



TUFFLON®

AUSTRALIA'S MOST TRUSTED POLYUREA

LIQUIMIX
experts in polyurea



LIFE EXTENSION OF WATER ASSETS

Billions of dollars are spent by municipal councils, industrial and mining companies to develop infrastructure to process potable water, waste water and sewerage.

Cracks in concrete structures will cause leaks and damage to existing infrastructure. Chemicals in waste water and sewerage, particularly sulphuric acid attacks the cement, leaving exposed aggregate. And even exposing steel reinforcement within the structure.

As these assets deteriorate over time, it is essential to find solutions to both repair the damage and prevent further deterioration. A life extension system needs to include proper repair of the concrete structure - including crack repair, concrete leak repair, treatment of exposed steel and rendering to return the concrete surface back to its original profile.

Other methods used include ground stabilisation with injection spray foams, geofabric or surface stabiliser

Liquibond. Leaking concrete repairs are also a crucial part of the process to ensure professional, long lasting results.

Early detection of damage and subsequent treatment and lining could extend the life of the asset saving millions of dollars in replacement costs.

LiquiMix's three step system - PREPARE, PRIME, PROTECT includes the full remediation and protection of these facilities.



Driven by a strong focus on safety and quality, LiquiMix employs a team of experienced industrial chemists, coating inspectors and trade qualified professionals to work closely with certified independent applicators, civil engineers, project managers and asset owners to deliver safe, predictable and accountable outcomes.

*Neill Barrell
Managing Director*

TUFFLON®

AUSTRALIA'S MOST TRUSTED POLYUREA FOR WATER FACILITIES

The Tufflon range of pure polyurea exhibits outstanding abrasion and corrosion resistance, coupled with permanent elasticity, making it the perfect lining system for protecting steel and concrete surfaces.

Australian made under ISO 9001, Tufflon is used throughout Australia, New Zealand, the Pacific Islands, Europe, Taiwan and China.

Derived from the original spray polyurea developed by Texaco in the 1980's, there is no other polyurea range in the world with such a long and successful history of use. Designed for abrasion, impact, corrosion-resistance, chemical-resistance, waterproofing and permanent immersion there is a particular grade to suit each project. Tufflon-P80 and Tufflon-P90 are the preferred grades for Water Facility linings.

A continuous and seamless thick-film lining is rapidly spray-applied with vice-like grip to well-prepared surfaces and is touch-dry within seconds. Unlike paint, epoxy or cementitious coatings, Tufflon remains flexible and elastic for many years and will move and conform to subtle changes in the substrate without cracking, flaking or blistering. Partially soluble diluents such as Propylene Carbonate are not used in any of the Tufflon or Elaston range of polyurea products.

RECOMMENDED GRADES FOR WATER FACILITIES:

Tufflon-P80

Pure polyurea
Excellent for colder climates
Shore hardness of 78A

Tufflon-P90

Pure polyurea
High tear strength and hardness
Shore hardness of 90A

WATER FACILITIES

potable water reservoirs
water treatment plants
wastewater treatment plants
desalination plants
sewage treatment plants
clarifiers and launder channels
pumping stations
secondary containment (bunding)

The method of rehabilitating an existing water facility is much the same as the protection of a new water facility, with several extra key steps. LiquiMix offers support to Applicators and works in conjunction with the Asset Owner, Engineers, Project Managers and Applicators involved in the project.

THE THREE STEP LIFE EXTENSION SYSTEM

1. PREPARE

Damaged concrete that has been corroded and broken, chipped or cracked must be rehabilitated. This will often require concrete leak repair, replacement or repair of reinforcement bars and rendering to rehabilitate the concrete substrate back to its original profile.

2. PRIME

Priming the surface is more than just about the products - though using the correct primer is paramount. The techniques involved can mean the difference between success and failure. Proper priming eliminates osmosis, soluble salts, blisters and other problems from occurring in the final result.

3. PROTECT

This is the final step in the life extension of any asset. Application of Tufflon - ensuring the surface is even, watertight and easy to clean with excellent adhesion. ITP used throughout this stage. This will ensure the water facility is protected for 30+ years into the future.

TECHNICAL SUPPORT AND TRAINING

- ✓ Comprehensive applicator training
- ✓ On-site technical support
- ✓ Remote technical support
- ✓ Access to exact methodologies
- ✓ Highest standard of testing throughout project
- ✓ Highest possible product performance warranty

THE QUALITY ASSURANCE SYSTEM

INSPECTION

The initial inspection of the asset includes a thorough examination of the condition of the substrate and consideration to accessibility / power / water and compressed air.

SPECIFICATION

Includes the outline of the purpose of the works, the specified system and the warranty period. LiquiMix and the Applicator are prepared to issue.

INSPECTION AND TEST PLAN (ITP)

The ITP is a step-by-step guide of the remediation process from beginning to end. It includes hold points at which an authorised officer must sign off before further steps may continue.

TRIAL SECTION

At the beginning of a project, LiquiMix will always recommend a trial section of two or three square metres of varying surfaces within the asset. This trial area will represent the finished product and will be tested to comply with LiquiMix's standards. These tests include:

1. Hydraulic adhesion testing.
2. High voltage porosity testing to AS3894.1 - 2002.
3. Dry film thickness (DFT) testing.

NEXT GENERATION EQUIPMENT

When applied with the next generation GRACO Series 2 Reactor (plural spray proportioner) real-time monitoring and access to a full log of events is available via a convenient mobile app.

This monitoring is very important to ensure the two liquid components are proportioned at the correct ratio and that correct quantities of product are being applied. This monitoring can be done remotely in real time providing extra quality assurance.

LiquiMix provides comprehensive training on the use of Graco Reactors, and support our customers both remotely and on-site.



TUFFLON®

WHAT MAKES THIS POLYUREA SO UNIQUE?

PROVEN TO PERFORM

The Tufflon system has a long and successful 10+ year history of use in lining drinking water reservoirs. No other polyurea has such a strong and reliable track record.

TUFFLON CONTAINS NO UNREACTIVE DILUENTS

Many other 'pure' polyurea products contain diluents to cheapen the formulation or help them spray better. Many of these diluents promote osmotic blistering and severely affect the long term performance of the polyurea.

THE SYSTEM BONDS STRONGLY TO DAMP CONCRETE

Prior to the application of Tufflon, the concrete substrate needs to be primed with Civilox-18. This unique, Mannich based epoxy bonds strongly to damp concrete typically found inside recently emptied concrete reservoirs - most epoxy systems will not bond strongly to damp concrete.

CIVILOX PRIMER WILL NOT BLUSH OR BLOOM

Civilox-18 won't suffer from amine blush when used in cold, damp environments often found inside recently emptied reservoirs - most epoxies cannot be used when RH exceeds 80% due to the risk of amine blush. This can be seen as a waxy, greasy deposit on the surface of cured epoxy which greatly reduces inter-coat adhesion and severely limits the long-term performance of the system.

NEXT DAY RETURN TO SERVICE

Due to rapid setting and rapid full cure, the asset can be returned to service after just 24 hours.

- ✓ chemical resistant
- ✓ abrasion resistant
- ✓ permanently elastomeric
- ✓ potable water approved
- ✓ seamless, smooth finish
- ✓ light-coloured, easy-clean finish
- ✓ bridges hairline cracks
- ✓ will not peel, flake, crack or blister
- ✓ excellent adhesion
- ✓ adheres to damp, cold, green concrete

PERMANENT ELASTICITY

With an elongation greater than 400%, the system will bridge hairline cracks, expansion joints and tolerate subtle movement in the substrate without cracking, flaking or peeling.

THE SYSTEM WILL FULLY CURE AT LOW TEMPERATURES

Most drinking water reservoirs are remediated during winter months when demand is low, Civilox-18 will fully cross-link at temperatures as low as 0°C often found in the winter months - most coating systems will not cure at temperatures under 7°C.

AS/NZS 4020:2005

The Civilox-18 / Tufflon system has passed all requirements of the potable water standard. It is now required both be tested as a system and not individually.

EASY TO CLEAN

Tufflon forms a continuous, cream coloured lining that is smooth and easy to clean.

PERFECT FOR WATER FACILITIES

Often the time chosen to repair and line these facilities is during the winter when the demand for water is at its lowest - therefore the facilities are damp and cold. Allowing the water reservoir, treatment plant or sewerage treatment plant to completely dry before remediation is not usually possible. Therefore a system that works flawlessly, adhering with vice-like grip to cold, damp (and often green) concrete is a must.

CHEMICAL RESISTANCE

Tufflon is resistant to all chemicals used in the treatment of water and sewerage. This includes chlorine, sodium hypochlorite, alum, hydrochloric acid, sodium hydroxide, hydrogen sulphide and sulphuric acid.

PROPERTY	TEST METHOD	TUFFLON-P80	TUFFLON-P90
Tensile Strength	ASTM D412 06ae2	16.5	16.0
Elongation (%)	ASTM D412 06ae2	427	430
Tear Strength kgf/cm2	ASTM D412 06ae2	50	98
Hardness Shore A	ASTM D 2240- 91	78	90
Hardness Shore D	ASTM D 2240- 91	38	45
Abrasion Resistance (mg loss)	ASTM C501-84, H18 wheel@ 1,000rpm with 1,000g weight	50	58





LiquiMix Pty Ltd
24 Rosa Place
Richlands Queensland 4077

W www.liquimix.com
E admin@liquimix.com
P +61 7 3277 6655

LIQUIMIX
experts in polyurea