Introducing Era Polymers Pty Ltd
Excellence in Polyurethane Chemistry
# Era Polymers

**Australia’s Largest Independent Polyurethane Systems House**

- Largest supplier of high performance prepolymers in Asia
- Three state-of-the-art manufacturing facilities with >50,000 MT production capability per year
- Worldwide Alliances
- ISO 9001 Certified
- NATA Accredited testing laboratory
- >95 fulltime employees – within Australia and Internationally
- Strong technical service team >18 qualified chemists operating across 9 laboratories
- High level of investment into Research & development annually
- Global presence with distribution points in all regions
- Currently exporting to >70 countries
Era Polymers

1986
COMPANY FOUNDED BY GEORGE & TINA PAPAMANUEL

1987
Move into first building 250m²

1988

1989
Export to first country, Singapore

1992
Move into current Research and Administration building 1500m²

1993
First factory built and kettle installed at Samos Ena site 15,000 m²

1994
NATA accreditation for Era testing laboratories

2000
PU Foams added to Era Polymers’ product line

2004
Second manufacturing plant Samos Dio 15,000 sq. metres

2005
Exported products to 30th country

2011
Era Polymers New Zealand established

2012
Waterproofing Membranes & Floor Coatings;
Exported products to 70th country

2013
Acquisition of Applied Polymers
Acquisition of Urethane Coatings Pty Ltd
Era Polymers

HEAD OFFICE
NEW ZEALAND

- Five blending tanks for polyol blending ranging from 1-20 drums
- 800m² Office and Warehouse area
- Recently upgraded QC and Product Development Laboratory
- Rapid response to local product demands
Ariel Industries

- Acquired by Era Polymers early 2014
- Specialises in high performance insulation foam for the LNG Industry
- Melbourne based
- 1 Kettle & 9 Blending vessels
Era Polymers

LABORATORIES

Types of Laboratories

- Elastomer
- Foam
- Coatings
- Analytical Testing
- Cryogenic Testing
- Physical Testing
Era Polymers is an ISO9001:2008 Quality Certified Company

NATA World Recognised Testing Laboratories
<table>
<thead>
<tr>
<th>Test</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS1683.21</td>
<td>Determination of Abrasion Resistance using a rotating cylindrical device</td>
</tr>
<tr>
<td>AS1683.15.2</td>
<td>Durometer Hardness</td>
</tr>
<tr>
<td>AS1638.4</td>
<td>Determination of Density</td>
</tr>
<tr>
<td>AS1683.11; ISO 37</td>
<td>Tension testing of Vulcanised Rubber</td>
</tr>
<tr>
<td>DIN53512</td>
<td>Determination of Rebound Resilience of Rubber</td>
</tr>
<tr>
<td>ASTM C518</td>
<td>Determination of Thermal Properties of Materials – Thermal Conductivity</td>
</tr>
<tr>
<td>ASTM D6226</td>
<td>Open-Cell content</td>
</tr>
<tr>
<td>PRODUCT GROUPS</td>
<td>Details</td>
</tr>
<tr>
<td>---------------</td>
<td>---------</td>
</tr>
<tr>
<td>ELASTOMERS</td>
<td>Castable, Sprayable, Trowellable MDI, TDI, Aliphatic, Ether, Ester, Caprolactone</td>
</tr>
<tr>
<td>FOAMS</td>
<td>Pour, Spray, Rigid, Flexible, PIR, Microcellular</td>
</tr>
<tr>
<td>FLOOR COATINGS</td>
<td>TDI, MDI &amp; Aliphatic Bases</td>
</tr>
<tr>
<td>WATERPROOFING MEMBRANES</td>
<td>Single component, two component, spray applied</td>
</tr>
<tr>
<td>MACHINERY</td>
<td>Polytec EMC, Graco, Cannon &amp; Fecken-Kirfel</td>
</tr>
<tr>
<td>TRADING / BRANDED PRODUCTS</td>
<td>Acmos, Fomo, Icynene, Dow Corning, Conap, Futura, Perstorp Caprolactones, Green Mountain</td>
</tr>
<tr>
<td>TOLL MANUFACTURE</td>
<td>Third party contract manufacturing</td>
</tr>
</tbody>
</table>
TWO PRODUCTION SITES IN AUSTRALIA

Samos Dio

Samos Ena
Era Polymers

QC TESTING
What are spray elastomers?

They are sprayable protective coatings.

These coatings are not hard and brittle but rather flexible and rubbery.
Some substrates and structures are prone to movement such as thermal expansion/contraction of metal and cracking or movement of concrete.

Flexible coatings are required to manage the substrate movement by stretching (elongating).

Hard rigid coatings will tend to crack in these situations leading to failure and loss of substrate protection.
USES OF THE TECHNOLOGY

Corrosion Protection

- Metal structures
- Pipelining

Waterproofing

- Roofs
- Concrete
USES OF THE TECHNOLOGY

Concrete Protection

• Car parks
• Industrial floors

Impact / abrasion resistance

• Linings
• Mining
USES OF THE TECHNOLOGY

Architectural hard coating

- Decorative
- Hard coating foam roofs
Polyureas are formed when an Isocyanate reacts with an amine in a rapid, exothermic reaction.

$$\text{Diisocyanate} \quad \overset{\text{Amine}}{\longrightarrow} \quad \text{Polyurea}$$
**Polyurethanes** are polymeric materials produced when a liquid **isocyanate** is reacted with a liquid **polyol**.

\[
\text{Diisocyanate} \quad \text{Polyol} \quad \text{Polyurethane}
\]

**WHAT ARE POLYURETHANES?**
Some of the main differences between Polyurethanes and Polyureas:

<table>
<thead>
<tr>
<th></th>
<th>Polyurethane</th>
<th>Polyurea</th>
<th>KEY</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tensile Strength</strong></td>
<td>++</td>
<td>++</td>
<td>++ Outstanding</td>
</tr>
<tr>
<td><strong>Elongation</strong></td>
<td>++</td>
<td>+</td>
<td>Good</td>
</tr>
<tr>
<td><strong>Impact Resistance</strong></td>
<td>++</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td><strong>Abrasion Resistance</strong></td>
<td>++</td>
<td>+</td>
<td>Fair</td>
</tr>
<tr>
<td><strong>Chemical Resistance</strong></td>
<td>++</td>
<td>+</td>
<td>Poor</td>
</tr>
<tr>
<td><strong>High Temp Resistance</strong></td>
<td>+</td>
<td>++</td>
<td></td>
</tr>
<tr>
<td><strong>Humidity/Moisture Tolerant</strong></td>
<td>-/+</td>
<td>++</td>
<td></td>
</tr>
<tr>
<td><strong>Low Temp Application</strong></td>
<td>+</td>
<td>++</td>
<td></td>
</tr>
<tr>
<td><strong>Surface Smoothness</strong></td>
<td>++</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Adhesion to primers</strong></td>
<td>+</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Ability for topcoat adhesion</strong></td>
<td>+</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Price</strong></td>
<td>+</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>UV resistance/Weatherability</strong></td>
<td>-</td>
<td>--</td>
<td></td>
</tr>
</tbody>
</table>
Physical property comparison between a high performance Polyurethane and Polyurea formulation

<table>
<thead>
<tr>
<th>PHYSICAL PROPERTIES</th>
<th>Eraspray ST</th>
<th>Eraspray ESP950</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardness (Shore A)</td>
<td>95</td>
<td>95</td>
</tr>
<tr>
<td>Tensile Strength (MPa)</td>
<td>17</td>
<td>23</td>
</tr>
<tr>
<td>Angle Tear Strength, Die C (kN/m)</td>
<td>75</td>
<td>64</td>
</tr>
<tr>
<td>Trouser Tear Strength (kN/m)</td>
<td>30</td>
<td>33</td>
</tr>
<tr>
<td>Elongation (%)</td>
<td>175</td>
<td>350</td>
</tr>
<tr>
<td>DIN Abrasion Resistance 10N (mm³)</td>
<td>165</td>
<td>98</td>
</tr>
<tr>
<td>Cured Specific Gravity (g/cm³)</td>
<td>1.03</td>
<td>0.96</td>
</tr>
</tbody>
</table>
Epoxy coatings are one of the main alternatives used in opposition to polyurethane coatings.

Some advantages of Polyurethanes over Epoxies are:

- Polyurethanes can be designed to be elastomeric or rigid, while epoxies are normally rigid or even brittle;

- Polyurethanes could be cured relatively quickly at low temperatures whilst epoxies tend to cure slower or sometimes not cure at all at very low temperatures.

- Polyurethanes generally have excellent abrasion resistance compared to other industrial coatings systems.

- Aliphatic Polyurethanes are well known for their excellent UV resistance and colour stability, while epoxies and aromatic polyurethanes may not be used for certain exterior applications (application dependant).
Advantages of Rubber Linings Compared with Polymer Linings
Prefabricated sheets of constant thickness
High permeation resistance
Good abrasion resistance
High elasticity

Disadvantages of Rubber Linings Compared With Polymer Linings
Limited resistance to organic chemicals (organic solvents!)
Low resistance to mechanical forces (cutting, impact, etc)
Lower resistance to high temperatures
Sheets are glued into place leaving the joints as a possible mode of failure.
Limited to STD rubber sheet thicknesses
More labour Intensive
Cost
Polyurethane v Linatex Rubber

- Blasting costs, Priming costs and Material costs approximately the same for both.
- Labour and speed of application provides cost savings for the PU
- Seamless, no joins etc.
- Final Price approx 15 - 20% Cheaper
Key FEATURES of sprayable elastomers include:

- 100% solids i.e. solvent free.
- Set/cure at variable temperatures - winter and summer.
- They are NON flammable.
- Can be applied in a single or multi-pass coat to different dry film thicknesses.
- Set in minutes.
- Can be put into service within hours.
- They can be easily repaired if damaged.
- They require NO post curing.
In addition to the handling advantages there are also a number of important performance advantages which include:

<table>
<thead>
<tr>
<th>Advantage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Superior adhesion with a suitable primer.</td>
</tr>
<tr>
<td>Resistance to chemical attack.</td>
</tr>
<tr>
<td>Resistance to gouging and abrasion.</td>
</tr>
<tr>
<td>Flexibility and resilience.</td>
</tr>
<tr>
<td>Impermeable.</td>
</tr>
<tr>
<td>Fast setting</td>
</tr>
<tr>
<td>Formation of a totally seamless polymer coating that is adhered to the substrate.</td>
</tr>
</tbody>
</table>
ELASTOMERIC SPRAY SYSTEMS

[Images of people spraying materials onto surfaces in outdoor settings]
• Substrates
• Environmental Conditions
• Primers
• Spray Material to use
• Machinery
• Desired physical properties.
Common Substrates

- Metal
- Concrete
- Geotextile

Substrates to avoid

- Silicone
- Polyethylene
- Polypropylene
- Phenolic Foam
- EPDM
- Teflon
ENVIRONMENTAL CONDITIONS

Temperature Conditions
- At low temperatures the reaction can be slowed which also causes slower cure.
  - Ambient/Atmospheric/Temperatures
  - Substrate Temperature
- Dewpoint consideration is important (temperature at which vapour will begin to condensate)

Wind
- Wind is a major factor when spraying outdoors
- High wind can affect spray patterns and disrupt the even distribution of material
- It is important to determine winds velocity and direction before commencing.

Dew Point
- Temperature and Humidity are very important during application of a spray elastomer
- A spray elastomer should ONLY be applied if the substrate temperature is 4°C above the Dew Point and Rising.
- If not then moisture will condense on the substrate and cause adhesion issues.

Examples

<table>
<thead>
<tr>
<th>Temperature °C</th>
<th>Humidity %</th>
<th>Dew Point °C</th>
<th>Difference</th>
<th>OK to spray</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>90</td>
<td>23.2</td>
<td>1.8°C</td>
<td>NO</td>
</tr>
<tr>
<td>25</td>
<td>50</td>
<td>13.9</td>
<td>11.1°C</td>
<td>YES</td>
</tr>
<tr>
<td>20</td>
<td>90</td>
<td>18.3</td>
<td>1.7°C</td>
<td>NO</td>
</tr>
<tr>
<td>20</td>
<td>40</td>
<td>6.0</td>
<td>14°C</td>
<td>YES</td>
</tr>
<tr>
<td>15</td>
<td>90</td>
<td>13.4</td>
<td>1.6°C</td>
<td>NO</td>
</tr>
<tr>
<td>15</td>
<td>40</td>
<td>1.5</td>
<td>13.5°C</td>
<td>YES</td>
</tr>
</tbody>
</table>
What to watch for:

Substrate Heat Sink
- Typically thick metallic substrates like steel tend to retain cold temperatures
- Reaction temperatures of fast set coatings can be drained and retard the curing.
- Subsequent layers are insulated and cure ok, but delamination can occur at the first layer.

Pinholing and Outgassing
- When substrate contains moisture and CO$_2$ is formed by reacting with water.
- When the substrate is porous, entrapped air expands when heated and escapes through the coating.
- When substrate is contaminated usually by oil or silicone the material flow or dispersion can also be affected.
Adhesion is a very important factor when bonding spray coatings.

Primers are designed to adhere to certain substrates that are correctly prepared to accept the top coat.

Adhesion windows are critical and should be followed closely for each different primer.

For maximum adhesion generally all primers should be spray coated with the elastomer within 12 hours.

The adhesion window of the primer will generally decrease as the temperature increases.

• **NOTE**: Primer dry film thickness (DFT) must be followed as per the recommended technical specifications indicated on the TDS in order to achieve maximum adhesion to the substrate.
<table>
<thead>
<tr>
<th>TYPE</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium Performance</td>
<td>This type is suitable for most general applications. Waterproofing, corrosion and general wear being the main industrial use.</td>
</tr>
<tr>
<td>High Performance</td>
<td>This type is used where abrasion resistance is important. Applications include Industrial coatings in the Mining Industry, Coal Wagons, Truck Beds, Screen decks, Chute / Launder and Hopper linings etc.</td>
</tr>
<tr>
<td>Polyurea</td>
<td>Polyureas are used in similar applications to high performance Polyurethanes. They have faster gel times so tend to have better adhesion to substrates when moisture is present.</td>
</tr>
<tr>
<td>Aliphatic</td>
<td>UV Stable</td>
</tr>
<tr>
<td>Potable Water</td>
<td>Potable water approved* (AS/NZS 4020:2005)</td>
</tr>
</tbody>
</table>
To spray Polyurethane Elastomers you need the following:

- Plural Component Proportioner
- Heated Hoses
- Heated Whip Hoses
- Fusion Spray Gun
- Supply Pumps
- Agitators
<table>
<thead>
<tr>
<th>Physical Property</th>
<th>Physical Property</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abrasion Resistance</td>
<td>Thermal Coefficient of Expansion</td>
</tr>
<tr>
<td>Bond Strength</td>
<td>Water Absorption</td>
</tr>
<tr>
<td>Hardness</td>
<td>Tear Strength (Angle)</td>
</tr>
<tr>
<td>Elongation</td>
<td>Tear Strength (Trouser)</td>
</tr>
<tr>
<td>Flexural Modulus</td>
<td>Flexural Strength</td>
</tr>
<tr>
<td>Tensile Modulus</td>
<td>Tensile Strength</td>
</tr>
</tbody>
</table>
Common Causes

**Adhesion Problems**
- Improper surface preparation
- Insufficient surface preparation
- Incorrect primer selection
- Coating outside recoat window

**Chemical Contamination Problems (Isocyanate)**
- Moisture presence from incorrect sealing of the drums after opening
- Insufficient Nitrogen purge after opening of part drums.

**Unmixed problems arising from insufficient stirring (Polyol)**
- Material will lose its key physical properties
- Colour variations
- Cure problems
- Tacky surface
Storage Problems

- Low temperatures can cause material to freeze.
- Exposure of drums to weather (Rain) can cause moisture absorption.

Wet Substrate Problems

- Polyurethanes are moisture sensitive and spraying onto wet or moist substrates can cause foaming, blistering or poor surface appearance.
- Loss of adhesion.
Foaming Due To High Humidity

- In high temperatures there is more humidity in the air.
- Solutions
  - Polyureas tend to be more tolerant to humidity.
  - Increase spray tip size (larger spray particles).
  - Spray under appropriate humidity conditions.

Foaming Due to moisture ingress into Material

- The Polyol Component is hydrophilic, if drums are left open atmospheric moisture can be absorbed.
- When Isocyanate reacts with moisture carbon dioxide is produced and crystallization becomes evident in the material.
Pinholing

• Commonly caused by:
  1. Small microscopic voids or pinholes in the substrate.
  2. Moisture embedded in the substrate.
**Blistering (Trapped solvent)**

- Blisters occur when solvent becomes trapped by the cured surface coating of polyurethane.
Blistering (Thick coating)

- Coating blisters are caused by the coating layer being applied at too high a thickness. They can appear as round or oblong blisters and depending on the state of cure, can feel spongy or uncured beneath the surface when examined.
Peeling / Delamination

- Delamination may be caused by improper surface preparation, moisture, contamination from dirt, dust, concrete residue etc., incompatible materials and closing of the primer adhesion window. The photo on left is typical for delamination of the coating after the adhesion window, whilst photo on the right is typical of delamination from improper surface preparation causing no adhesion in the specific areas.
Thermoblistering / Delamination

- Defined as a blister within two layers
- Two possibilities exist:
  1. Cold substrate or the substrate acting as a “heat sink”; causing a slow cure on the 1st layer.
  2. If 1st Layer is applied too thick this will cause a high exotherm and not allow the coating to wet out or react with the previous layer thus causing delamination.
Surface preparation is **CRITICAL** in obtaining good adhesion to any substrate.

**POOR surface preparation = POOR coating performance.**

<table>
<thead>
<tr>
<th>The surface preparation will generally include</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abrasive blasting to achieve a suitable mechanical bond</td>
</tr>
<tr>
<td>Solvent washing / Degreasing to remove any contamination</td>
</tr>
<tr>
<td>Application of a suitable primer to achieve good chemical bond</td>
</tr>
<tr>
<td>Application of coating</td>
</tr>
<tr>
<td>Steel</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>Grind to remove all sharp edges, corners, weld beads, weld slag and splatter.</td>
</tr>
<tr>
<td>Thoroughly clean/solvent degrease surface to remove all traces of oil and grease.</td>
</tr>
<tr>
<td>Compressed air must be dry, free of oil, water and other possible contaminants. Abrasive grit blast to recommended specification E.g.: SSPC-5P-5 “White Metal Finish” SSPC-SP10 “Near White”</td>
</tr>
<tr>
<td>Vacuum clean blasted surface with heavy duty industrial cleaner</td>
</tr>
<tr>
<td>Apply appropriate primer</td>
</tr>
</tbody>
</table>
## TYPES OF PRIMERS

### CONCRETE SUBSTRATE – Use Erabond Concrete

- **Fast Dry (2 hours), solvent based single component polyurethane**
- **Dries to hard film to resist outgassing from concrete**
- **Can be mixed with sand to make a filler for filling small holes and defects in the concrete slab**

### STEEL SUBSTRATE – Use Erabond 6100 STD and optional 6100 FC (Fast Cure)

- **2 Component high solids primer**
- **Recommended for Steel, Iron and Galvanized metal substrates**

### STEEL SUBSTRATE – Erabond CM

- **2 Component**
- **Recommended for Mild steel, Aluminium and Galvanized steel substrates**
- **Contains anti corrosive additives**
### SPRAYABLE PRODUCTS

<table>
<thead>
<tr>
<th>TYPE</th>
<th>PRODUCT</th>
<th>APPLICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Medium Performance MDI</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ERASPRAY ESM RANGE</strong></td>
<td>Eraspray ESM700</td>
<td>Waterproofing, corrosion and general wear</td>
</tr>
<tr>
<td></td>
<td>Eraspray ESM800</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Eraspray ESM900</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Eraspray ESM955</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Eraspray ES900PW</td>
<td>Potable water grade</td>
</tr>
<tr>
<td><strong>TYPES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>High Performance MDI</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ERASPRAY ESP RANGE</strong></td>
<td>Eraspray ESP880</td>
<td>Abrasion resistance, e.g. Industrial coatings in the Mining Industry</td>
</tr>
<tr>
<td></td>
<td>Eraspray ESP950</td>
<td>Abrasion resistance</td>
</tr>
<tr>
<td><strong>TYPES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>High Performance TDI</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ERASPRAY SPECIALTY RANGE</strong></td>
<td></td>
<td>Abrasion resistance, e.g. Industrial coatings in the Mining Industry</td>
</tr>
<tr>
<td></td>
<td>Eraspray ES81A-HB</td>
<td>Abrasion resistance</td>
</tr>
<tr>
<td></td>
<td>Eraspray ES321</td>
<td>Abrasion resistance</td>
</tr>
<tr>
<td><strong>Polyurea</strong></td>
<td>Eraspray ST</td>
<td>Similar applications to high performance Polyurethanes with certain chemical and higher temperature resistance properties.</td>
</tr>
<tr>
<td></td>
<td>Eraspray ESU610D</td>
<td>High Hardness Polyurea</td>
</tr>
<tr>
<td><strong>Aliphatic Coating</strong></td>
<td>Eraspray AL950</td>
<td>Outdoor applications - UV resistant</td>
</tr>
<tr>
<td><strong>Polyaspartic Coating</strong></td>
<td>XPE 11-1441</td>
<td>UV resistant overcoat for Polyurea and Polyurethane coatings, industrial and commercial flooring and deck coatings</td>
</tr>
</tbody>
</table>
ESM900 Grey PU spray + Erabond 6100 FC Red Primer

1. Pontoon surface preparation consisting of 2½ class blast of new steel and repaired steel sections and whip blast of existing paint sections. Substrate washed with solvent after blasting.

2. Blasted substrate coated with Erabond 6100FC Red primer. This is a fast cure priming system with an added anti-corrosive package.

3. Spray application to 3mm coating thickness of Eraspray ESM900 grey via high pressure impingement mixing equipment.

4. Finished pontoon which will be used to supply fresh water to a coal preparation plant.
CASE STUDIES: Waterproofing & Containment

Ecofoam RS2048 PU foam, Eraspray ESM900 spray, Polyaspartic XPE11-1441 White spray

Watercare Waste Water Digester 8 – Mangere, Auckland, New Zealand

Watercare Waste Water needed to increase the capacity for anaerobic digestion at their Mangere Plant, part of this project included the construction of a new sludge digester, Digester 8. This new floating tank required waterproofing and containment. The waste treatment (sewage) is maintained at 40°C methane gas emitted is utilised within the treatment plant.
CASE STUDIES: Waterproofing & Containment

**Ecofoam RS2048, Eraspray ESM900, Polyaspartic XPE11-1441 White**
Watercare waste water digester 8 – Mangere, Auckland, New Zealand

- The steel structure was coated with Epoxy
- A 50 mm layer of Ecofoam RS2048 to provide insulation. Ecofoam RS2048 is a two-component polyurethane water/HFC blown foam sprayed-in-place polyurethane foam insulation, with fire retardant.
- A coating of Eraspray ESM 900 to protect the foam. Eraspray ESM900 a non-solvented polyurethane spray elastomer designed for industrial applications where good physical properties are specified an ideal choice for Digester 8.
- A coating of white polyaspartic XPE11-1441W to stabilise the UV COLOUR. XPE 11-1441 is a VOC-free, aliphatic coating designed as an abrasion resistant topcoat for polyurea and polyurethane systems.
- Finally a light coating of XPE11-1441 with anti-skid on top to add slip resistance for maintenance engineers access.
CASE STUDIES: Sewerage Industry - Digester Tank Insulation

Eraspray ESM900
SA United Water Bolivar Digester Tanks

Era Polymers assisted in the refurbishment of this 40 year old digester tank. The refurbishment included repairs to the internal metal work, pumps etc. as well as replacing the insulated roof. The digesters are maintained at 35°C for efficient anaerobic processing of sewage; to maintain this constant temperature sufficient insulation is required, Era Polymers products were specified.
**CASE STUDIES: Sewerage Industry - Digester Tank Insulation**

**Eraspray ESM900**
SA United Water Bolivar Digester Tanks

**PROCESS:**
- Steel Surface Shot Blast to remove any contaminants
- Metal primer was applied followed by a 50mm layer of **Stepanfoam RS3011** 48kg/m³ sprayfoam to provide insulation
- Finally a 5mm coating of **Eraspray ESM900** elastomeric spray coating was applied to protect the insulation layer.

The refurbished digester is now set for extended life and operation!
CASE STUDIES: Car Park Decking

ESM955 PU Spray + Erabond Concrete primer
Sealtec – New Zealand
CASE STUDIES: Car Park Decking

ESM955 PU Spray + Erabond Concrete primer
Sealtec – New Zealand
Eraspray ESM900 is a medium performance MDI Polyurethane/Polyurea with a hardness of 90 Shore A, a general purpose product with good impact abrasion properties and was an ideal choice for this project where abrasion resistance and waterproofing needed to be addressed.

- Size of Project: 250 m²
- Film Thickness: 2 mm
- Spray Equipment: H20/35 PRO
- Surface Preparation: None
- Project complete: 1 Day
- Number of Workers: 2
- Materials Used: Eraspray ESM900
Era Polymers were closely involved in the specifying and then application of the ESP950 Polyurethane around chemical tanks at Quenos chemical plant in Sydney. After months of accelerated immersion testing the ESP950 was specified and then applied by spray application. The surrounds of the tanks were previously coated with Rigid Epoxy Paints that could not withstand any substrate movement and had subsequently cracked and were ineffectual. The ESP950 has proved successful for the specific job.

- **Size of Project**: 2600 m²
- **Film Thickness**: 1-2 mm
- **Spray Equipment**: H20/35 PRO GX7 Gun
- **Surface Preparation**: Wash / clean of exterior tank surface.
- **Project complete**: 5 Days
- **Number of Workers**: 4
- **Materials Used**: Erabond CM Primer Eraspray ESP 950
CASE STUDIES – Wear Protection & Waterproofing

Eraspray ESM900 PU Spray + Erabond Concrete Primer
The Lakes Mall Shopping Centre

ESM900 is a medium performance MDI Polyurethane with a hardness of 90 Shore A.

- Size of Project: 2500 m²
- Coating Thickness: 2 mm
- Spray Equipment: Graco EXP-2 Fusion Gun Air Purge
- Surface Preparation: Grinding of horizontal floor + high pressure water clean
- Project complete: 11 Days
- Number of Workers: 3
- Materials Used: Erabond Concrete Primer Eraspray ESM900
The Eraspray ST was the ideal protective lining material in order to offer good chemical resistance, applied by Polymer Technology International for the internal spraying of a sewerage manhole concrete collar.

**PROCESS:**
- Priming – Erabond Concrete
- Spraying - Eraspray ST
- Graco Spray Equipment was used
- Internal spraying of the concrete collar ready for Installation

Concrete collar was water blasted to remove contaminants and surface defects were subsequently repaired with a fast set epoxy grout.
- Erabond Concrete (yellow) primer was applied with a roller and allowed to dry
- Eraspray ST was sprayed onto the surface at approximately 4mm thickness
- The sprayed collar was put into its final position later that same day.
CASE STUDIES – Waterproofing

Era Polymers R&D Facility Roof Top – ESM900 PU + Erabond 6100 Primer
CASE STUDIES – Roofing / Waterproofing

Eraspray ESM900
Valencia Apartments - Homebush Bay Sydney.
CASE STUDIES

ESP950 PU + Erabond Concrete Primer
Hornsby Honda – Car Park
General Safety Information

SDS (Safety Data Sheet)

• Always read before using a new material
• Pay particular attention to sections

  2  Hazard Identification
  4  First Aid Measures
  5  Fire Fighting
  8  Exposure Protection / Personal Protection
General Safety Information

Part A – Isocyanates

- Inhalation can produce severe irritation of the respiratory system.
- PPE must be used to avoid exposure.

Incase of Exposure to Isocyanates

- Remove person from immediate environment

Part B – Polyols

- As applicable PPE must be used.
THANK YOU

QUESTIONS?