



PRODUCT DATA SHEET

UrePac® Cast 420 80

System Description

UrePac™ Cast 420 80 is a cold cure, two component polyurethane elastomer based on polyether polyol and MDI isocyanate. The system has been developed to be processed through high or low pressure dispensing machines or hand mix applications.

Product Description and Features.

The elastomer is designed for use as a high performance cold castable elastomer with good impact and abrasion resistance.

- Cold Cure
- 100% Solids, Zero VOC.
- Low Viscosity
- Excellent flexibility

Component A (Polyol) Specification:

Specific Gravity (22°C):	1.04 +- 0.02 g/ml
Viscosity (Brookfield) (22°C):	1200-1500 m.Pas
<i>Spindle 3 Speed 50</i>	
Appearance:	Yellow liquid

Component B (Isocyanate) Specification:

Specific Gravity (22°C):	1.20 +- 0.02 g/ml
Viscosity (Brookfield) (22°C):	250 +- 100 m.Pas
<i>Spindle 2 Speed 50</i>	
Appearance:	Clear Pale Yellow liquid

Mixed System Specification

Mix Ratio: <i>(95% Theory)</i>	By Weight	100 Polyol (Part A): 43 Isocyanate (Part B)
	By Volume	100 Polyol (Part A): 40 Isocyanate (Part B)
Gel Time/Pot Life (22°C):		420-540 s
<i>Time from when mixing commences till the liquid forms a solid.</i>		
Cure time (70°C Mould):		25+-10 minutes

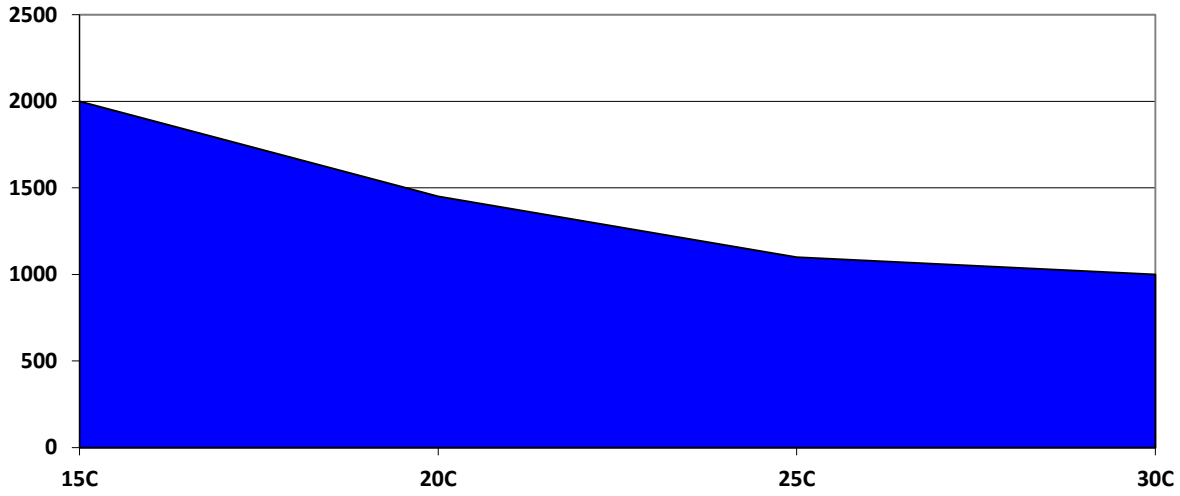
(Obtained from Laboratory 100g cup mix, results will vary depending on mix quantities)

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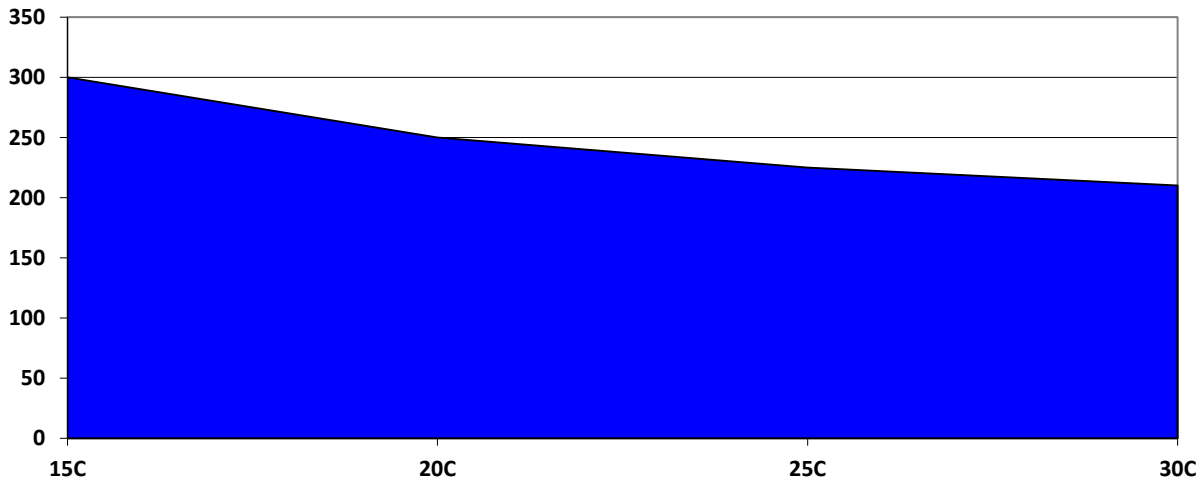
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Viscosity vs. Temperature

Polyol



Isocyanate



Packaging Options:

Packaging	Component A (Polyol)	Component B (Isocyanate)
23L White Open top pail	20kg	22kg
60L Open Top Drum	60kg	66kg
205L Closed Head Drum	210kg	230kg
1000L IBC	1000kg	1150kg

Typical Cured Elastomer Properties

After 7 days cure @ 22°C unless otherwise specified.

Hardness (22°C)	ASTM D1737	80+-2 Shore A
Solid Density (22°C):		1.07 g/ml
Tensile Strength:	ASTM D412	7.5+-1 MPa
Elongation:	ASTM D412	300+-10%
Taber Abrasion:	ASTM D4060	195 mg loss
<i>H22 Wheel 1kg per 1000 cycles</i>		
Water Absorption (22°C):	ASTM D471	Less than 1% @ 24 hours
Service Temperature:		-0°C to 80°C

Storage

Component A should be stored in closed containers under dry conditions out of direct sunlight between 25°C and 30°C. If the product goes below 20°C then a component will freeze out of the solution. The product will need to be reheated to 40°C and thoroughly mixed before being used in production.

Component B should be stored separately from *Component A*, at 20°C to 25°C.

Both products will have a minimum shelf life of six months when stored under these conditions.

Cured Product: Like all polyurethanes based on aromatic isocyanates this elastomer is **not** UV stable and will have surface discolouration and degradation if exposed to UV radiation and sunlight. Please speak to our technical consultants regarding your options if this product is required for use in external applications.

Typical Chemical Resistance Chart

3 Suitable for long term use

2 Suitable for Short to Medium term exposure

1 Very short term exposure (i.e. will withstand spills that are cleaned off within an hour)

0 Not suitable to any exposure

Chemical	Result @ 22°C	Chemical	Result @ 22°C
Acetic Acid	1	Acetone	1
Ammonium Hydroxide (50%)	1	Benzene	1
Brine Saturated H ₂ O	3	Chlorinated Water	3
Diesel Fuel	3	Petroleum	3
Petroleum/10% Ethanol	3	Hydrochloric Acid (37%)	2
Hydrofluoric Acid (10%)	2	Hydraulic Oil	3
Isopropyl alcohol	3	Lactic Acid	2
MEK	1	Methanol	3
Methylene Chloride	1	Mineral Spirits	2
Motor Oil	3	Nitric Acid (50%)	0
Phosphoric Acid (10%)	3	Phosphoric Acid (50%)	2
Potassium Hydroxide (10%)	3	Potassium Hydroxide (20%)	3 (Discolouration)
Propylene Carbonate	2	Sodium Hydroxide (25%)	1
Sodium Hydroxide (50%)	0	Sodium Hypochlorite (10%)	3
Sodium Bicarbonate	3	Stearic Acid	1
Sugar/H ₂ O	3	Sulphuric Acid (10%)	1
Sulphuric Acid (50%)	0	Toluene	3
1,1,1 Trichloroethane	1	Trisodium Phosphate	3
H ₂ O	3	Vinegar/H ₂ O (5%)	3
Xylene	2	H ₂ O (14 Days @70°C)	3

Component Preparation

Component A (polyol) should be thoroughly mixed each day prior to use as the components can separate out overnight. If this component is held in day tanks they should be continuously agitated to prevent any separation during production.

Component B (isocyanate) does not need to be mixed prior to use.

Both Components should be preconditioned to 25°C to ensure that the components will have consistent reactivity and performance.

Mould Preparation

The mould should have a clean dry surface and should be uniformly heated to approximately 70-80°C for optimal demould time and surface cure. We recommend a silicone based release agent. Our technical consultants will be happy to discuss your mould design requirements with you if required.

Processing

Mix Ratio – It is absolutely essential that the mix ratio of the two components is accurately measured and maintained to within 1% of the specified value. This ensures that the chemical reaction will proceed to completion and that the optimum physical properties are achieved. If using a machine to dispense it is highly recommended that calibration of mix ratio is conducted daily before production commences to ensure that the correct ratio is being maintained.

Please note: The reactivity of the system will not be altered if the level of one component is increased/decreased as it is not simply a catalyst. If you want to adjust the reactivity or mix ratio please discuss your specific requirements with our technical consultants.

Dispense Machine – Low pressure machines dispense the two components at a controlled ratio through a mechanically driven mix head. The machine will then clean the residual reacting components out of the mix head with a solvent flush. We can supply UrePac+ 7102 which is a non flammable solvent suitable for flushing of low pressure mix heads. Machines built specifically for elastomer production will pre-heat and degas the material in the day tanks for optimal processing and physical properties.

Hand Mix – When small production runs are required it is perfectly acceptable to hand mix the two components to achieve the final product. We recommend that a clean dry vessel twice the volume of the liquid is used to enable sufficient mixing of the components. Please follow the following method:

- Accurately weigh the Polyol component into clean dry mixing vessel. For a 0-5kg mix, a scale that can measure to within 0.1 - 1 grams should be used.
- Into the same container quickly but accurately weigh the correct weight of isocyanate component.
- Mix the liquids together using a jiffy type paint mixer with a high torque 240V drill (not a battery powered cordless drill) at about 2000-2500rpm.
- Continue mixing for about 60 seconds until a homogeneous blend of the two liquids is achieved being careful to entrap as little air as possible into the mix.
- For best results degas the material in a vacuum chamber at a vacuum of about 28-30mmHg
- Pour the liquid evenly into the mould cavity. This process must be completed well within the elastomers pot life.
- Clean the mixer and bucket with UrePac+ 7102. Wait until the appropriate demould time before opening the mould to ensure complete cure.
- Demould the material when cured and if possible post cure in an oven at 80 -100°C overnight.

Clean Up

It is essential that any liquid spills are cleaned up immediately, as the isocyanate (which reacts with atmospheric moisture) and reacting urethane is very difficult to remove once it has fully cured. For liquid spills we recommend using UrePac+7102 which is a non flammable, quick drying solvent. For cleaning of cured urethane from small utensils we recommend using UrePac+ 7108 heated to 70°C in a deep fryer for 1-2 hours.

Safety Requirements:

PPSE



We recommend the use of eye protection and latex or nitrile gloves when processing any polyurethane systems. We would also recommend the use of disposable overalls as splashing of the isocyanate can cause temporary staining of the skin, and some individuals can become sensitized to isocyanates with skin contact. If the isocyanate is heated or dispensed as an aerosol into the atmosphere then a respirator with organic vapour filter is essential when spraying elastomers.

Transport (Dangerous Goods) Classification

Component A: None

Component B: None

Isocyanates

Classified as Hazardous according to Worksafe Australia

HARMFUL VAPOUR

SKIN AND EYE IRRITANT

SKIN AND RESPIRATORY SENSITISER

FIRST AID

If inhaled: remove from exposure. For all but the most minor symptoms arrange for a doctor or transport to the nearest hospital.

In case of eye contact: immediately flush eyes with plenty of water for at least 15 minutes. Contact medical attention.

In case of skin contact: immediately wash skin with soap and plenty of water. Get medical attention immediately if symptoms occur. Remove contaminated clothing Wash clothes before re-use.

Other information: Never give fluids or induce vomiting

Advice to Doctor: May cause respiratory sensitisation or asthma-like symptoms. Bronchodilators, expectorants and anti-tussives may be of help. Respiratory Symptoms, including pulmonary oedema, may be delayed.

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Persons receiving significant exposure should be observed 24-48 hours for signs of respiratory distress. No specific antidote. Treatment based on judgement of the physician in response to reactions of the patient.

WATER CONTAMINATION CAUSES DANGEROUS PRESSURE

Store in a DRY place. The combined evolution of CO₂ and heat can produce sufficient pressure to rupture a closed container.

IN CASE OF FIRE: use CO₂, dry chemical or foam extinguishers. If water is used it should be in very LARGE quantity. The reaction between water and hot isocyanate may be vigorous. Wear a positive pressure self-contained breathing apparatus.

IN CASE OF SPILL OR LEAK: evacuate and ventilate spill area. Do not use water. Dyke to prevent entry into waterways. If temporary control of isocyanate vapour is required, a blanket of foam may be placed over the spill. Use appropriate safety equipment including respiratory protection during clean up. Soak up with sawdust or other absorbent. Shovel into suitable open-top containers. Do not make pressure tight.

Remove from the area for decontamination. Use a solution of 3-8% ammonia in water or 5-10% sodium carbonate at about a 10 to 1 ratio to isocyanate. Detergent may be added to facilitate wetting of ammonia solution. Let stand 1-2 days before disposal in approved manner.

EMERGENCY RESPONSE (All Hours)

1800 033 882 (Australia Only)

Disposal

Liquid Systems: Liquid polyurethanes should be disposed of with an EPA approved industrial waste company which meet all applicable federal, state and local laws and regulations.

Cured Urethanes: Fully reacted and cured polyurethanes are inert and can be disposed of as normal landfill.

Container: Dispose of decontaminated drums in accordance with all applicable federal, state and local laws and regulations.

Do Not Re-use Empty Container.

Do Not Cut or Weld Empty Container.

Disclaimer

This information is given in good faith but without warranty and is supplied to users based on our general experience and, where applicable, on the results of tests on samples of typical manufacture.

However, because of the many factors which are outside our knowledge and control that can affect the use of these products, it is imperative that the end user is satisfied that the material will meet their individual processing and performance requirements. Pacific Urethanes Pty Ltd cannot accept liability for any injury, loss or damage resulting from reliance upon this information.

All sales of this product shall be subject to Pacific Urethanes' Terms and Conditions of Sale. For a copy of these terms please contact us at info@pacificurethanes.com.

For additional information, consult the Material Safety Data Sheet for this product.