



# DELTA POLYUREA HCR

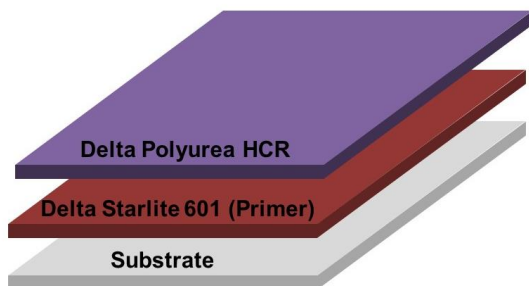
Rapid Curing Modified Polyurea



## DESCRIPTION

A fast set, high end, rapid curing modified polyurea designed for use in application on concrete or steel or other substrates exposed to hydro carbon solvents. It is 100% solids, flexible, aromatic.

## SYSTEM DESIGN



## BENEFITS

- ❖ 100% Solids with zero VOC
- ❖ Fast reactivity and cure time resulting in almost immediate return-to-service time
- ❖ Can be applied in -30°C and upwards
- ❖ Perform in constant temperatures from -30°C to +120°C
- ❖ Retains physical properties at -30°C to +120°C

- ❖ Moderate elongation properties
- ❖ Seamless, resilient, flexible and tough
- ❖ Excellent solvent Resistance
- ❖ Good corrosion protection
- ❖ Impact, tear and abrasion resistant
- ❖ Low permeability waterproofing membrane

## USES

- ❖ Fertiliser Plants
- ❖ Refineries
- ❖ Chemical processing plants
- ❖ Mining
- ❖ Oil & Gas, petroleum industries
- ❖ Paper and Pulp Mills
- ❖ Pharmaceuticals
- ❖ Primary & Secondary containment
- ❖ Water, waste water and industrial effluent treatment plants
- ❖ Power and Desalination Plants

## FINISH

Low sheen

## COLOUR

Standard medium grey. Custom colours (blended to match any RAL number) are available upon request.

## SURFACE PREPARATION

Substrates to be coated must be structurally sound, clean and free from any contamination.

Concrete – preparation by diamond disc grinding.

**Delta Intercontinental Pte Ltd**  
38 Woodlands Industrial Park E1, #06-04  
Singapore 757700

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Email : [deltaintercon@singnet.com.sg](mailto:deltaintercon@singnet.com.sg)  
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Steel – preparation by wire brush, hydro or sand blasting as per required.

## APPLICATION

Applied utilising high pressure, heated plural component spray proportioning equipment that is capable of supplying correct pressure and heat for the appropriate hose length on a consistent basis. Applied in a cross directional method.

For concrete substrate:

- Primer coat of Delta Starlite 601 @ 0.30kg/m<sup>2</sup>.
- Spray on finishing coat of Delta Polyurea HCR @ 1.5lit/m<sup>2</sup> (average 1.5mm thick).

## TECHNICAL AND APPLICATION DATA

|   |                       |
|---|-----------------------|
| Solids by Volume                                  | 100%                  |
| Volatile Organic Compound                         | 0g/l                  |
| Theoretical coverage @ 1mm                        | 1 m <sup>2</sup> /l   |
| Specific Gravity (kg/l)                           | A – 1.12<br>B – 1.176 |
| Viscosity at 25°C                                 | A – 390<br>B - 1040   |
| Tensile strength (ASTM D412 C)                    | 19 to 21 MPa          |
| Elongation (ASTM D 412)                           | 40 to 50%             |
| Hardness (ASTM D 2240)                            | 45 to 50 Shore D      |
| Flexibility<br>(2mm mandrel ASTM 1737)            | Pass                  |
| Water Vapour Permeability<br>(ASTM E 96)          | 0.0007 perm-inch      |
| Water absorption -24 hours<br>(ASTM D 471)        | <0.5%                 |
| Crack bridging @ -25°C<br>(ASTM C 836), 25 cycles | Pass                  |
| Tear strength (Die C ASTM 412)                    | 40 to 45 KN/m         |
| Impact resistance                                 | > 10 J                |

|   |  |
|---|--|
| Fire rating                                     | Class 2  |
| Flash point Pensky Martin                       | > 93°C   |
| Service temperature (Dry)                       | -20°C to 120°C                                 |
| Abrasion resistance<br>(ASTM D 4060)            | 15mg loss Taber<br>CS 17 Wheel<br>1kg/1000 rev |
| Chemical resistance                             | See list attached                              |
| Gel Time  | 6 to 20 secs                                   |
| Tack Free Time (DFT &<br>Temperature dependant) | 30 to 45 secs                                  |
| Post Cure Time                                  | 24 Hours                                       |
| Volume Ratio (A:B)                              | 1 to 1   |
| Block Temperature                               | 60°C to 70°C                                   |
| Hose Temperature (A and B)                      | 60°C to 70°C                                   |
| Constant Pressure                               | 136 Bar  |

## STORAGE CONDITIONS AND SHELF LIFE

All components of Delta Polyurea HCR have a shelf life of 12 months in original unopened packing, stored in dry enclosed place without exposing to direct sunlight and at temperature between 15°C to 35°C, protected from frost. Keep away from extreme heat, freezing and moisture.

## PACKAGING

380 litre set.

Comprises of: Part A – 190 litres  
Part B – 190 litres

## SAFETY

Product contains isocyanates and curatives. Do not take internally. May irritate eyes and skin. Ensure adequate ventilation and avoid inhaling vapours. Always use with suitable personal protective equipment.

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## Chemical Resistance List

|                    |  |
|--------------------|--|
| Test Method        | ASTM-3908 Modified (One Year Immersion)                              |
| Sample Description | 500mm x 500 mm carbon steel plate- SA 2.5 surface profile            |
| Test Description   | Samples coated to 1000 $\mu$ (1.0 mm) DFT cured for 24 hours at 24°C |

|             |                 |   |    |                           |
|-------------|-----------------|---|----|---------------------------|
| Results Key | 0% - 2% Change  | = | R  | Recommended No Effect     |
|             | 2% - 5% Change  | = | C  | Recommended Slight Effect |
|             | 6% - 15% Change | = | RC | Recommended Conditional   |
|             | 16% + Change    | = | F  | Failure Not Recommended   |

| S/No | Chemicals                          | Start Mass (grams) | End Mass (grams) | Percent of Change | Result | Comments                                |
|------|------------------------------------|--------------------|------------------|-------------------|--------|---|
| 1    | 1,1,1-Trichlorethane               | 135                | 137.1            | 1.53%             | RC     | Swelling and blisters, visible damage   |
| 2    | Acetic Acid                        | 135                | 135.1            | 0.07%             | R      | No effect                               |
| 3    | Acetone                            | 135                | 137.5            | 1.82%             | R      | No effect                               |
| 4    | Ammonium Hydroxide (20%)           | 135                | 135              | 0.00%             | R      | No effect                               |
| 5    | Antifreeze/Water (50:50)           | 135                | 137.1            | 1.53%             | R      | No effect                               |
| 6    | Benzene                            | 135                | 139.2            | 3.02%             | C      | Some swelling, no visible damage        |
| 7    | Brake Fluid (Dot 3)                | 135                | 141.1            | 4.32%             | C      | Some swelling, no visible damage        |
| 8    | Brine-Salt Water (180g/L) Seawater | 135                | 135.2            | 0.15%             | R      | No effect                               |
| 9    | Brine-Salt Water (310g/L) Sat. Sol | 135                | 135.3            | 0.22%             | R      | No effect                               |
| 10   | Citric Acid (50%)                  | 135                | 135.6            | 0.44%             | R      | No effect                               |
| 11   | Clorox (10% in water)              | 135                | 135              | 0.00%             | R      | Slight discoloration, no visible damage |
| 12   | Copper Chromate Arsenic (4%)       | 135                | 135.1            | 0.07%             | R      | No effect                               |
| 13   | Diesel Fuel (Kerr-McGee)           | 135                | 135.9            | 0.66%             | R      | No effect                               |
| 14   | Hydraulic Fluid                    | 135                | 135              | 0.00%             | R      | No effect                               |
| 15   | Hydrochloric Acid (10%)            | 135                | 134.9            | -0.07%            | R      | No effect                               |
| 16   | Hydrofluoric Acid (10%)            | 135                | F                | Failure           | F      | Cracking, Bubbles, Disintegration       |
| 17   | Isopropyl Alcohol                  | 135                | 135.5            | 0.37%             | R      | No effect                               |



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|    |  |     |       |         |    |   |
|----|--|-----|-------|---------|----|---|
| 18 | Lactic Acid (50%)                        | 135 | 135.1 | 0.07%   | R  | No effect                               |
| 19 | Liquid Nitrogen Fertilizer (28-0-0)      | 135 | 135.5 | 0.37%   | R  | No effect                               |
| 20 | Liquid Urea Fertilizer                   | 135 | 136   | 0.74%   | R  | No effect                               |
| 21 | Methanol                                 | 135 | 135.6 | 0.44%   | R  | No effect                               |
| 22 | Methyl Ethyl Ketone (MEK)                | 135 | 142.8 | 5.46%   | RC | Little swelling, no visible damage      |
| 23 | Methyl Tertiary Butyl Ether (MTBE)       | 135 | 140.3 | 3.78%   | C  | Slight swelling, no visible damage      |
| 24 | Methylene Chloride                       | 135 | F     | Failure | F  | Swelling and blisters, visible damage   |
| 25 | Methyl-N-Amyl Ketone (M.A.K.)            | 135 | 139.9 | 3.50%   | C  | Some swelling, no visible damage        |
| 26 | Mineral Spirits                          | 135 | 136.7 | 1.24%   | R  | No effect                               |
| 27 | Motor Oil (Pennzoil 10 w 30)             | 135 | 135.7 | 0.52%   | R  | Slight discoloration, no visible damage |
| 28 | Muriatic Acid (17.1%)                    | 135 | 136.4 | 1.03%   | R  | No effect                               |
| 29 | Muriatic Acid (31.45%)                   | 135 | F     | Failure | F  | 48 Hours Contact OK                     |
| 30 | NaCl / Water (10%)                       | 135 | 135   | 0.00%   | R  | No effect                               |
| 31 | Nitric Acid (20%)                        | 135 | F     | Failure | F  | Swelling and blisters, visible damage   |
| 32 | Nitric Acid (50%)                        | 135 | F     | Failure | F  | Swelling and blisters, visible damage   |
| 33 | Phosphoric Acid (10%)                    | 135 | 135.4 | 0.30%   | R  | No effect                               |
| 34 | Phosphoric Acid (50%)                    | 135 | F     | Failure | F  | Swelling and blisters, visible damage   |
| 35 | PM Acetate                               | 135 | 135.5 | 0.37%   | R  | No effect                               |
| 36 | Potassium Hydroxide (10%)                | 135 | 135.5 | 0.37%   | R  | No effect                               |
| 37 | Potassium Hydroxide (20%)                | 135 | 137   | 1.46%   | R  | Slight discoloration, no visible damage |
| 38 | Propylene Carbonate (Jeffsol PC)         | 135 | 136.2 | 0.88%   | R  | No effect                               |
| 39 | Skydrol                                  | 135 | 142.1 | 5.00%   | C  | Little swelling, no visible damage      |
| 40 | Sodium Bicarbonate-Solid                 | 135 | 135   | 0.00%   | R  | No effect                               |
| 41 | Sodium Hydroxide (25%)                   | 135 | 135.1 | 0.07%   | R  | No effect                               |
| 42 | Sodium Hydroxide (50%)                   | 135 | 135.1 | 0.07%   | R  | Slight discoloration, no visible damage |
| 43 | Sodium Hypochlorite (Sat. Solution)      | 135 | 135.9 | 0.66%   | R  | Slight discoloration, no visible damage |
| 44 | Sour Brine (120,000ppm H <sub>2</sub> S) | 135 | 135.9 | 0.66%   | R  | No effect                               |
| 45 | Sour Condensate                          | 135 | F     | Failure | F  | Short term exposure acceptable          |
| 46 | Sour Crude (120,000ppm H <sub>2</sub> S) | 135 | 136.4 | 1.03%   | R  | No effect                               |
| 47 | Stearic Acid (50%)                       | 135 | 137.1 | 1.53%   | C  | Slight discoloration, no visible damage |
| 48 | Sugar/Water (10%)                        | 135 | 135.1 | 0.07%   | R  | No effect                               |
| 49 | Sulphuric Acid (22%)                     | 135 | 134.9 | -0.07%  | R  | No effect                               |
| 50 | Sulphuric Acid (50%)                     | 135 | F     | Failure | F  | Cracking, Blisters, Discolouration      |
| 51 | Sulphuric Acid (98%)                     | 135 | F     | Failure | F  | Cracking, Blisters, Discolouration      |
| 52 | Toluene                                  | 135 | 135.2 | 0.15%   | R  | No effect                               |

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|    |   |     |       |       |   |                                    |
|----|---|-----|-------|-------|---|------------------------------------|
| 53 | Trisodium Phosphate (TSP)                 | 135 | 135.6 | 0.44% | R | No effect                          |
| 54 | Unleaded Gasoline (5% Methanol)           | 135 | 135.4 | 0.30% | R | No effect                          |
| 55 | Unleaded Gasoline (5% MTBE)               | 135 | 136.4 | 1.03% | R | No effect                          |
| 56 | Unleaded Gasoline (Texaco)                | 135 | 136   | 0.74% | R | No effect                          |
| 57 | Vingear/Water (5.95)                      | 135 | 135.2 | 0.15% | R | No effect                          |
| 58 | Wastewater - Storm. Water. Pond- SOC      | 135 | 135.4 | 0.30% | R | No effect                          |
| 59 | Wastewater - Anaerobic Digester - AC      | 135 | 135.5 | 0.37% | R | No effect                          |
| 60 | Wastewater - API Separators MO            | 135 | 136.5 | 1.10% | R | No effect                          |
| 61 | Wastewater - Clarifier - FSO              | 135 | 135   | 0.00% | R | No effect                          |
| 62 | Wastewater - Clariflocculator FSO         | 135 | 135.2 | 0.15% | R | No effect                          |
| 63 | Wastewater - Equalization Basin - AC      | 135 | 135   | 0.00% | R | No effect                          |
| 64 | Wastewater - Rapid Charcoal Filters - FSO | 135 | 135.2 | 0.15% | R | No effect                          |
| 65 | Water (Tap) (25°C)                        | 135 | 135.1 | 0.07% | R | No effect                          |
| 66 | Water (Tap) (82°C)                        | 135 | 135.2 | 0.15% | R | No effect                          |
| 67 | Xylene                                    | 135 | 141.6 | 4.66% | C | Slight swelling, no visible damage |



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## Chemical Resistance List

|   | Weight Change After Immersion |        |                    |                     |                      |        |                                    |
|---|-------------------------------|--------|--------------------|---------------------|----------------------|--------|------------------------------------|
|   | 24 hours                      | 7 Days | 30 Days            | 60 Days             | 6 Months             | 1 Year | >1 Year                            |
| Acetic Acid 10%                           | 0.0002%                       | 0.03%  | 0.13%              | 0.11%               |                      |        |                                    |
| Acetic Acid 40%                           | 0.38%                         | 1.90%  |                    |                     | 7.32%<br>(10 months) |        |                                    |
| Acetic Acid 50%                           |                               |        |                    |                     | 9.75%<br>(11 months) |        |                                    |
| Diesel                                    | 0.00%                         | 0.00%  | 0.00%              | 0.01%               |                      |        | 0.1%<br>(3 years)                  |
| Ethanol                                   |                               |        |                    | 8.73%<br>(3 months) |                      |        |                                    |
| Ethanol 47.5%<br>Methanol 47%<br>MIBK 5%  | 2.48%                         | 4.19%  | 5.43%              |                     | 8.13%                |        |                                    |
| Gasoline (unleaded)                       | 0.07%                         | 0.50%  | 1.40%              | 2.30%               | 5.16%                |        | 4.75%<br>(17 months)<br>Shore D 50 |
| Hydrochloric Acid 24%                     | 0.00%                         | 0.01%  | 0.02%              |                     |                      |        |                                    |
| Jet Fuel JP-1,2,3                         | 0.00%                         | 0.00%  | 0.00%              | 0.01%               |                      |        | 1.4%<br>(5 Years)                  |
| JP – 7 Jet Fuel 60%<br>Toluene            | 0.61%                         | 2.14%  | 4.10%              | 4.93%               | 8.34%                |        | 8.67%<br>(19 Months)               |
| Methanol                                  | 2.30%                         | 3.41%  |                    |                     | 12.4%                |        | 9.12%<br>(19 Months)               |
| Phosphoric Acid 50%                       | 0.00%                         | 0.001% | 0.02%              |                     |                      |        |                                    |
| Skydrol                                   | 0.39%                         | 2.30%  | 4.93%<br>(25 Days) |                     | 13.7%                | 16.5%  |                                    |
| Sodium Hypochlorite 12%                   |                               |        |                    |                     | -1.5%<br>(8 Months)  |        |                                    |
| Sodium Hydroxide 50%                      | 0.00%                         | 0.001% |                    | 0.70%               |                      |        | 2.36%<br>(2 Years)                 |
| Sulphuric Acid 50%                        | 0.00%                         | 0.00%  |                    |                     |                      | 6.15%  |                                    |
| Sulphuric Acid 14%<br>Phosphoric Acid 30% |                               |        |                    |                     |                      | 2.36%  | -0.86%<br>(2 Years)                |
| Sulphuric Acid 93%                        | Destroyed<br>(2 Days)         |        |                    |                     |                      |        |                                    |
| Water                                     | 0.00%                         | 0.00%  |                    |                     |                      |        |                                    |
| Xylene                                    | 1.10%                         | 4.60%  |                    | 20.0%               | 21.63%               |        |                                    |

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