only.

Note: Avoid clipping feet at pre-cut dowel holes.



### Install the Stake Brackets in the Expanda™ profile's utility

Take note of the directional arrow on the Stake Bracket indicating the "down" direction. Hold the Stake bracket at 45° to the utility channel, twist 1/4 turn to engage and lock in place.

Recommended spacings for Stake Brackets are 600mm centres (maximum) and 100mm in from the ends.



### Placing PaveX™ Expanda™ at

We recommend the use of a string line for a straightness & levelling guide. Place PaveX<sup>™</sup> Expanda<sup>™</sup> at the prescribed joint locations, perpendicular to the timber formwork. Before hammering, ensure the threaded end of the stakes are at the top & that the flat sides of the stakes are parallel to the profile. Hammer the provided stakes through the stake brackets until the top of thread is approx. 25mm below the top of



### **Locking PaveX™ Expanda™**

Lift the Expanda™ profile until flush with the top of the timber formwork. Using either the Multi Purpose Joiner or a wrench, twist the stake 90° to lock the profile in place.

Suggestion: Twist and lock in the stake brackets at both ends first.



#### Load Transfer: Installing the **GFRP Dowels & Sleeves.**

PaveX<sup>™</sup> dowels and sleeves are provided in the carton labelled PXD14. First, insert GFRP dowels into the sleeves. From the channel side of the profile, align the exposed end of the dowel with the pre-cut dowel holes. Insert the dowel until the flange of the dowel sleeve mates with the profile. Twist until the sleeve locks in to the profile's utility channel.



#### Place mesh either side of the oint in accordance to AS 3727.1:2016.

Mesh must be supported by bar chairs that comply with AS/NZS 2425:2015 and are nositioned at a maximum of 600mm centres.



#### Pour through concrete either side of the Expanda™ profile.

Ensure that concrete is adequately compacted around the profile and dowels. Finish concrete to project requirements, ensuring the removal of concrete laitance to expose the surface of the Expanda™ capping. For best results, we recommend the use of a damp sponge or cloth to clean the capping profile.

### Additional Features PaveX<sup>TM</sup> Expanda<sup>TM</sup>

PaveX™ Expanda™ complies with the requirements of AS 3727.1:2016 Residential Pavements



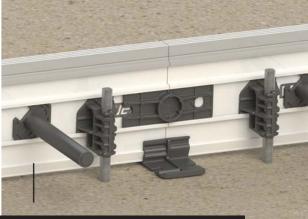


PaveX™ Expanda™ profile is supplied pre-fitted with a durable, stay-in-place capping (Fig. 1).

If specialty sealants are specified for the project, Expanda™ capping can be scored on an exposed end and ripped along the full length of the joint (Fig. 2).

The resultant removal of capping provides a 12mm deep void to meet surface sealant requirements (Fig. 3).

Fill void with sealant or filler to the manufacturer's specification (Fig. 4).



### PaveX™ Multi-Functional Joine

For pavements that are greater than 3 metres wide, PaveX™ Expanda™ can be butted end-to-end, using the provided PaveX™ Multi Purpose Joiner.

Slide the joiner in the utility channel until it is flush with the end of the profile. Align with the adjoining profile, then slide the joiner back to equally bridge across both profiles.

**Handy Hint:** For added stability at the connection of the profiles, install a Clip-on foot directly below the joiner.



Optional: If required, the PaveX™ Expanda™ joiner can also be used as a tool for removing the stake.

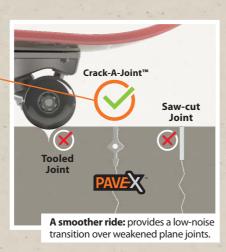
Stakes may need re-positioning due to impediments in the subgrade including rocks, rubble or tree roots.



**Recommended:** The use of PaveX<sup>™</sup> Expanda<sup>™</sup> end caps can mitigate the ingress of debris into the internal expansion voids of the profile. End caps are sold separately.

Place an end cap on either end of the PaveX™ Expanda™ profile prior to positioning between the timber formwork. End caps are cast into the 

PaveX™ Crack-A-Joint™



### PaveX<sup>™</sup> Crack-A-Joint<sup>™</sup>

### **Product Description**

As an alternative to traditional saw cutting and tooled joints, PaveX<sup>™</sup> Crack-A-Joint<sup>™</sup> induces a controlled crack to the full depth of the concrete.

PaveX<sup>™</sup> Crack-A-Joint<sup>™</sup> is available in 3 metre lengths, with profile heights of 25mm and 38mm which initiate a crack in slabs between 75mm and 150mm in depth.

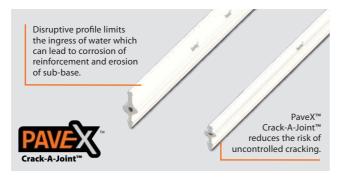
Extruded in UV stabilised uPVC. PaveX™ Crack-A-Joint™ is also suitable for use in pavements in chemically corrosive environments including chlorinated or salt-water swimming pool surrounds and coastal environments.

PaveX<sup>™</sup> Crack-A-Joint<sup>™</sup> complies with the requirements of AS 3727.1:2016 Residential Pavements.

### **Features & Benefits**

- Safety: Reduces the risk of cuts and abrasions caused by sharp edges on traditional steel profiles.
- · Complies with the requirements of AS 3727.1:2016 Residential Pavements.
- · Immediately initiates a contraction joint in the slab when placed in freshly poured wet concrete.
- · Unique profile compliments aggregate interlock which facilitates load transfer.
- · Profile heights of 25mm and 38mm initiate controlled cracks in slabs between 75mm and 150mm in depth.
- Corrosion-Free: PaveX™ Crack-A-Joint™ is extruded from UV stabilised uPVC.
- · Finish the slab the same day. There is no need to return the next day for saw-cutting.

- PaveX<sup>™</sup> Crack-A-Joint<sup>™</sup> will butt up to any given edge, including columns
- PaveX ™ Crack-A-Joint™ can be placed quickly, with precision.
- Lightweight and easy to carry around the iob site.
- Reduces the risk of early shrinkage cracking, producing architecturally aesthetic pavements.
- No joint filler required: The edge of the PaveX™ Crack-A-Joint<sup>™</sup> profile acts as a support for the edge of the concrete and stops unsightly fraying and spalling.
- Available in 3m standard lengths.
- Optional: PaveX™ Crack-A-Joint™ Rip-A-Strip Capping and Clip-on Joiners are sold separately.





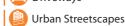
### **Applications & Environments**











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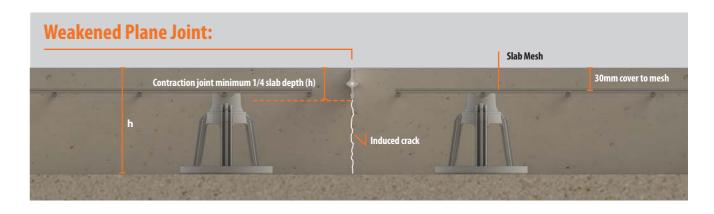


## **Compliance & Technical Data**

PaveX™ Crack-A-Joint™ complies with the requirements of AS 3727.1:2016 Residential Pavements (✓)



### AS 3727.1:2016 - Compliance Information



- Constructed by creating a plane of weakness to a depth of 1/4 the pavement thickness (h) from the surface.
- Spacing of Crack-A-Joint<sup>™</sup> to be no greater than prescribed in Table 5.2 of AS 3727.1:2016.
- · The steel reinforcing mesh shall be terminated 50mm short of either side of the plane of weakness.
- No sealant required at top of weakend plane joint.
- Crack inducers that are placed along the bottom of the slab are not recommended as the location of the crack at the surface is not controlled.





Saw-cut timing is critical. Late saw-cutting may lead to unsightly, uncontrolled cracks that are susceptible to spalling.



**Tooled joints** may not initiate a crack to the full depth of the slab and do not support small hard wheels such as skateboards, rollerblades, skates and scooters.



As an alternative to traditional saw cutting and tooled joints, PaveX™ Crack-A-Joint™ induces an immediate controlled crack to the full depth of the concrete. PaveX™ Crack-A-Joint™ eliminates the need to return the next day for saw-cutting.

### **Installation** Guidelines

### PaveX™ Crack-A-Joint™ complies with the requirements of AS 3727.1:2016 Residential Pavements (✓)





### **Preparing PaveX™** Crack A-Joint™ for use.

For pavements less than 3 metres wide, pre-cut PaveX™ Crack A-Joint™ profile to the required length with a saw. For paths greater than 3 metres wide, use the Crack-A-Joint™ Clip-on joiner (sold separately) to connect profiles together.

Hint: When using a bull-nose finishing edger, it is recommended to reduce the Crack-A-Joint™ profile lengths by x2 the radius of the edging tool. This eliminates the protrusion of visible edges of the profile at the finished edge of the concrete pavement.



### Placing PaveX™ Crack A-Joint™

Mark the concrete with a string line or a straight edge along the line of the joint.

PaveX<sup>™</sup> Crack-A-Joint<sup>™</sup> can be installed using a variety of methods.

#### **Recommended Installation:**

Whilst screeding wet concrete, work Crack-A-Joint ™ into the concrete until the top edge of the profile is flush with the concrete.



# Remove the thin laver of concrete laitance. Clean the joint line with a damp sponge or cloth.

### PaveX™ Crack-A-Joint™ — Optional Features



### Hint: PaveX™ Crack-A-Joint™ can also be used with capping.

If required, PaveX™ Crack-A-Joint™ capping is sold separately on a spooled roll. PaveX™ Crack-A-Joint™ capping can be fitted to joined profiles onsite to provide a continuous joint line. Capping includes a removable Rip-A-Strip™ which, when removed, produces a clean and clearly defined joint finish. Keyed-in anchoring wings on the capping profile seals the joint, mitigating the ingress of debris and water, whilst preventing weed growth.



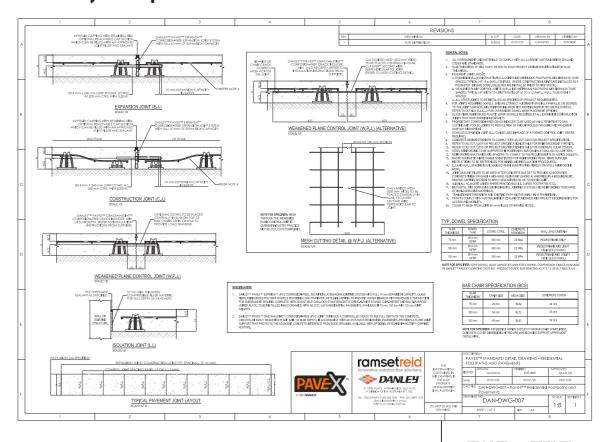
For pavements that are greater than 3 metres wide, PaveX™ Crack-A-Joint™ can be butted end-to-end, using the provided clip-on joiner.

Prior to placing it into concrete, align the connecting Crack-A-Joint™ profiles, then clip the joiner over the arrowed base of the profiles. PaveX™ Crack-A-Joint™ Clip-on joiner is compatible with both the 25mm and 38mm profiles.

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# **How to Specify**

### **PaveX™ Joint System Specification Details**



### Specifying PaveX<sup>™</sup> Expanda<sup>™</sup> For Expansion Joints

DANLEY™ PAVEX™ EXPANDA™ uPVC CORROSION-FREE, SACRIFICIAL FORMWORK JOINTING SYSTEM WITH FULL 10 mm EXPANSION CAPACITY. GLASS FIBRE REINFORCED POLYMER DOWELS PROVIDING LOAD TRANSFER. KEYED-IN CAPPING TO PREVENT WATER INGRESS WITH REMOVABLE TOP SECTION FOR SUBSEQUENT SEALING. COMPLETE WITH ADJUSTABLE CAM-LOCK STAKE BRACKETS, DRIVE-N-TWIST STAKES, CLIP-ON FEET AND MULTI-PURPOSE JOINER PLATE. TO BE INSTALLED IN ACCORDANCE WITH AS 3727.1:2016 RESIDENTIAL PAVEMENTS. AVAILABLE IN 75 mm, 100 mm AND 125 mm JOINT HEIGHTS.

Scan the QR Codes to download a copy of the PaveX™ Specification Details in either DWG or PDF format.

### Specifying PaveX™ Crack-A-Joint™ for Weakened Plane Joints

DANLEY™ PAVEX™ CRACK-A-JOINT™ CORROSION-FREE uPVC JOINT TO INDUCE A CONTROLLED CRACK TO THE FULL DEPTH OF THE CONCRETE. CREATES AN EARLY WEAKENED PLANE (1/4 PAVEMENT THICKNESS) IN ACCORDANCE WITH AS 3727.1:2016 RESIDENTIAL PAVEMENTS, PROVIDES A FLUSH JOINT SUPPORT THAT PROTECTS THE ADJACENT CONCRETE INTERFACE FROM EDGE SPALLING. AVAILABLE WITH OPTIONAL KEYED-IN RIP-A-STRIP™ CAPPING FEATURE.



## **Product Packaging & Kit Codes**

### Placing an order for PaveX™ Expanda™ is as easy as 1, 2, 3.

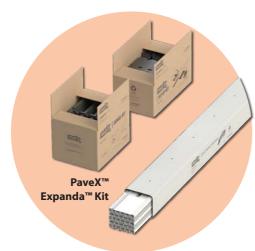
### PaveX™ Expanda™

**DANLEY** 

There are 3 simple, and easy to understand Kit codes for Expanda™

Kit Code	Kit Description		
PX075KIT	PaveX™ 75mm 5x3m with Capping, Dowels & Set-up Kit		
PX100KIT	PaveX™ 100mm 5x3m with Capping, Dowels & Set-up Kit		
PX125KIT	PaveX™ 125mm 5x3m with Capping, Dowels & Set-up Kit		

Kits comprise of the Expanda<sup>™</sup> profile with capping and the requisite components to construct 15 lineal metres of expansion joint. PaveX™ Expanda™ end caps are sold separately. Available in 50pcs packs in each profile size.



### **EXAMPLE:** When you place an order for PX125KIT, here is what you'll receive on-site:



### PaveX™ Pack Weights & Dims

#### PaveX™ Expanda™

	•		
Image	Pack Code	Pack Size (L x W x H)	Weight
1	PX075	3010 x 95 x 92 mm	8.3 kg
1	PX100	3010 x 91 x 101 mm	10.7 kg
1	PX125	3010 x 121 x 101 mm	12.3 kg
2	PXSET	363 x 208 x 150 mm	8.1 kg
3	PXD14	283 x 228 x 191 mm	4.5 kg

#### PaveX™ Crack-A-Joint™

Pack Code Pack Description		Weight
CAJ25	CAJ25 PaveX™ Crack-A-Joint™ 25mm 10x3m	
CAJ38 PaveX™ Crack-A-Joint™ 38mm 10x3m		6.2 kg
<b>CAJCG</b> PaveX <sup>™</sup> Crack-A-Joint <sup>™</sup> Rip-A-Strip Capping x 60m - Grey		4.3 kg
CAJCB	PaveX™ Crack-A-Joint™ Rip-A-Strip Capping x 60m - Black	4.3 kg
CAJCJ	PaveX <sup>™</sup> Crack-A-Joint <sup>™</sup> Clip-on Joiner 200mm x 50pcs	0.8 kg

### AS/NZS 2425:2015 Compliance

### What is AS/NZS 2425:2015?

AS/NZS 2425:2015 bar chairs in reinforced concrete - product requirements and test methods is a mandatory standard that covers minimum durability requirements for chairs and spacers used in concrete construction. All plastic chairs and spacers used in reinforced concrete construction MUST comply with the requirements of AS/NZS 2425:2015.



### Are you using AS/NZS 2425:2015 compliant bar chairs & spacers? What is at risk?

- Unsatisfactory manufacture and application of bar chairs and spacers can lead to the misplacement of steel reinforcement.
- This in turn, may compromise structural strength and reduce the durability of reinforced concrete.
- Asset Owners, Engineers, Suppliers and Building Surveyors are responsible for ensuring that compliant products are manufactured, specified and installed on construction projects.

### How do we comply?

As a trusted and leading supplier of plastic chairs & spacers, ramsetreid complies with the testing requirements of **AS/NZS 2425:2015, by ensuring:** 

- · We conduct ongoing batch testing.
- Test chairs & spacers to strength grade categories of 60kg, 120kg, 200kg and >300kg.
- Pre-load test specimens to 20kg.
- Under pre-load: Chairs <75mm to deflect ±1mm. Chairs ≥75mm to deflect ±2mm.
- Test chairs at 30°C (±2°).
- Apply load to test samples for a minimum duration of 1 minute.
- Deflection under load +3mm.
- After applied load, the final recovered position of the test specimens must be <2.0mm.
- All test results are to be recorded and retained for a minimum duration of 2 years.
- Packaging must clearly identify the supplier details, strength rating and batch test traceability.



### PROUDLY MADE IN AUSTRALIA.

PaveX<sup>™</sup> Joint System | Danley<sup>™</sup> AUS & NZ

Danley<sup>™</sup> plastic chairs & spacers are manufactured in our ISO 9001 Accredited Facility.





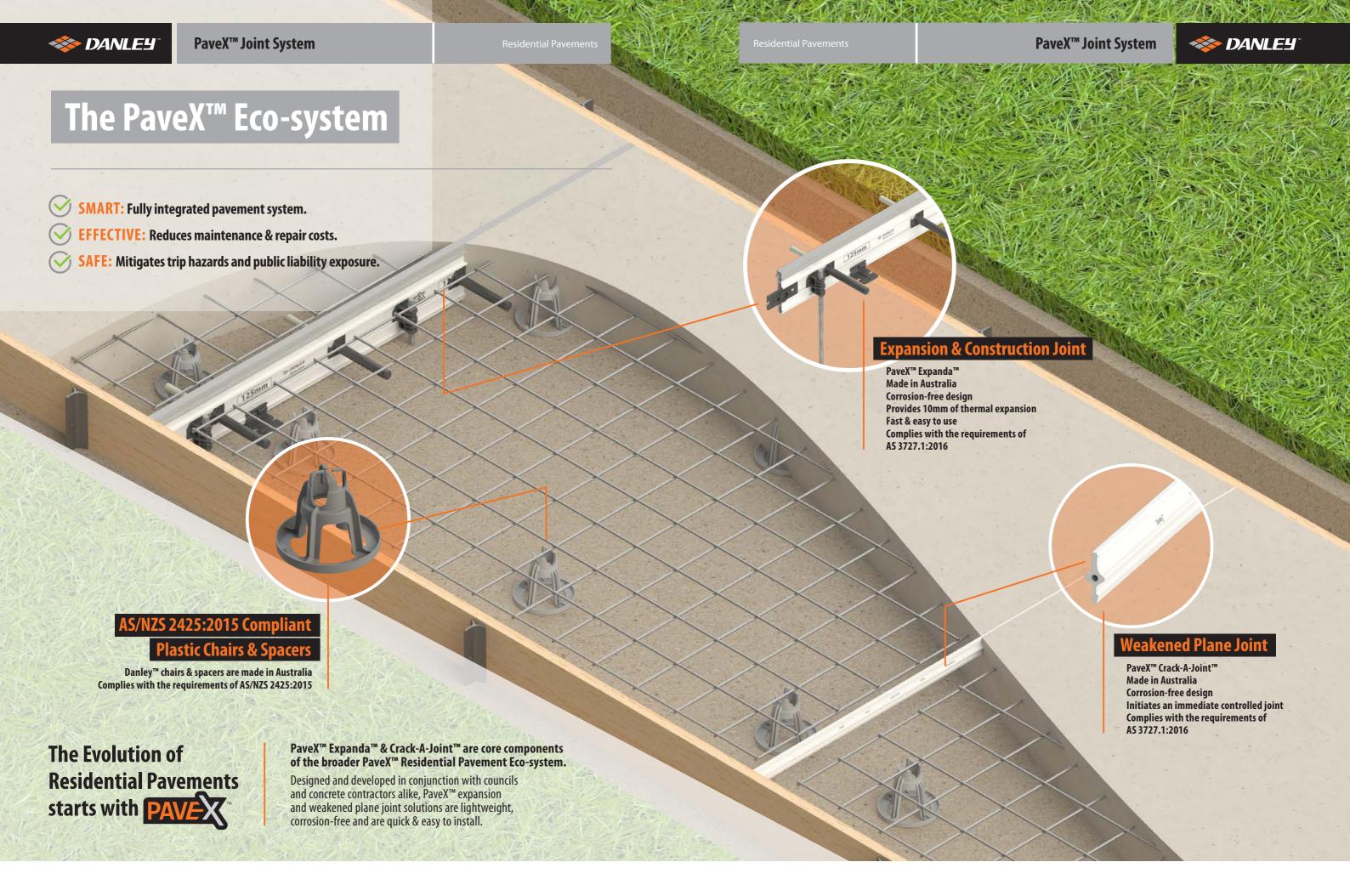




**Every batch of Danley™** chairs and spacers we manufacture are tested in our NATA endorsed facility in Melbourne.



All Danley™ plastic chairs and spacers comply with the requirements of AS/NZS 2425:2015



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### customer service

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