

# Hi-Seal<sup>TM</sup> CONSTRUCTION SEALANTS

Ramset Hi-Seal Construction Sealants are formulated utilising next generation technology that offers superior performance to meet the challenges posed by today's construction techniques and the environment.



Hi-Seal<sup>TM</sup>  
**DuraMax**

Hi-Seal<sup>TM</sup> FC

Hi-Seal<sup>TM</sup> PU+



**Ramset<sup>TM</sup>**  
[www.ramset.co.nz](http://www.ramset.co.nz)

# Hi-Seal of approval. Guaranteed ✓

## Approved Applicators

Ramset has developed a network of quality approved applicators who have completed training to an acceptable level of competence.

When you select a Ramset Approved Applicator you can be confident of knowing they have the experience and training to apply and install Ramset products to the appropriate technical specifications.

Please phone Ramset NZ on 0800 RAMSET for a list of approved applicators.



## Accessories

37cm Sachet Barrel Gun  
Plastic Cone Nozzles

Part # 670SAE  
Part # 7N1599



37cm Sachet Barrel Gun



Plastic Cone Nozzles

Closed Cell Backing Rod

PF ROD 6MMX50M  
PF ROD 8MMX50M  
PF ROD 10MM X 50M  
PF ROD 13MM X 50M  
PF ROD 15MM X 50M  
PF ROD 20MM X 50M  
PF ROD 25MM X 50M  
PF ROD 30MM X 50M  
PF ROD 40MM X 2M  
PF ROD 50MM X 2M

PFROD06  
PFROD08  
PFROD10  
PFROD13  
PFROD15  
PFROD20  
PFROD25  
PFROD30  
PFROD40  
PFROD50



Closed Cell Backing Rod

# Contents

---

**Ramset Hi-Seal DuraMax**

Silyl modified polymer (SMP) sealant

Page 4

**Ramset Hi-Seal FC**

High performance polyurethane elastomeric joint sealant

Page 6

**Ramset Hi-Seal PU+**

Class A polyurethane sealant

Page 8

**Jointing Guidelines**

Page 10

# Hi-Seal™ DuraMax

## Silyl Modified Polymer

### Description

Ramset DuraMax is a solvent free versatile 1-part low modulus silyl modified polymer (SMP) sealant for multipurpose applications in the construction and general building industry.

DuraMax cures with humidity from the air to form a tough but low modulus sealant with high elasticity, which has an excellent resistance against weathering and chemicals. This new easy to use sealant is even resistant to water immersion during the early stages of curing.

DuraMax is free of solvents, PVC, PCB and isocyanates and is fully paintable according to DIN 52452, PT4. It has an extraordinary low shrinkage on curing.

Ramset Hi-Seal DuraMax Construction Sealant passes ISO 11600-F-25LM and is New Zealand E2/AS1 compliant. This also confirms a  $\pm 25\%$  joint movement capability.

DuraMax is suitable for most common building materials such as concrete, brick, fibre cement boards, glass, ceramic tiles, marble, natural stone, metals, timber, rigid PVC and all connection and movement joints, indoor and outdoor. It is ideal for all construction joints, such as at window, door, roof and facades, joints in wood and metal architraves.

The VOC level of 10 gms/L means it can confidently be specified for any building compliant to NZGBC requirements. Ramset DuraMax is one of the safest and lowest VOC construction sealant on the New Zealand market.

### General Properties

Type	Silyl Modified Polymer (SMP), neutral curing
Colours:	Grey, Black, White
Curing system:	With humidity from air
Sagging:	< 2 mm (DIN 52454-ST-U 26-23)
Extrusion rate:	> 100 g/min (DIN 52456 - 6 mm)
Density:	Approximately 1.5 g/cm (DIN 52451 -PY)
Total Joint movement:	$\pm 25\%$ of joint width
Skin formation:	(+23°C / 50% RH) Approximately 2 hours
Curing speed:	(+23°C / 50% RH) Approximately 2 mm/24 hours
Shrinkage:	< 3% (DIN 52451 -PY)
Tensile strength:	(@ 100% elongation) Approximately 0.3 - 0.4 N/mm <sup>2</sup> (DIN 52455 NWT-1-A2-100)
SHORE A hardness:	Approximately 20 (DIN 53505, 28 days at 23°C/50% RH)
VOC	10 grams per litre as per SCAQMD Rule 1168.
Solvent Content:	Zero
Isocyanate Content:	Zero
Temperature limits:	Approximately -40°C to +80°C; short-time up to +100°C
Application temperatures:	+5°C to +40°C (surface temperature)

### Preparation of Joints

Surfaces to be sealed have to be sound, clean and dry and free from dust, grease and release agents and flaky paint or old sealant residue. Do not attempt to re-seal over silicone sealants. Materials to be sealed must be compatible with DuraMax (according to DIN 52452, Part 1); they must not contain bitumen or tar. Adhesion and compatibility with plastics must be tested to ensure good adhesion. When sealing coated surfaces (such as water repellent facades) a pre-test for compatibility must be carried out. With some acrylic coatings adhesion loss has been observed due to plasticizer migration.

Joint design is done according to DIN 18540; that is approximately 2:1 ratio width to depth. Avoid three sided adhesion. Always use profiles made from polyethylene foam for pre-filling, to avoid adhesion of the sealant to the backside of the joint. Profiles have to be compatible with DuraMax; do not use products containing bitumen, tar or oil. Cover edges of the joint with adhesive masking tape.

Primers: Use DuraMax Porous Primer, a film-forming primer for concrete and other porous materials and for a few metals and plastics. For sealing of natural and synthetic stone compatibility tests have to be performed. This product can be used without primer on anodized aluminium, galvanised steel, rigid-PVC, polystyrene and polycarbonate. Any glass surfaces must be primed using DuraMax Glass Primer to prevent UV attack to the glass / sealant interface.

### Application

Fill joints with sealant evenly and without trapping air. Smooth surface immediately using spatula wetted with water with a SMALL amount of wetting agent added. Remove adhesive tape directly after smoothing of the surface and before sealant forms any skin. Use only low concentration of wetting agent to avoid discoloration of sealant or adjacent surfaces. Use opened containers within short period of time.

Curing time depends on temperature and humidity. Once a firm skin has formed paint can be applied. It is best to use a pure acrylic water based paint as the first coating over the sealant. Note that DuraMax has a movement capability far greater than a normal paint film. If the joint is moving then cracks can appear in the paint surface.

### Limitations

Ramset DuraMax is not recommended for sealing floor joints. This sealant is not designed to seal continuously immersed joints or below waterline applications.

### Cleaning

Uncured material can be removed using Solvent. This solvent can also be used to remove grease from the surface to be sealed. Cured materials can only be removed mechanically.

# Hi-Seal™ DuraMax

## Silyl Modified Polymer



### Health & Safety

Fuller details on each of the products mentioned are available on the product Safety Data Sheets. To ensure no harm is caused to persons using Ramset products, it is recommended that the appropriate Safety Data Sheets are read by all concerned.

### First Aid

If swallowed do not induce vomiting, give a glass of water and contact a doctor immediately.

If skin contact occurs remove contaminated clothing, wash with warm soapy water. Do not scrub.

If eye contact occurs hold open and flood with water for at least 15 minutes. Get medical advice.

For emergency information contact the National Poisons Information Centre, phone 0800 764 766 (0800 POISON) or CHEMICALL, phone 0800 243 622.

### Disposal

If spilt, absorb with clay, sand or earth. Dispose of in land fill.

### Shelf Life

9 months if stored in cool, dry conditions in original, unopened containers.

### Usage

The following usages apply for a 10 x 10 mm<sup>2</sup> joint:

- 600ml sausage - approximately 6 metres
- 300ml cartridge - approximately 3 metres

### Packaging

Colour	Pack Size	Order Number
White	300ml cartridge	HSDMW300
Grey	600ml sausage	HSDMG600
Black	600ml sausage	HSDMB600



# Hi-Seal™ FC

## Fast Curing Polyurethane Trafficable Sealant

### Product

Hi-Seal FC is a fast cure high performance one component polyurethane elastomeric joint sealant.

### Description

When fully cured Hi-Seal FC will provide a tough, flexible seal capable of cyclic expansion and compression to  $\pm 25\%$  of original joint width without primer on most substrates. Hi-Seal FC is unaffected by ultra-violet radiation, atmospheric contamination or pollution. Its excellent weatherability enables it to retain its original properties after years of exposure.

(C.S.I.R.O RILEM exposure study).

### Recommended Uses

- Trafficable - Plats, stairs, roads, runways, aprons and pavements.
- Vertical - Precast, blockwork, aluminum, plasterboard, timber and most common building substrates.
- Pick resistant - Prisons, cells, schools and public amenities.
- Chemical resistant - Service stations, hangers, aprons and banded areas.
- Fungal resistance - Wet areas, wash down bays, food processing.

### Features & Benefits

- Compliant - ISO 9002
- Aromatic Technology - No priming required on most substrates.
- U.V Resistant - No discolouration.
- $\pm 25\%$  Movement - Low modulus elastomeric sealant.
- Abrasion & Pick Resistant - Security applications.
- Shore A 45 - Trafficable applications.
- AS 4020 - Potable water approval.
- Excellent Chemical Resistance - Petroleum & wash down environments.
- Resistant to Fungal attach AS 1157.2 - Chicken, poultry & food environments.
- Acoustic Properties
- Paintable

### Approvals & Standards

ASTM C.920-87 & 98 (USA) as Type S, Grade NS, Class 25, use T,G,A,M&O as an external joint sealant. Federal Specification TT-S-00230C, Type II, Class A. AS 4020-1992 Potable Water.

### Performance Properties

Property	Typical Value
Typical properties	after seven days cure at 25°C and 50% RH
Technology	Aromatic
Appearance	Non-sag smooth thixotropic paste
Cure System	Moisture Curing
Tack free time(minutes)	45 minutes
Rate cure	in mm/24h 3.5
Hardness	Shore A 45 + 5%
Tensile Strength	> 2.1 N/mm <sup>2</sup>
Elongation at break	> 650%
Application Temperature	5°C to 35°C
Temperature Resistance	-40°C to + 70°C
Colour	Grey

### Application Instructions

#### Preparation

Clean all surfaces by removing foreign matter and contaminants such as oil, dust, grease, frost, water, surface dirt, old sealants and any protective coating. Porous substrates should be cleaned by grinding saw cutting or blast cleaning (sand or water). Dust, loose particles, etc should be blown out of joints with oil free compressed air or vacuum cleaned. Non porous and plastic surfaces should be cleaned by solvent or mechanical means.

Cleaning solvents should not be allowed to air dry or evaporate without being wiped with a clean, dry cloth.

#### Priming

For maximum performance on porous surfaces use Ramset N49 Primer. 5077 cleaner / N40 primer is recommended for non-porous surfaces. On applications involving glass, specially treated surfaces or critical structural fabrications consult Ramset for primer recommendations.

#### Application

Hi-Seal FC when used as an adhesive or sealant should be dispensed from the sausage sachet by means of a hand or air operated caulking gun designed for such application (available from Ramset).

Pierce the membrane from the top of the cartridge and screw on the supplied nozzle. Having previously cut this to give the required angle and bead size.

Place the cartridge in a suitable Ramset extrusion gun and press the trigger. For sausages, a barrel gun is required, this is available from Ramset. Clip the end of the sausage and place complete sausage with pierced end located at the top of the nozzle. Screw top of nozzle and housing on barrel of gun. Using the trigger on the gun extrude product from the sausage to stop product flow, using the thumb depress the catch plate mechanism located at the very rear of the gun, directly above the trigger.

Apply Hi-Seal FC in a continuous operation using positive pressure adequate to properly fill and seal a cavity.

# Hi-Seal™ FC

## Fast Curing Polyurethane Trafficable Sealant

### Precaution

- Hi-Seal FC should not be used in highly chlorinated areas such as swimming pools, spas etc without prior consultation with Ramset Technical Services.
- Hi-Seal FC should not be used in glazing applications subject to UV light radiation or direct sunlight exposure without prior consultation with Ramset.
- Hi-Seal FC should not be applied or finished with wet tooling techniques, using solvents, water or detergent/ soap solutions.
- Hi-Seal FC sealant should not be applied to unpredictable absorptive surfaces such as marble, limestone or granite unless a standard of appearance has been agreed on as a result of testing for stain and/or discolouration.
- Do not use in interior or exterior structural sealing below the waterline in marine applications.
- Do not apply at temperatures below 5°C.
- Do not apply to surfaces with special protective or cosmetic coating such as mirrors, reflective glass or surfaces coated with Teflon, polyurethane or polypropylene. Will not adhere to polyethylene, polypropylene or PTFE.

### Paintability

Ramset Hi-Seal FC can be painted as early as 24 hours after application using water borne coating and most epoxy coating systems. Coatings containing high solvent contents such as gloss enamels or high oil based undercoats may cause the surface of the sealant to react creating a tacky surface to develop. A field test is recommended to ensure compatibility. To obtain best appearance and performance the paint must approximate the elongation capabilities of the sealant. High build coatings with some elastomeric ability such as quality acrylic emulsions have the capability to absorb low movement without significant distortion of the paint film. Please contact Ramset Technical Department if unsure of any paint system.

### Health & Safety

On contact, uncured sealant causes irritation. Gloves and protective goggles must be worn during application and use.

- Avoid contact with skin, eyes and avoid breathing in vapour.
- Wear protective gloves when mixing or using
- If poisoning occurs, contact a doctor or Poisons Information Centre.
- If swallowed, do not induce vomiting. Give a glass of water.
- If skin contact occurs, remove contaminated clothing and wash skin thoroughly for a minimum of 15 minutes and see a doctor.
- For more detailed information refer to Safety Data Sheets.

### Clean-Up

Clean up uncured material and equipment immediately after using solvent. Do not use solvents on skin.

Cured Hi-Seal FC is difficult to remove via chemical means and mechanical means may be necessary.

### Storage

Store between 5°C and 30°C.

Shelf life is twelve months in original unopened cartridge or sausage.

### Usage

Approximate usage based on a 10 x 10 joint

600ml sausage - 6 metres

### Packaging

Colour	Pack Size	Order Number
Grey	600ml sausage	HSFCG600



# Hi-Seal™ PU+

## Class A Polyurethane Construction Sealant

### Product

Hi-Seal PU+ is a low modulus, one component, Class A polyurethane sealant.

### Description

When fully cured Hi-Seal PU+ it will form a tough, flexible seal capable of cyclic expansion and compression movement of  $\pm 25\%$  of the original joint width.

Hi-Seal PU+ is virtually unaffected by normal weathering conditions, ultra-violet radiation, atmospheric contamination and pollution.

Its excellent weatherability enables it to retain its original properties after years of exposure.  
(C.S.I.R.O. RILEM Long- Term Durability Study)

### Recommended Uses

#### Sealing joints in:

- In situ concrete
- Precast and tilt up panels
- Brick & blockwork
- Aluminium windows
- Granite, sandstone and marble
- Interior / Exterior

### Features and Benefits

- UV and weather resistant
  - Excellent resistance to aging and weathering
  - Permanently flexible
  - Will not shrink or crack
- Thixotropic - no sagging or running
- Excellent flexibility - joint movement  $\pm 25\%$
- Acoustic rated
- Suitable for contact with drinking water - AS4020-1994
- Non-corrosive neutral cure
- Paintable with acrylic based surface coatings
- AS1157-1972 fungus and mildew resistant

### Approvals and Standards

- CSIRO RILEM LONG - TERM SEALANT DURABILITY STUDY DBCE Doc. 97/196 (M)
- ISO 11600-Class F-25LM
- ASTM C.920-87 & 98 (USA) as Type S, Grade NS, Class 25, use NT,G,A,M,&O as an external joint sealant
- AS4020 – 1992 Potable water
- AS1157-1972 Resistance to fungal growth
- Ministry of Agriculture and fisheries New Zealand (Meat, fish, Game, Poultry- All areas)

### Performance Properties

Property	Typical Value
Appearance	Non-sag smooth thixotropic paste
Chemical type	Polyurethane
Application temperature	+5°C to +35°C
Tool working time	30mins at 20°C
Tack free time	6 to 12 hours
Cure rate	2mm per 24 hour period
Max. joint movement	$\pm 25\%$
Max. joint width	50mm
Elongation at break	900%
Cure hardness	Shore A30
Tensile strength	1.3N / mm <sup>2</sup>
Service temperature	-40°C to 70°C
Chemical resistance	Dilute alkalis and acids. Temporary contact with petrol, diesel and other hydrocarbons

### Application Instructions

#### Preparation:

Clean and dry all surfaces by removing foreign matter and contaminants such as oil, dust, grease, frost, water, dirt, old sealants and any protective coating. Dust and loose particles should be blown out of joints or vacuum cleaned. Non porous surfaces may require preparation / priming, refer primer selection guide. Cleaning solvents should not be allowed to dry or evaporate without being wiped with a clean, dry cloth. DO NOT USE METHYLATED SPIRITS.

#### Priming:

For maximum performance on porous surfaces and in all immersed applications use Ramset N49 Primer.

5077 cleaner / N40 primer is recommended for non-porous surfaces.

#### Application:

Hi-Seal PU+ should be dispensed from either the cartridge or sausage by means of a caulking gun (available from Ramset).

Pierce the membrane at the top of the cartridge and screw on the nozzle. Cut nozzle to give the required angle and bead size. Place the cartridge in a Ramset applicator gun and squeeze the trigger.

For sausages, a barrel gun is required, clip the end of the sausage and place in barrel gun.

Screw end cap and nozzle on to barrel gun. Using the trigger extrude the sealant, to stop depress using the catch plate.

Apply Hi-Seal PU+ in a continuous bead using enough pressure to properly fill the joint.



# Hi-Seal™ PU+

## Class A Polyurethane Construction Sealant

### Precaution

Hi-Seal PU+ should not be;

- Used in chlorinated water such as swimming pools, spas etc.
- Used on any material containing bitumen. Bitumen products should not come into contact with Hi-Seal PU+
- Constantly immersed in salt water
- Used for glazing applications
- Applied to cement based substrates within 28 days of initial pour or set.
- Used in trafficable joints
- Applied at temperatures below 5°C.
- Joints subject to prolonged immersion in water.

### Paintability

Ramset Hi-Seal PU+ can be painted after full cure. Coatings containing solvents such as enamels, oil based or other coatings may cause the surface of the sealant to react creating a tacky surface. A field test is recommended to ensure compatibility of the coatings with Hi-Seal PU+.

### Health & Safety

On contact, uncured sealant causes irritation. Gloves and protective goggles should be worn during application and use.

- Avoid contact with skin, eyes and avoid breathing in vapour.
- If poisoning occurs, contact a doctor or Poisons Information Centre.
- If swallowed, do not induce vomiting. Give a glass of water.
- If skin contact occurs, remove contaminated clothing and wash skin thoroughly for a minimum of 15 minutes and see a doctor.
- For more detailed information refer to Material Safety Data Sheet.

### Clean-Up

Clean up uncured material and equipment immediately after using solvent. Do not use solvents on skin.

Cured Hi-Seal PU+ is difficult to remove via chemical means and mechanical means may be necessary.

### Storage

Store between 5°C and 30°C. Shelf life is 18 months in original unopened cartridge or sausage.

### Usage

Approximate usage based on a 10 x 10 joint  
600ml sausage - 6 metres

### Packaging

Colour	Pack Size	Order Number
Grey	300ml cartridge	HYSLGYG375
Grey	600ml sachet	HSPUG600



# Ramset™ Construction Sealants

## Guidelines for joint design and movement calculation

### Overview

Movement of joints in concrete structures is caused by:

- Changes in temperature (Opening and closing)
- Concrete shrinkage (Opening)
- Concrete creep (Closing)

The factors that cause joints to open are the most significant when optimising joint design for sealants.

Because joints move, sealants must be elastic and flexible to avoid splitting, tearing and loss of adhesion.

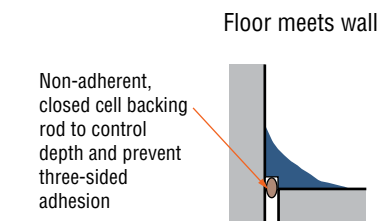
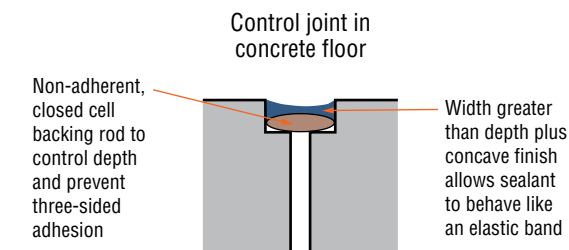
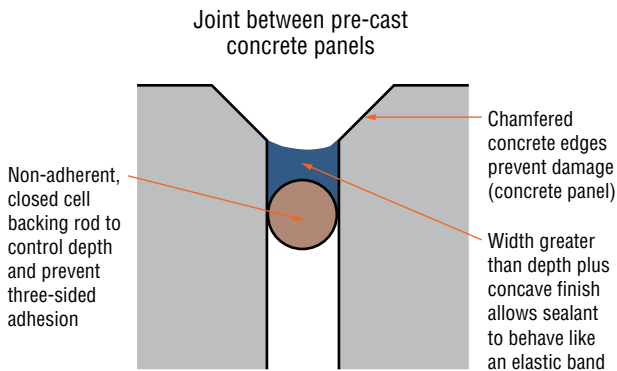
A sealant's flexibility is defined by its strain capacity, expressed as a percentage change in nominal joint width.

### Joint configuration

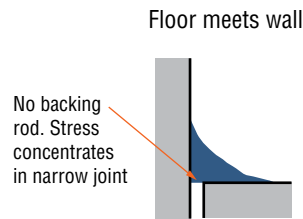
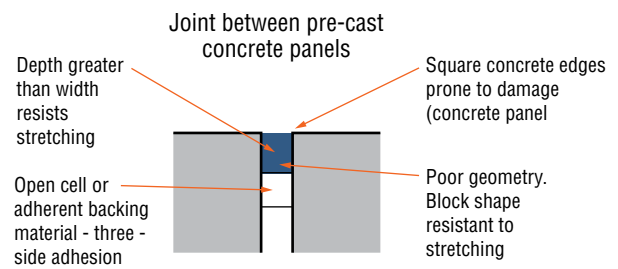
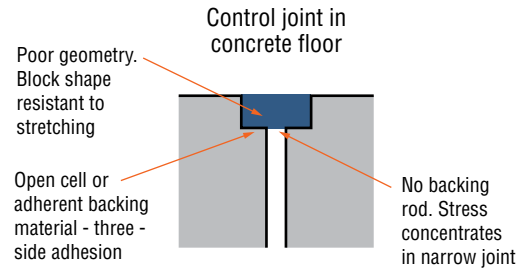
#### Correct Width to Depth Ratio

Joint Width	Joint Depth
6mm to 10mm	Equal to joint width
10mm to 20mm	10mm
20mm to 50mm	Equal to 1/2 x joint width

#### Correct joint configuration



### Incorrect joint configurations



### Joint design

Following is a simple, conservative method for calculating minimum joint width. For more accurate and rigorous treatment, consult the references listed on the next page of this document.

#### Calculation of joint width

$$\text{Minimum Joint Width, } b_{\min} = 100 / \text{Sealant Strain Capacity} \times \Sigma \Delta L \dots (1)$$

$\Sigma \Delta L$  = Anticipated joint movement

$$\Sigma \Delta L = \Delta L_t + \Delta L_{cs} \dots (2)$$

$\Delta L_t$  = Change in Joint Width due to Temperature Change (mm)

$\Delta L_{cs}$  = Change in Joint Width due to Concrete Shrinkage (mm)

#### Changes in temperature

$$\Delta L_t = L \times c_{\text{temp}} \times \Delta T \dots (3)$$

L = Joint Spacing (mm)

$c_{\text{temp}}$  = Coefficient of Concrete Thermal Expansion (mm/mm°C)

$\Delta T$  = Change in Temperature (°C)

# Ramset™ Construction Sealants

## Guidelines for joint design and movement calculation

### Concrete shrinkage

$$\Delta L_{cs} = L \times \hat{A}_{cs} \dots (4)$$

L = Joint Spacing (mm)

$\hat{A}_{cs}$  = Concrete Shrinkage Strain =  $850 \times 10^{-6}$  mm (Conservative. Refer AS3600 Clause 6.1.7 for accurate values)

In this simple method, effects that cause joints to close are ignored, as they do not impart tensile strain on the sealant. For example concrete creep and temperature increase cause joints to close resulting in compression of the sealant.

### Worked example:

Concrete Panel Width = L = 4m

Thickness = 150 mm

Installation Temperature = 30°C

Minimum Temperature = 5°C

Sealant = Ramset HiSeal

Strain Capacity =  $\pm 25\%$

$$\epsilon_{c,temp} = 12 \times 10^{-6} \text{ mm/mm}^\circ\text{C}$$

$$\hat{A}_{cs} = 850 \times 10^{-6} \text{ mm}$$

$$\Delta L_t = 4 \times 1000 \times 12 \times 10^{-6} \times (30 - 5^\circ\text{C}) = 1.2 \text{ mm}$$

$$\Delta L_{cs} = 4 \times 1000 \times 850 \times 10^{-6} = 3.4 \text{ mm}$$

$$b_{min} = 100 / 25 \times (1.2 + 3.4) = 18.4 \text{ mm}$$

### References

AS3600 – 2001, Concrete Structures Standards Australia Precast Concrete Handbook  
National Precast Concrete Association Australia 2002 Warner et al 1998 Concrete Structures, Addison Wesley Longman Australia Joint Design.

Glazing must comply with AS1288 - 1994

Joint Width	Joint Depth
6mm to 10mm	Equal to joint width
10mm to 20mm	10mm
20mm to 50mm	Equal to $\frac{1}{2}$ x joint width

Correct joint design is necessary to ensure sealants do not split or tear.

- Depth must not be less than 6mm.
- Control joint depth using closed-cell polyethylene backer rod available from Ramset, or other non-adherent material to prevent three-sided adhesion.
- Anticipated joint movement must be less than the joint movement capacity.
- Lap shear joints should have a bead width equal to, or greater than twice the anticipated movement.
- For all applications requiring a high degree of dynamic movement the designed joint width should be at least four times the total anticipated joint movement.

Failure to observe these recommendations can result in tearing or splitting of the sealant.

### Surface preparation

Mask around joints prior to application to obtain a neat finish.

Surfaces should be dry and free from oil, grease, dust, release agents, sealants, adhesives or other substances that may interfere with the bond of some products.

Powder coatings that contain wax based matting agents may prevent some products bonding to them.

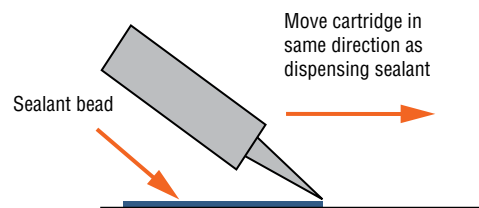
Metal surfaces should first be degreased using solvent or methylated spirits.

### Application instructions

Cut conical tip of threaded nipple and screw on nozzle. Cut nozzle to required diameter. Load cartridge into caulking gun. Dispense sealant into joint, moving the cartridge as illustrated.

Tool the sealant before it skins (see Skinning time for each product) to force it into contact with substrates to ensure adhesion.

Remove masking tape before sealant skins.



**Auckland - Albany**  
5J Miro Place, Albany  
p 09 447 1296  
f 09 447 1297  
e alban@ramset.co.nz

**Auckland - Penrose**  
35 Station Rd  
p 09 579 3072  
f 09 579 1701  
e auckland@ramset.co.nz

**Auckland - Henderson**  
123 Central Park Drive  
p 09 838 9865  
f 09 837 3014  
e henderson@ramset.co.nz

**Auckland - East Tamaki**  
Unit 1, 333 East Tamaki Road  
p 09 272 4701  
f 09 272 4703  
e easttamaki@ramset.co.nz

**Whangarei**  
2A Herekino St  
p 09 438 2010  
f 09 438 9188  
e whangarei@ramset.co.nz

**Hamilton**  
15 Somerset St  
p 07 847 9047  
f 07 847 9980  
e hamilton@ramset.co.nz

**Tauranga - Mt Maunganui**  
Unit 1, 15 Portside Drive  
p 07 572 0520  
f 07 572 0530  
e tauranga@ramset.co.nz

**Rotorua**  
Waterford Park Estate  
50 Old Taupo Rd  
p 07 348 0190  
f 07 348 9200  
e rotorua@ramset.co.nz

**New Plymouth**  
p 06 759 8984  
f 06 759 8983  
e newplymouth@ramset.co.nz

**Palmerston North**  
903 Tremaine Avenue  
p 06 357 6745  
f 06 357 6775  
e palmerstonnorth@ramset.co.nz

**Napier - Onekawa**  
124 Taradale Road  
p 06 843 0067  
f 06 843 0043  
e napier@ramset.co.nz

**Lower Hutt**  
46 Victoria St  
p 04 569 7247  
f 04 566 8752  
e lowerhutt@ramset.co.nz

**Wellington**  
147 Taranaki St  
p 04 384 4138  
f 04 385 0868  
e wellington@ramset.co.nz

**Nelson**  
p 03 548 2664  
f 03 548 3559  
e nelson@ramset.co.nz

**Christchurch - Riccarton**  
7 O'Shanneseey Place  
p 03 341 8710  
f 03 341 8730  
e christchurch@ramset.co.nz

**Christchurch - Hornby**  
Unit 2/37 Foremans Rd  
p 03 349 4749  
f 03 349 4750  
e hornby@ramset.co.nz

**Dunedin**  
5 Melbourne St  
p 03 455 1134  
f 03 456 1388  
e dunedin@ramset.co.nz

**Invercargill**  
121 Clyde St  
p 03 218 9241  
f 03 214 7787  
e invercargill@ramset.co.nz

**Queenstown**  
200A Glenda Dr  
p 03 442 8073  
f 03 442 8074  
e queenstown@ramset.co.nz

No part of this publication may be reproduced without the prior written consent of Ramset New Zealand. While every effort has been made to ensure the accuracy of the information in this publication, the publishers accept no responsibility or liability for any errors or omissions. Ramset New Zealand fully exclude any liability to any person in respect of, or arising out of any reliance by such person on any contents of this publication for any purpose.