

High joint movement accommodation, two component, polyurethane joint sealant for water retaining structures

Uses

Sealing movement and static joints in water retaining structures, especially in applications likely to be subjected to biological degradation such as:

- Sludge digestion tanks
- Sewerage and water treatment plants
- Filtration and aeration tanks
- Water reservoirs

Advantages

- Resistant to bacteriological attack
- Slump resistant - suitable for vertical joints
- Abrasion resistant
- Excellent adhesion to primed substrates
- High joint movement accommodation
- Two component - predictable, even cure rate
- Long track record in demanding environments

Standards Compliance

Emer-Seal 200 complies with the following standards:

AS 4020 - Products for use in contact with potable water.

Description

Emer-Seal 200 is a two part, gun grade, slump resistant elastomeric polyurethane sealant specially formulated for sealing joints in all water retaining structures. It is highly resistant to biodegradation by both aerobic and anaerobic bacteria, which makes Emer-Seal 200 particularly well suited to sewage treatment and storage plants.

Technical Support

Parchem offers a comprehensive range of high performance, high quality construction products. In addition, Parchem offers a technical support package to specifiers, end-users and contractors, as well as on-site technical assistance.

Design Criteria

Emer-Seal 200 is designed for use in water retaining structures and may be applied to joints between 20 mm and 50 mm wide. Joints should be designed to accommodate the anticipated movement due to thermal changes, hydrostatic forces and any other factors. To cope with the hydrostatic pressures the joint sealant depth should be a minimum 20mm to ensure sufficient bond to the joint faces. Joint width to depth ratio should never exceed 1:1 ie. The depth should never be greater than the width.

Typically, joints in water retaining structures will be 20mm (W) x 20mm (D) up to 50mm (W) x 25mm (D)

When joint sizes are outside these parameters, consult with the local Parchem sales office for specific advice.

Movement accommodation factor (MAF)

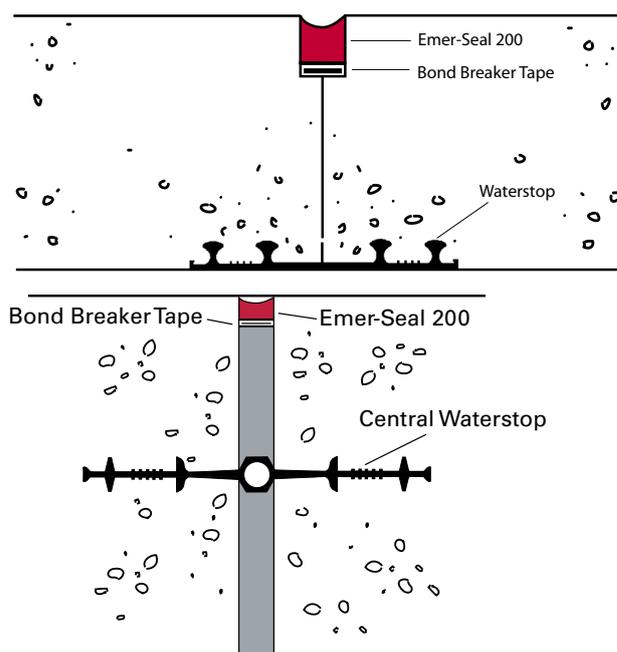
Joints expected to withstand repeated or cyclical movement or extremes of heat, chemical attack or physical abuse should be designed and spaced so that total joint movement under tension and compression does not exceed +/- 30% (total 60%) of the joint width at time of sealing. The total movement in shear should not exceed 50% of joint width at time of sealing in these joints.

Bond breaker tape and joint fillers

Joints subject to hydrostatic pressure must have the sealant supported by a sound, rigid Parchem joint backing material and must incorporate a suitable Fosroc Supercast waterstop. Do not use backing materials which will bleed oils, solvents or bitumen. A self adhesive polyethylene bond breaker tape must be used to prevent adhesion of Emer-Seal 200 to the back of joint or to joint fillers and thus allow optimum sealant performance. Under no circumstances should duct tape, masking tape or any other tape be used apart from a polyethylene tape (See application example below for uses of backing materials).

Priming

Priming is essential on all surfaces to assure a sound bond between substrate and sealant and ensure that optimum movement capability and ageing characteristics are realised. (See Application instructions for details).



Examples of a sealed joints in water-excluding structures.

Properties

Data quoted is typical for this product but does not constitute a specification.

Emer-Seal 200:	2 part compound in paste form
Product Code:	620610
Pot life (working life) at 23°C:	2 hours
Cure time at 23°C:	Initial cure: 24 hours Full cure: 14 days
Colour:	Grey
Specific gravity:	Approximately 1.3
Solids content:	100%
Application temperature:	5°C - 50°C
Service temperature:	Minus 40°C - 80°C
Water immersion:	Must be fully cured before immersion. Unaffected by water immersion after curing
Hardness Shore A:	Typically 25
Movement accommodation factor:	Maximum 60% for butt joints (± 30%)
Flammability:	Burns, but does not readily support combustion. Note that toxic fumes may be generated if product is burned
Chemical resistance:	Resistant to dilute acids and alkalis to occasional spillage and aliphatic solvents (Avgas, petrol etc.) Not resistant to aromatic or oxygenated solvents

Specification Clauses

“Where so designated on the drawing, joints are to be sealed with Emer-Seal 200 two part polyurethane sealant, manufactured by Parchem. All parties involved in the project and the installation of the sealant must read and understand the technical data sheet before installing the sealant. Joint preparation, sealant mixing and application must be in strict accordance with the manufacturer’s instructions and preferably be installed by an experienced contractor. Storage shelf life is 3 months when stored in unopened original containers in dry conditions, between 5°C and 30°C.

Applications Instructions

Joint preparation

Ensure that joint dimensions are as specified, and that anticipated joint movement is within the capability of the Movement Accommodation Factor of Emer-Seal 200. Concrete should have been allowed to cure for at least 28 days.

Remove all dirt, dust, laitance and loose material from concrete by vigorous wire brushing or grinding. Remove all rust, scale and protective coating from metal surfaces, and clean off any oil or grease using Solvent 10. Joint faces in concrete must be sound, flat and free of surface irregularities and completely dry, clean and frost free. Be wary of any excess moisture in the bottom of the joint ie from any expansion joint filler’s or ponding of water, it is imperative the joint must be completely dry prior to application of the primer and sealant, the applied primer must not be exposed to any moisture prior to the application of the sealant itself. Any joint faces which do not meet these requirements may require forming of a fresh joint surface by saw cutting or refacing with a suitable epoxy mortar. For a particularly neat finish, cover the face edges of the joint with masking tape before priming. Prime joint as detailed below, inserting bond breaker and/or backing material when appropriate.

Priming masonry surfaces

Use Primer 13. This is a two part epoxy surface primer with exceptionally good hydrolytic stability which ensures good adhesion of Emer-Seal 200 to the substrate under prolonged submerged conditions. The ambient and substrate temperature needs to be above 5°C before and after the application of the primer. Mix the two components of the primer by pouring the Hardener component into the Resin component, mix thoroughly for a minimum of one minute by stirring with a spatula, paint stirrer etc. Apply an even coat of primer by brush onto the bonding faces of the concrete, the base of the joint should have no primer residue present after the primer has been applied, then allow the primer to become touch dry before applying any sealant (typically 1 hour at 23°C). **DO NOT APPLY SEALANT TO TACKY OR WET PRIMER.** The sealant must be applied within 8 hours at normal temperatures - within 3 hours at elevated temperatures (above 30°C).

The pot life (usable life) of mixed Primer 13 is 30 minutes @ 23°C and 20 minutes @ 30°C. Any unused mixed Primer 13 should be discarded after the pot life has expired.

Priming metallic surfaces

Use Primer 4 on clean rust free ferrous metal. Consult the Technical Services Department for treatment of stainless steel. Apply primer and allow to dry for a minimum of one hour but not longer than eight hours prior to application of Emer-Seal 200.

Special notes on priming any surface type

Primed areas not sealed within eight hours of primer application must be abraded, re-cleaned and reprimed.

It is essential to ensure that faces of the joint are thoroughly primed and the back/bottom of the joint are not contaminated with primer. The concrete surface should be shiny after priming; if the surface is not shiny i.e. the primer has been absorbed into the concrete, another coat of primer should be applied.

Any primed area contaminated prior to sealing by any foreign material will require thorough cleaning and repriming.

Mixing

Prior to any priming or mixing, check that the product being used is within its Use By Date; the Curing compound should preferably be within 2 months of date of manufacture, good QA practice should be maintained i.e. batch numbers of the sealant should be recorded including the primer. Due to the short shelf life of the curing compound the product should only be ordered and delivered to site just prior to installation. If unsure, check with the local Parchem office.

To facilitate proper mixing in cold weather, it is recommended that Emer-Seal 200 be stored for at least 12 hours at approximately 20°C prior to mixing. Thorough even mixing is essential to ensure proper cure. Mix only entire units to ensure correct proportions. During mixing ensure entire contents are fully mixed, paying particular attention to the sides and bottom of the tin. Avoid air entrapment caused by bringing the blade too close to the surface. Transfer all of Curing Compound into the Base tin. Hold the tin firmly and mix thoroughly using ONLY the recommended mixing paddle fitted into a heavy duty, low speed drill (300-500 rpm) until sealant colour is uniform and streak free. For mixing material, use a small mixing paddle (pc 770164), or large mixing paddle (pc 770163). Mix for 3 minutes then scrape down sides of tin. Mix for a further 3 minutes, total mixing time should be a minimum of 6 minutes. Be wary of excessive high speed mixing as high speed mixing may entrain air into the mixed material which may intern cause air voids in the joint. Incorrect mixing can adversely affect cure and final properties.

Gun loading

Ensure that the surface of the sealant is reasonably concave to prevent air pockets. Place the relevant follower plate on top of the sealant and load by direct filling of a Parchem G-Gun or into empty cartridges.

Application

Hold the nozzle against the joint, and gun sealant firmly into the joint extruding the bead in front of the gun to minimise voids. Wipe the nozzle occasionally to ensure a clean extrusion.

Tooling

To gain adequate surface contact between sealant and substrate and to eliminate air voids, tool sealant to a smooth finish with a slightly convex trowel. Remove masking tape if used.

Cleaning

Clean up uncured material and equipment immediately after use using Solvent 10. Do not use solvents on skin. Wash hands thoroughly with industrial cleaner.

Limitations

Not recommended for post-tensioned joints, or for use in highly chlorinated water such as in swimming pools. For advice on sealing such structures, contact Parchem's technical department. Do not apply Emer-Seal 200 to any material containing mobile bitumen, nor allow bitumen to contact Emer-Seal 200. If likely to be in contact with other organic materials not specifically designed to be used with Emer-Seal 200, Parchem recommend initial testing to ensure compatibility.

Estimating

Supply

Emer-Seal 200: 6 litre units
(Base and Curing Compound supplied in correct proportions. Complete units to be mixed to ensure correct curing)

Primer 13: 250 ml units
(Base and Hardener, supplied in the correct proportions. Complete units must be mixed to ensure correct curing)

Primer 4: 250 ml units

Solvent 10: 4 and 20 litre drums

Quantities

The table below gives some typical values:

Joint Size		Usage
Width	Depth	Metres of joint / 6 litre unit
20	20	15
30	20	10
40	20	7.5
50	25	4.8

The above calculations do not allow for wastage.

Emer-Seal® 200

Primer Quantities

250 ml of Primer 13 for about 6 litres of Emer-Seal 200

250ml of Primer 4 for about 50 litres of Emer-Seal 200

A simple formula can be used to calculate the amount of Emer-Seal 200 required to seal a joint of known dimensions:

$$N = L \times W \times D$$

N = number of litres
L = length of joint, in metres
W = width of joint, in metres
D = depth of joint, in millimetres

e.g L = 10 m
W = 0.02 m
D = 20 mm
N = 10 x 0.02 x 20 = 4 Litres

Exact quantities required will vary according to substrate condition.

Storage

Shelf life 3 months when stored in unopened original containers in dry conditions, between 5°C and 30°C.

Important notice

A Safety Data Sheet (SDS) and Technical Data Sheet (TDS) are available from the Parchem website or upon request from the nearest Parchem sales office. Read the SDS and TDS carefully prior to use as application or performance data may change from time to time. In emergency, contact any Poisons Information Centre (phone 13 11 26 within Australia) or a doctor for advice.

Product disclaimer

This Technical Data Sheet (TDS) summarises our best knowledge of the product, including how to use and apply the product based on the information available at the time. You should read this TDS carefully and consider the information in the context of how the product will be used, including in conjunction with any other product and the type of surfaces to, and the manner in which, the product will be applied. Our responsibility for products sold is subject to our standard terms and conditions of sale. Parchem does not accept any liability either directly or indirectly for any losses suffered in connection with the use or application of the product whether or not in accordance with any advice, specification, recommendation or information given by it.

