

Wastewater Plant Asset Protection and Repair

Loctite® Applications & Case Histories



Wastewater Plant Asset Protection & Repair

The Effluent Never Stops!

A wastewater engineer knows the value of equipment reliability and predictability. It's their responsibility to keep the plant running 24 hours a day, 7 days a week without downtime. Whether the plant is functioning at full capacity or not, the effluent never stops!

Loctite® offers a wide range of high-quality products, services and training to help Wastewater Industry Professionals repair and extend the life of equipment and protect both mechanical and civil assets. Whether you are repairing concrete structures, combating corrosion, improving pump efficiency or preventing and sealing leaks, Loctite® branded products have a solution for all of your maintenance and repair applications.

This catalogue provides a summary of Loctite® wastewater applications and solutions. For further information call the Loctite Customer Support Line or visit our website.



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Our Commitment to the Wastewater Industry

- Dedicated Wastewater Maintenance Program
- Industry Leading Customer Support – Pre & Post Application
- Worldwide Industry Experience & Resources
- 'Hands-on' Product Application and Technical Support
- On-Site Product & Maintenance Training
- National Distribution Network and Engineering Service Agents
- Customer Support Hot Line





Loctite® Product Range

Under the Loctite® brand there are three key surface engineered technologies known as Nordbak®, Fixmaster® & Big Foot™. Tried and proven for over 50 years, these technologies offer proven solutions for the problems caused by wear, abrasion, chemical attack, erosion, corrosion, impingement, entrainment, mechanical damage and traction control.



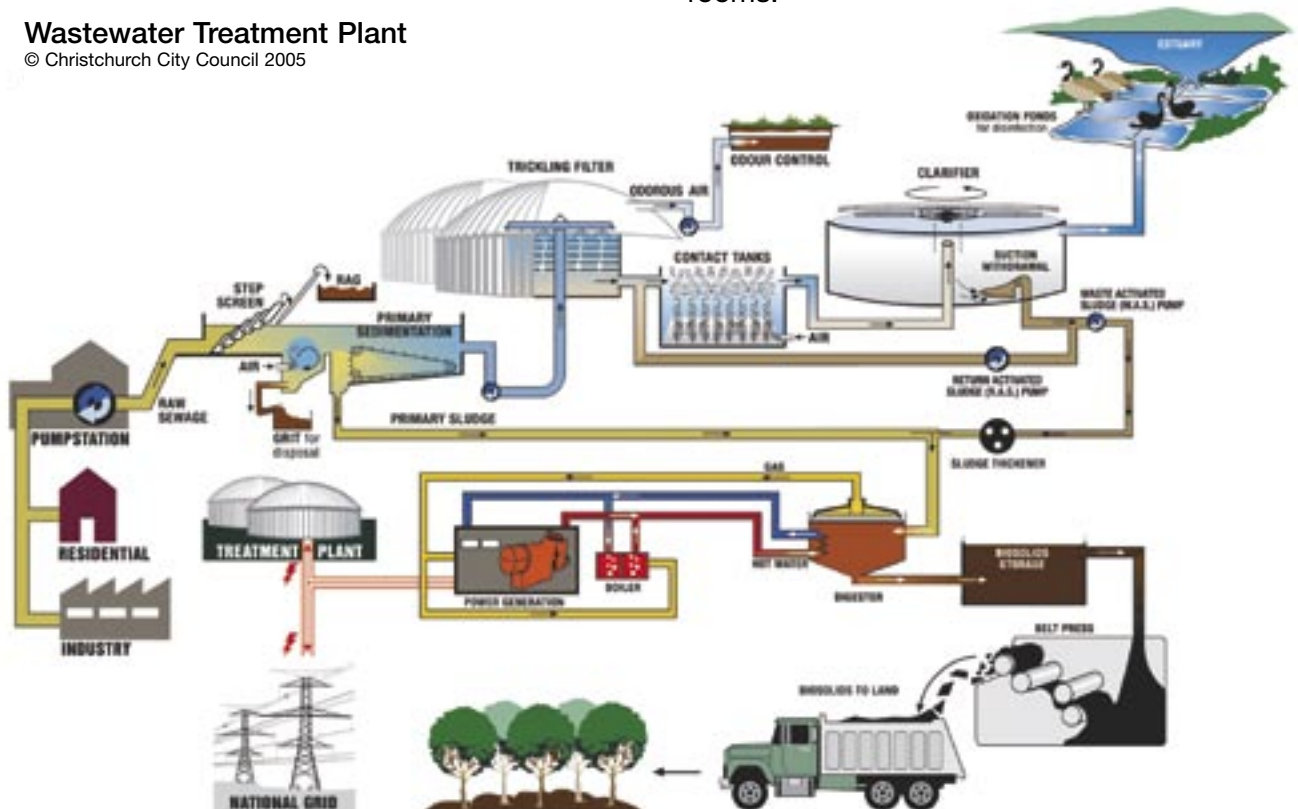
Loctite® Nordbak® – Utilises superior wear properties of ceramic and the convenience of two-part epoxies to seal and protect plant assets from wear and corrosion. Available in trowelable and brushable formulations with special fillers for tough conditions, Nordbak® is ideal for all repairs that have to last.

Loctite® Fixmaster® – Designed to repair, reclaim, protect and maintain worn metal, rubber, wet or submersed and concrete surfaces. Predominantly 2-part composites, the range varies from metal filled putties to urethanes and quartz based concrete repair products.

Loctite® Big Foot™ – Purpose designed to provide superior traction control in industrial environments, Loctite® Big Foot™ is resistant to harsh chemicals and tough enough to handle forklift and vehicular traffic. Ideal for use on steel ramps, concrete, walkways, stairs and machine rooms.

Wastewater Treatment Plant

© Christchurch City Council 2005



Loctite® Wastewater Applications

Equipment/Problem	Fixmaster® Superior Metal	Fixmaster® Fast Set Steel Putty	Fixmaster® Wear Resistant Putty	Fixmaster® Rapid Rubber Repair kit	Fixmaster® Flex 80 Putty	Fixmaster® Flex 80 Liquid	Fixmaster® Urethane Sealant	Fixmaster® Metal Magic Steel™ Stick	Fixmaster® Under-water Repair Stick	Fixmaster® Magna Crete	Fixmaster® High Performance Quartz	Nordbak® Pneu Wear	Nordbak® Brushable Ceramic	Nordbak® Chemical Resistant Coating	Big Foot® Heavy Duty Pedestrian Grade
Influent Pipes & Structures															
Repair steel pipe		●						●							
Repair submersed or wet steel pipe									●						
Repair and seal pipe sleeve				●	●										
Repair & prevent wear and corrosion of Sewage Inlet										●	●				
Repair & prevent wear and corrosion of Butterfly Valve			●										●		
Access Hole & Surge Chamber															
Repair concrete surface										●	●				
Prevent groundwater penetration and corrosion							●			●	●				
Re-seat cover							●			●	●				
Pumps															
Prevent premature wear and increase efficiency													●		
Rebuild and reclaim volute	●		●											●	
Rebuild and reclaim impeller	●		●									●		●	
Repair damaged or fatigued concrete footing										●	●				
Bar Screen															
Prevent corrosion and wear													●	●	
Repair damaged conveyor and cover alligators clips				●	●										
Grit Chamber															
Repair and prevent wear and corrosion of paddles				●	●	●							●		
Prevent corrosion and wear of grit auger				●	●	●							●		
Repair concrete surface										●	●			●	
Seal expansion joints				●		●	●								
Auger Press															
Rebuild and reclaim trough			●								●	●	●		
Rebuild and reclaim auger screw												●			
Prevent wear of auger screw leading edge												●	●		
Clarifier															
Repair & prevent corrosion and wear of scrapping spatulas					●	●							●	●	
Repair concrete surface										●	●			●	
Seal expansion joints				●		●	●								
Repair eroded wheel track											●				
Aerator															
Increase efficiency of blowers													●		
Anchor bolts										●					
Repair concrete surface										●	●			●	
Seal expansion joints							●								
Repair and prevent wear of decant gate rubber hinge				●	●										
Settling Pond															
Repair and prevent wear of agitator paddles					●	●									
Repair concrete surface										●	●			●	
Seal expansion joints				●		●	●								
Belt Press															
Prevent wear and corrosion of rollers													●		
Rebuild and reclaim trough			●								●	●	●		
Conveyor Belts															
Repair damage and cover alligators clips				●											
Wet Areas & Walkways															
Prevent slips and falls															●
Repair cracks and holes							●			●					
Chemical Containment Areas															
Extend life and prevent erosion											●			●	
Discharge Pipes & Elbows															
Prevent blockage caused by crystallisation and build-up													●		
Prevent wear and abrasion												●	●		
Machinery Footings															
Repair or replace grouting										●	●				
Anchor bolts and minimise vibration										●	●				

Concrete Repair & Protection

Solutions: Magna-Crete, High Performance Quartz
Features & Benefits: High Compression Strength, Non-Shrink, Freeze / Thaw Resistant, High Chemical Resistance, Superior Adhesion



Wastewater plants rely heavily on the use of concrete for construction of tanks and other structures. However concrete is prone to degradation caused by Corrosion, Erosion and Chemical Attack. Loctite® branded products provide long term and easy to use solutions to prevent degradation and restore concrete with minimal disruption to production.

Effects of Hydrogen Sulphide (H₂S) on Concrete

A common cause of concrete degradation is Bacterial Acid Corrosion. This corrosion is caused when aerobic bacteria in effluent produces Hydrogen Sulphide (H₂S), which converts to Sulphuric Acid (H₂SO₄) in the presence of oxygen.

The Sulphuric Acid vapour, which is released above the water line, reacts with concrete decreasing the structural strength and durability, and further increasing permeability.

Solution: A protective coating of Loctite® Fixmaster® High Performance Quartz provides long term chemical resistant protection from Bacterial Acid Corrosion and other chemical attacks.

Corrosion - Spalling

Because concrete is permeable it is prone to ingress of moisture which causes embedded steel re-enforcement bars to corrode. The corroded steel bars expand and exert a force on the surrounding concrete causing the concrete to bulge and crack.

Solution: Fixmaster® High Performance Quartz or Magna-Crete can be used to create a non-porous barrier against water ingress or to reclaim damaged surface.

Fluid Flow Erosion

The constant flow of effluent over and through concrete will eventually wear the surface.

Solution: Fixmaster® High Performance Quartz or Magna-Crete can be used to reclaim the eroded surface.

Further Loctite® branded concrete repair and protection solutions include re-seating access chamber covers, creating or repairing footings and grouting, repairing and sealing cracks and holes, and protecting chemical containment areas.

Case History

Saving Time & Money

This wastewater plant discovered major concrete erosion below the settling pond aerator. The action of aerators created a vortex under the agitator causing the concrete to degrade.

Initial estimates to repair were prohibitive and require closing the settling pond for a minimum of 15 days. Cleaned with Loctite® Natural Blue® and repaired using Fixmaster® High Performance Quartz, the pond was returned to commission within 2 days, saving significant cost in downtime and labour.



Applying Fixmaster® High Performance Quartz

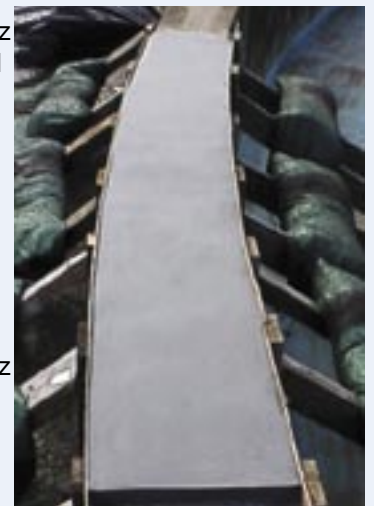
Case History

Superior Compressive Strength

Clarifier wheel tracks are prone to deterioration caused by constant pressure of the wheel rotating over the surface. Using Fixmaster® High Performance Quartz the surface was repaired with minimal downtime.

Fixmaster® High Performance Quartz is up to 5 times stronger than concrete and is highly resistant to chemical attack.

Additionally, Fixmaster® High Performance Quartz requires a minimum depth of only 6mm to achieve compressive strength, compared to concrete which requires 100mm.



Rebuilding and re-enforcing with Fixmaster® High Performance Quartz

Metal Repair & Protection



- Solutions:** Superior Metal, Fast Set Steel Putty, Wear Resistant Putty, Metal Magic Stick, Pneu-Wear, Brushable Ceramic, Chemical Resistant Coating
- Features & Benefits:** Eliminates & Breaks Corrosion / Erosion Cycle, Non-Shrink, High Compression Strength, Broad Chemical Resistance, Superior Adhesion

Loctite® branded products are designed to provide long term protection to metal components from corrosion and erosion, maximise efficiency, and minimise maintenance and repair. And when repair is necessary, Loctite® branded products can be easily applied in-situ without heat or welding.

Pump Repair & Protection

Pump casings and impellers are subject to wear from abrasive slurries and solids, cavitation and chemical attack. Each of these can wear down internal sections of pump casings. Some of the common wear areas include the cutwater, wear ring seats, impeller vane tips and inside the volute.

Solution: Repair heavy surface wear to pump casings and components using Nordbak® Wearing Compound. Ceramic beads provide superior wear resistance ensuring extended product life and greater pump efficiency. Once repaired, overcoat with Nordbak® Chemical Resistant Coating for superior resistance to chemical environments.

Further Loctite® branded metal surface solutions include repairing and preventing wear of reclaiming troughs, bar screens, auger screws, agitator paddles, and pipes.

Case History

Preventing Fluid Flow Disruption

Crystallisation of sewerage waste can cause stainless steel discharge pipes and elbows to become blocked. However application of a single coat of Nordbak® Brushable Ceramic will significantly reduce crystallisation build-up.

After three months application at a New Zealand wastewater treatment plant, these pipes sealed with Nordbak® Brushable Ceramic displayed no signs of crystallisation. Normally these pipes would have been cleaned every 3 months, requiring two staff for a full day.



4 weeks build-up



Protected with Loctite®

Case History

Increasing Belt Press Maintenance Predictability

To prevent damage to the primary equipment, belt press rollers are usually covered by a sacrificial coating of vulcanised rubber. However rubber is prone to premature wear and rapid delamination, which is both time consuming and expensive to repair.

Using Nordbak® Brushable Ceramic proved to be a superior alternative solution as it is wore evenly over a longer time period increasing predictability.

Also unlike rubber, Nordbak® Brushable Ceramic sealed the surface of the roller and bearings from erosion and chemical attack.

It was also discovered that when using Nordbak® Brushable Ceramic, the belt press tension could be further increased which resulted in a more efficient dewatering process.



These Belt Presses operate 24 hours per day

Case History

Reclaiming & Rebuilding Metal

A butterfly control valve at a Waste Water Treatment Plant was corroded and therefore unable to seal effectively. The components were abrasive blasted and a 'hold coat' of Nordbak® Brushable Ceramic (White) applied to seal the newly cleaned surface. The rough and corroded edges of the valve were then re-profiled with Fixmaster® Wear Resistant Putty before a final coat of Nordbak® Brushable Ceramic (Grey) was applied. Two coat colours can be utilised as a wear indicator for any future repairs or maintenance. The butterfly valve was returned to service within 1 day.

Rubber Repair & Protection



- Solutions:** Rapid Rubber Repair, Flex 80 Putty, Flex 80 Liquid, Urethane Sealant
- Features & Benefits:** Durable & Flexible, Non-Shrink, UV & Moisture Resistant, Resistant to Oil, Grease & Water, Superior Adhesion, Easy Mix & Application

Rubber is commonly used within a wastewater plant for construction of flexible equipment such as a conveyor belt or as a protective coating for critical operating equipment subjected to impact, abrasion and corrosion. Because these rubber components or coatings are constantly wearing, efficient repair and maintenance is vital to minimise downtime. Loctite® branded rubber repair products can be troweled, cast or brush applied and are designed for easy application and rapid cure.



Rubber components wear frequently

Rapid Conveyor Repairs

Without a functioning conveyor belt most industrial plants will incur downtime. That is why it is important to repair them as efficiently as possible.

Solution: Fixmaster® Rapid Rubber Repair is designed to repair damaged conveyor belts quickly and without the need for skilled labour. The two-part urethane is self-mixing and creates a durable repair within 2 hours of application.

Alternative methods of repair such as metal strips require creating even more holes and are time consuming.

Sealing Joints and Cracks

Minor cracks and joints can appear in any type of surface and therefore requires a universal sealant.

Solution: Fixmaster® Urethane Sealant cures to a flexible rubber and forms strong bonds to properly prepared concrete, masonry, glass, plastics, woods, and aluminum. It's formula resists deterioration from weather, stress, movement, water and many chemicals.

Further Loctite® branded rubber repair and protection solutions include coating pumps and impellers, sealing cracks and joints, forming expansion joints, casting wear parts, and repairing rubber and urethane components.

Case History

Achieving the Impossible

Many Australian wastewater plants utilise a decant gate to manage the flow of treated water from the settling pond to lower ground ponds. The gate hinges, which are made of rubber, are prone to degradation due to repetitive use and exposure to chemical attack.

Initial quotes to repair the Decant Gate at this major rural plant totaled \$100,000 and required 3 weeks downtime. However, using Fixmaster® Rapid Rubber Repair, an alternative solution was implemented.

Before application of Fixmaster® Rapid Rubber Repair the surface of the decant gate was thoroughly prepared using Loctite® Natural Blue and Fixmaster® Flex Primer & Cleaner.

Fixmaster® Rapid Rubber Repair was then easily applied to the damaged hinge using the self-mixing nozzle and dual cartridge dispenser.

Using the brushes and spatulas provided within the Fixmaster® Rapid Rubber Repair Kit, a second applicator spread the urethane to achieve a consistent coat thickness before it cured.

Finally a second coat was applied and allowed to cure for a minimum 2 hours before being returned to commission.

The Loctite® solution proved to create a durable repair in two days and at a fraction of the cost of the original repair quote. Additionally no expert labour or complicated equipment was required.

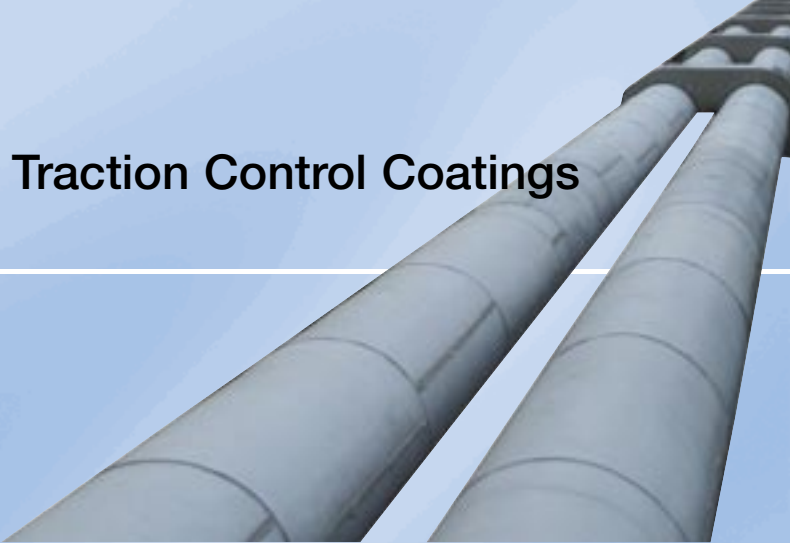


A close up of the damaged hinge



Applying Fixmaster® Rapid Rubber Repair

- Underwater Surface Repair • Traction Control Coatings
- Biodegradable Degreaser



Underwater Repairs

Not all repairs can be conducted on a clean and dry workbench, especially in a wastewater plant!

Fixmaster® Underwater Repair Stick is designed to be easily applied where it is needed, whether it is a wet, dry or submersed surface. This two-part epoxy's resin and hardener are pre-measured for consistent strength – simply twist off the desired amount, knead and apply. Featuring broad chemical resistance, it is ideal for plugging and filling cracks leaks and holes on pipes, fittings, tanks, valves and pumps.



Stop Leaking Pipes & Tanks

Case History

Preventing Slips and Falls with

Loctite® Big Foot™

According to the Australian Safety and Compensation Council there are over 26,000 new compensation claims each year for workplace falls, trips and slips. The average cost to a company for each compensation claim is \$4,500 and 4.2 weeks lost time.

Loctite® Big Foot™ products provide tough, long-lasting anti-skid surfaces for added safety to prevent slips and falls. Easily applied to potentially hazardous surfaces, Loctite® Big Foot™ coatings stand up to heavy traffic and harsh environments.

Now available in Safety Yellow



Superior Traction Control

Loctite® Big Foot™ was applied to this Wastewater wet well walkway assisting to prevent slips and falls in a potentially hazardous environment

The Environmentally Friendly Cleaner

P/N: 82249 (709ml) • P/N: 82251 (3.78lt) • P/N: 82253 (18.9lt)

Loctite® Natural Blue is an all-purpose, industrial strength, concentrated cleaner and degreaser. It is ideal for use on all plant equipment and should always be used when preparing a surface for coating.

Most importantly Loctite® Natural Blue's environmentally friendly formula does not effect bacteria and saponifies fats into bio-degradable water soluble and non-hazardous waste.



Loctite® Extend Rust Treatment

P/N: 75430 (946ml) P/N: 75448 (3.78ltr) P/N: 75465 (18.9ltr)

Loctite® Extend Rust Treatment converts existing rust into a stable base. Once cured it acts as a primer ready for painting and continues to protect the surface from further corrosion.

Ideal for use on steel pipes, valves, fittings, storage tanks, fences, guard rails, conveyors, and all other metal equipment. Also use on exposed concrete steel re-enforcement bars to treat and prevent spalling prior to rebuilding concrete.





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Product Specification Table

Description	Part No	Size	Coverage @ 6mm Thickness	Dry Service Temperature Range	Compression Strength # ASTM D695 N/mm ² (psi)	Shear Strength ASTM D10 02, N/mm ² (psi) 0.1MM gap and etched aluminium	Tensile Strength # ASTM D638 N/mm ² (psi)	Working Time Minutes @25°C	Functional Cure Hours @25°C
Fixmaster® Superior Metal	97473	408gm kit	232cm ²	-29° to +121°C	124.0 (18,000)	12.4 (1,800)	37.9 (5,500)	20	6
Fixmaster® Fast Set Steel Putty	39917	453gn kit	371cm ²	-29° to +93°C	74.5 (10,800)	13.8 (2,000)	31.7 (4,600)	3	10 min
Fixmaster® Wear Resistant Putty	98742 98743	454gm kit 1.35kg kit	342cm ² 1026cm ²	-29° to +107°C -29° to +107°C	80 (11,600)	10.0 (1,450)	33.8 (4,900)	30	6
Fixmaster® Rapid Rubber Repair Kit	96677	Kit	568cm ³	-29° to +82.2°C	-	-	9.0 (1,300)	1	2
Fixmaster® Flex 80 Putty	97423	453gm kit	604cm ²	-29° to +82.2°C	-	-	10.3 (1,500)	10	8
Fixmaster® Flex 80 Liquid	97413	453gm kit	442cm ²	-29° to +82.2°C	-	-	12.4 (1,800)	20	8
Fixmaster® Urethane Sealant	39916	300ml	762cm	-40° to +82.2°C	-	1.2 (700)	1.4 (200)	-	72
Fixmaster® Metal Magic Steel™ Stick	98853	113gm	45cm ²	-30° to +121°C	82.7 (12,000)	4.8 (700)	17.2 (2,500)	3	10 min
Fixmaster® Underwater Repair Stick	82093	113gm	45cm ²	Max +149°C	-	4.8 (700)	-	2	1
Fixmaster® Magna-Crete®	95551 95555	3.78ltr kit 18.9ltr kit	0.45m ² 2.0m ²	-29° to +1093°C -29° to +1093°C	89.6 (13,000)	-	-	15	1
Fixmaster® High Performance Quartz	96495	19kg kit	1.4m ²	-29° to +66°C	82.7 (12,000)	-	-	45	24
Nordbak® Pneu-Wear	98383 98382	1.36kg kit 11.32kg kit	0.1m ² 0.8m ²	-29° to +121°C	103.4 (15,000)	34.5 (5,000)	-	30	6
Nordbak® Brushable Ceramic - White	96443	907gm kit	*1.1m ²	-29° to +93°C	86.2 (12,500)	13.8 (2,000)	-	15	5
Nordbak® Brushable Ceramic - Grey	98733 98732	907gm kit 2.71kg kit	*1.1m ² *3.3m ²	-29° to +93°C -29° to +93°C	86.2 (12,500)	13.8 (2,000)	-	30	6
Nordbak® Chemical Resistant Coating	96092	5.43kg kit	*6.8m ²	-29° to +65°C	69.0 (10,000)	-	-	20	16
Big Foot™ Heavy Duty Pedestrian Grade - Safety Yellow	40302 40303	3.78ltr 18.9ltr	4.65m ² 23.25m ²	-29° to +60°C	-	-	-	-	12-72

Properties are based on mixing 453gm mass at 25°C, 7 days cure. # Ultimate Cure. * @ 0.5mm Thickness

Refer to Surface Engineering Solutions catalogue (ART698) for details of full Loctite® Nordbak® and Fixmaster® product range

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