Era
Polymers

A New Era in Polyurethane

Elastomers

VERSION 9.0

Contents

Excellence in Polyurethane Chemistry

Era Polymers is an Australian owned and operated Polyurethane Systems House. The company was founded in April 1986, in a home office, by George and Tina Papamanuel.

Since those modest beginnings the company has grown to become the largest Polyurethane Systems House in Australia and South Asia.

Operated by Industrial Chemists, **Era Polymers** has built an enviable reputation for outstanding product quality customer and technical service. **Era Polymers** currently exports products and provides technical service to over 75 countries worldwide.

Era Polymers is headquartered in Sydney, Australia as is **Era Polymers' R&D Centre** which supports a team of development chemists, the NATA* accredited laboratories as well as an extensive array of testing equipment.

Also located in Sydney are two world class manufacturing sites - **Samos Ena** and **Samos Dio.** At these sites, **Era Polymers** manufactures polyurethane systems for foams, elastomers, spray systems, binders,membranes and coatings.

Located in Melbourne, **Era Polymers** operates a third Australian manufacturing operation – **Applied Polymers**. This production site is responsible for the development and production of high performance foam insulation systems, in particular for the LNG (Liquefied Natural Gas) Industry.

Era Polymers Corporation, located in North Carolina USA, supplies products manufactured at **Samos Exi,** a world class, purpose built polyurethane prepolymer production facility. This site manufactures a full range of prepolymers, curatives and polyurethane systems, servicing the North American, South American and European markets.

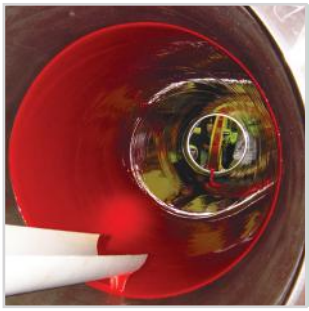
Era Polymers NZ Limited manufactures and distributes polyurethane systems to the New Zealand market from a production site centrally located in Auckland.

Era Polymers Africa, a modern production facility in Johannesburg, developing and manufacturing polyurethane elastomers, binders, foams and spray systems for supply to South Africa and the African continent.

Era Polymers' focus on export markets has resulted in more than 75 countries being serviced and supplied with high quality polyurethane systems. Partnerships in Europe, USA and Asia have enabled **Era Polymers** to bring the manufacturing of products into these markets; decreasing response times, shortening delivery lead times, while ensuring product quality is never compromised. The range of polyurethane foam systems, complemented with a complete range of ancillary products such as pigments and release agents, has raised the industry standard to a new level.

** National Association of Testing Authorities*

Applications



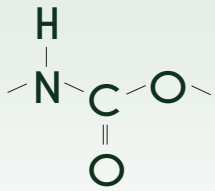
Superior cost advantage and performance has led to many instances of replacing metal, rubber, wood and plastic with Erapol elastomers. Some applications are shown in the table below.

Industry	Applications
Automotive	Grommets, bearings, bushes, flexible couplings.
Building and Construction	Moulds for concrete, gate seals, concrete pump parts, waterproofing.
Coated fabrics	Conveyor belts, fuel storage tanks, power transmission belts.
Electrical	Encapsulation, insulation, potting, cable joining.
Engineered Components	Gears, sprockets, wire guides, rail draft gear, stripper plates, press brake pads, textile yarn guides, cutting boards, business machine belts, couplings.
Food	Chute lining, grain buckets.
Mining	Bucket liners, conveyor rollers, scraper blades, floatation cell impellers, pump linings, grading screens, lined pipes, cross-over pads.
Oil, Chemical and Marine	Bushings, bearings, hydrocyclones, buoys, pipeline pigs and scrapers, fenders, valve seats.
Rollers	Board rollers, nip rollers, metal forming, printing, conveyor, can coating, paper mill.
Seals and Gaskets	Pneumatic and oil seals, diaphragms.
Footwear	Shoe soles, bottom moulding diaphragms, wear plates, energy absorbing insoles.
Wheel and Tyres	Fork-lift tyres, heavy duty castor wheels, escalator wheels, roller skate wheels, roller blade wheels.

What are Polyurethanes?

To the Chemist:

They are polymeric materials containing urethane groups



produced by the reaction of a polyol with an isocyanate.

To the Engineer:

They are materials offering a number of unique properties which enable products to be manufactured to meet a range of demanding applications.

To the Accountant:

They are materials which can be processed with low energy consumption and relatively low capital outlay for machinery to yield products which show cost saving through improved performance.

Polyurethane Elastomers are unique design and construction materials combining many of the advantages of rigid plastics, metals and ceramics with the extensibility of rubber.

While it is not claimed that polyurethanes are the answer to all problems, they are extremely versatile and this is the key to their widespread and growing use.

The main types of polyurethanes are:

- POLYETHER/TDI
- POLYETHER/MDI
- POLYESTER/TDI
- POLYESTER/MDI
- POLYCAPROLACTONE/TDI
- POLYCAPROLACTONE/MDI
- ALIPHATIC SYSTEMS
- POLYUREA SYSTEMS

These are also known as the "chemical backbones". Each has its own performance advantages. Please consult the **Era Polymers Technical Service Department** for specific recommendations.

As a general guide:

Polyethers are recommended for applications where parts undergo dynamic stress, i.e. they incur lower heat build-up. They also have advantages in high resilience, low temperature performance and resistance to water attack (hydrolysis). Polyethers also have lower viscosity and specific gravity.

Polyester based urethanes have superior cut, tear, abrasion, oil and solvent resistance.

MDI based products have lower isocyanate odour than similar TDI types and have superior hydrolysis resistance and often have higher resilience.

TDI based products are less sensitive to moisture, have shorter demould times and are more user friendly than MDI product.

Polycaprolactones exhibit good cut, tear, load bearing and abrasion resistance with the added advantage of better hydrolysis resistance when compared to Polyesters.

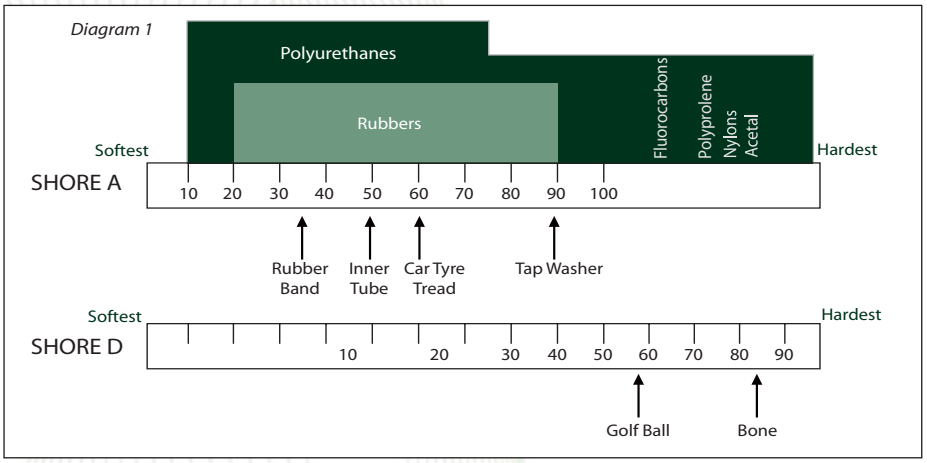
Aliphatic Systems have high resistance to weathering, high chemical resistance and durability in aggressive environments.

Polyurea Systems are fast reacting amine terminated systems used typically in spray applications. These systems have very good water and chemical resistance.

Properties of Erapol Elastomers

Polyurethanes compete against many other materials including rubber, plastic and metals.

The most common method of classifying polyurethanes is according to their hardness. The diagram (right) shows how polyurethanes compare in hardness to other materials.



1. Hardness

Erapol elastomers are available in a wide range of hardness, from 10 Shore A, which is softer than an eraser, to 85 Shore D which is much harder than a golf ball. For those unfamiliar with this method of measuring hardness, the pictures to the right show two typical Durometers.

Hardness measurement is a useful tool, however variation in readings by one or two units can be encountered when measuring most polyurethane and rubbers.

Shore A is the most common hardness scale used up to 95 Shore A. Any reading above this hardness level should be measured in Shore D scale. The comparison between the two scales is outlined above in *Diagram 1*.

Analog Hardness Tester

Digital Hardness Tester

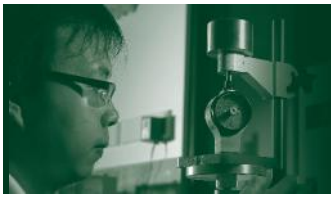
DIN Abrasion Testing Machine

Taber Abrasion Testing Machine

2. Abrasion Resistance

In severe wear applications ***Erapol*** elastomers offer outstanding durability when compared with rubbers, plastics or even metals.

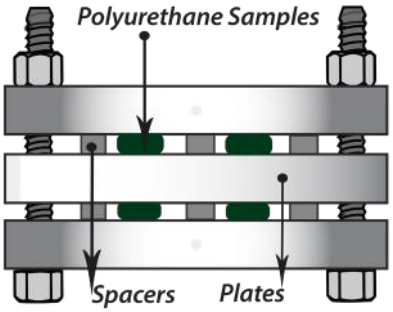
It should be emphasised that abrasion resistance is a complex property. Selection of an appropriate ***Erapol*** elastomer should be based on actual experience or simulated service tests. For comparative abrasion data please see Resistance Charts on pages 34 – 35.



Properties of Erapol Elastomers

3. Compression Properties

Erapol elastomers exhibit greater load-bearing capacity than conventional elastomers of equal hardness. This leads to successful applications such as wheels and industrial tyres, feed rollers and stripper springs. In addition to high load bearing properties in both tension and compression, ***Erapol*** elastomers also have a high load bearing capacity in shear.



1. Compression Set

(ASTM D-395 Method B)

Measures the amount of permanent deformation a part will undergo when loaded for a period of time. In ASTM D-395 Method B (see above) a load is generated by imposing a 25% compression on the sample.

2. Compression Deflection

(ASTM D-575)

This is defined as a compression test in which the force required to cause a specified deflection is determined. Commonly used strain values for this test are 5%, 10% and 25%.

4. Mechanical Properties

At low hardness all elastomeric materials, including ***Erapol*** elastomers will flex under impact. As conventional elastomers are compounded up to higher hardness they tend to lose elasticity and crack under impact. On the other hand, ***Erapol*** elastomers when at their highest hardness levels, have significantly better impact resistance than almost all plastics.

The inherent toughness, combined with the many other outstanding properties associated with the high hardness ***Erapols***, leads to many applications in engineering.

5. Tear Strength

Typically, tear strength is a strong indication of toughness and durability. High tear strength leads to longer service life. ***Erapol*** elastomers in this regard have a distinct advantage over other conventional elastomers.

6. Resilience

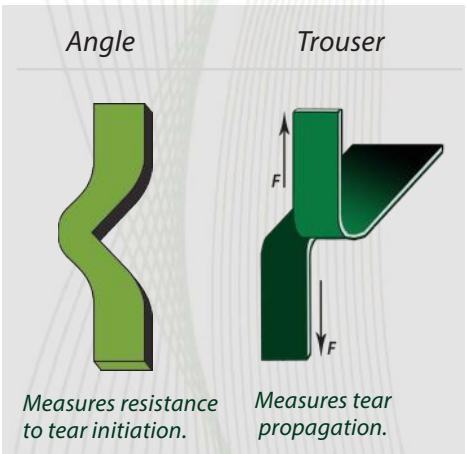
Resilience in conventional elastomers is generally a function of hardness. This often undesirable relationship does not hold true with ***Erapol*** elastomers. Products are available in a wide range of resilience.

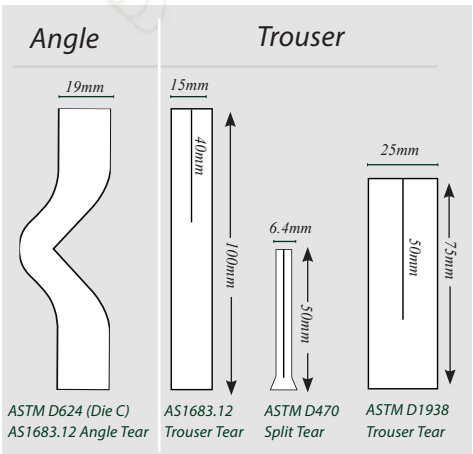
In shock-absorbing elastomer applications, low rebound compounds are usually used i.e. resilience range of 10-40%. For high frequency vibrations or where quick recovery is required, compounds of 40-65% resilience are used. In general, toughness is enhanced by high resilience.

7. Low Temperature Properties

Many ***Erapol*** elastomers remain flexible at very low temperatures and possess outstanding resistance to thermal shock. The low temperature resistance of ***Erapol*** elastomers has led to applications below -50°C.

There are two common test types used to measure tear strength:





Properties of Erapol Elastomers

8. Tensile Properties

Erapol elastomers are characterised by high elongation, high tensile strength and high modulus. This provides a combination of toughness and durability, over conventional elastomers.

Tensile tests are performed on a tensometer as shown (see right). In this test we are interested in the shape of the overall stress strain curve (see graphs below). The more area there is under the stress-strain curve the higher the toughness of the material.

We are also interested in various points along the curve including the ultimate tensile strength and elongation of the ***Erapol*** elastomers.

Tensile Strength

(ASTM Methods D412 and E6)

The maximum tensile stress a material is capable of developing. It is the force per unit of the original cross-sectional area which is applied at the time of rupture of a specimen. It is known variously as breaking load, breaking stress and ultimate tensile strength. A dumbell specimen is used for the test.

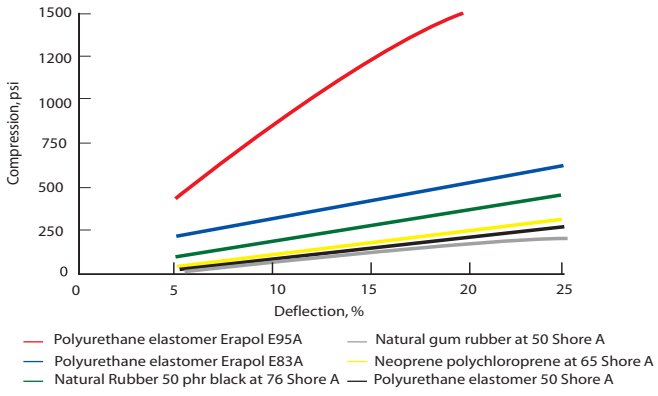
UTM

Elongation

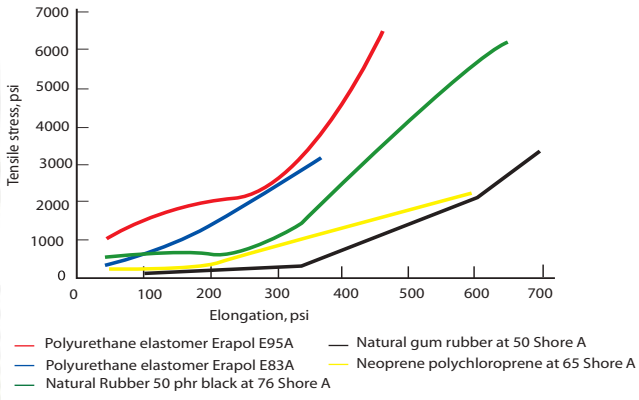
(ASTM Method D412)

The extension between two points produced by a tensile force applied to a specimen. Measured as a percentage of the original distance between the marks. A dumbell specimen is used for the test. Ultimate elongation is the elongation at the moment of rupture.

Stress Strain in Compression



Stress Strain in Tension



9. Flex Properties

Erapol elastomers resist cracking under repeated flexing. The rate of cut growth under flexing may be reduced by decreasing the thickness of the part. Unlike other conventional elastomers, ***Erapol*** elastomers can be used in very thin sections because of their strength and toughness.

10. Dry Heat Resistance

Whilst many ***Erapol*** elastomers are only suitable for continuous operation up to 90°C, intermittent use up to 120°C is possible. Using specially formulated materials, continuous operation up to 120°C or even higher can be achieved.

Properties of Erapol Elastomers

11. Water Resistance

Erapol polyether elastomers are resistant to the effects of water immersion and have excellent long-term stability in water up to 50°C. Continuous use in hot water over 80°C is not recommended for standard systems.

Water absorption is very low, in the range of 0.3-1.0% by weight and volume swell is negligible. This means, for example that ***Erapol*** elastomers can operate at close tolerance in water lubricated bearings without fear of seizure.

The moisture vapour transmission rate of ***Erapol*** elastomers is relatively high and advantage is taken of this fact in some applications, e.g. poromeric shoe upper materials. However, where this property might be disadvantageous, the advice of our Technical Service Department should be sought on the suitability of ***Erapol*** elastomers for any particular application.

12. Electrical Properties

Typically ***Erapol*** elastomers have very good insulating properties and are used in potting and encapsulating applications.

13. Oxygen and Ozone Resistance

Products made from ***Erapol*** elastomers are highly resistant to degradation by atmospheric oxygen and ozone. Tests on samples, aged over 500 hours in an atmosphere containing 3ppm ozone, show no attack even while under 20% strain. Past experience has shown that materials which resist the concentration for several hundred hours are virtually immune to attack by normal atmospheric concentrations.

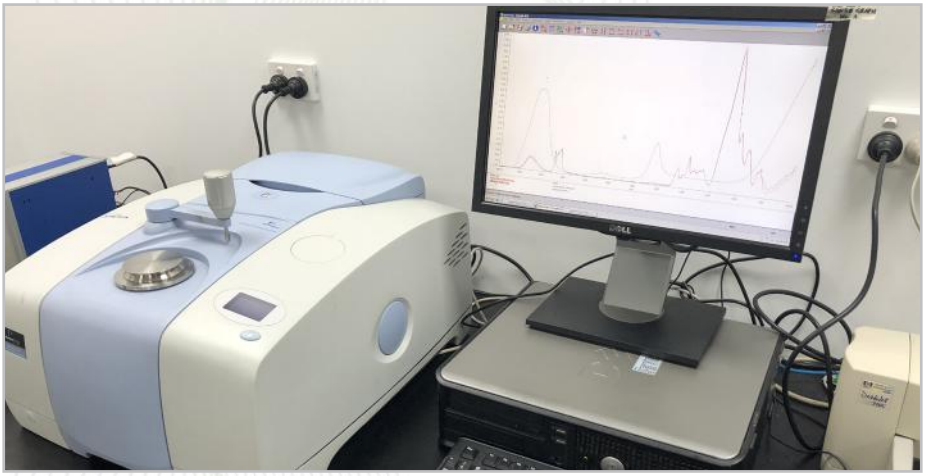
This makes ***Erapol*** elastomers highly successful when employed around electrical equipment, without the hardening and cracking often experienced with conventional elastomers and indeed many plastics.

14. Oil, Grease and Chemical Resistance

Many rubbers and plastics have excellent resistance to one or more specific solvents, oils or chemicals. ***Erapol*** elastomers are resistant to a wide range of chemicals which means they can be used in a multitude of chemical environments with the exception of strong acids, alkalis and certain solvents.

As with all materials being examined for oil and chemical resistance, it is best to place a sample of the material in actual service. If this is not practical, tests should be devised which simulate actual service conditions as closely as possible.

For specific information on chemical resistance, please see the Chemical Resistance Chart on page 54.



Properties of Erapol Elastomers

15. Radiation Resistance

Erapol elastomers are considered to have better resistance to gamma ray radiation than conventional elastomers. They retain a high proportion of their original flexibility and toughness when exposed to gamma radiation.

16. Fire Resistance

Erapol elastomers can be formulated to meet several self extinguishing or fire resistant specifications.

17. Mould, Mildew, Fungus Resistance

Suitably formulated ***Erapol*** elastomers, usually polyether based, do not support fungal growth and are generally resistant to such attack. This makes them particularly suitable for tropical environments.

18. Frictional Properties

Erapol elastomers resemble most plastics and elastomers, in that friction against non-lubricated surfaces generally decrease with increasing hardness. A high coefficient of friction is valuable for such products as solid industrial tyres, feed rollers, drive rollers etc.

High hardness compounds have the lowest coefficient of friction, and formulations having very low values are available. Such formulations are widely used for bushings, bearings and wear strips. Wear of shafts and mating surfaces is minimal, and usually considerably less than with plastic materials.

19. Bonding to other materials

During the initial moulding process and under controlled conditions, ***Erapol*** elastomers can be bonded to a wide variety of substrates. High bond strength can be obtained to most metals, wood and many plastics. Bond strength often exceeds the tear strength of the ***Erapol*** elastomers. The bond strength of ***Erapol*** to metal is usually several times higher than that of rubber to metal.

It is more difficult to bond cured ***Erapol*** elastomer sheet or moulding to other materials but special techniques have been developed to satisfy most requirements.

20. Machinability

Erapol elastomers can be machined using conventional equipment but you should consult our Technical Service Department for more information.

21. Variable Temperature Testing

Sub zero temperature testing is primarily designed for foam cryogenic applications where products are routinely analysed at temperatures below -165°C. This equipment also allows **Era Polymer's** the capability of testing elastomers at elevated temperatures to specific test methods including Tensile, Elongation, Compression and Angle tear (Die C). Elevated and sub zero temperature testing has extended **Era Polymer's** testing capabilities.

1. Shelf Life and Storage

Most ***Erapol*** brand prepolymers have a shelf life of at least 12 months when stored unopened in their original containers at temperatures less than 30°C. The isocyanate content of all ***Erapol*** prepolymers will decrease by reaction with moisture or heat. Partial drums should be blanketed with dry nitrogen.

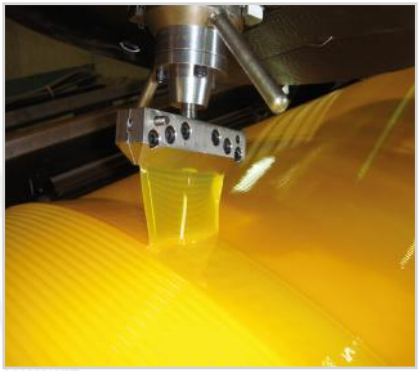
2. Effects of Heating the Prepolymer

The isocyanate (NCO) content of all prepolymers decreases with time and especially with exposure to heat. The table below shows the accumulated time taken at various temperatures to degrade prepolymers.

Temperature/°C	Time
60	7 days
70	3 days
80	36 hours
90	12 hours
100	8 hours

3. Toxicity

Erapol prepolymers contain reactive isocyanate groups and should be handled with care. Avoid inhalation of vapours and skin contact. Appropriate personal protective equipment (PPE) should be worn and adequate ventilation provided. For further information consult the Material Safety Data Sheets.



4. Effects of Curative Level

All physical properties of ***Erapol*** elastomers are sensitive to curative level. The curative level is often expressed as % theory. The table below shows how physical properties vary with % theory.

Physical Properties	Change
Hardness	Remains unchanged between 85-100 %
Tensile Strength	Maximum physical properties achieved between 90-95% theory.
Tear Strength	Maximum properties at 100-105% theory. Significantly lower outside the range.
Abrasion Resistance	Remains relatively unchanged between 85-105% theory. Slightly better at 100-105% theory.
Flex Life	Maximum property at 100-105% theory.
Elongation	Maximum at 100-105% theory.
Compression Set	Best at 85-95% theory.

Product Reference Guide

Era

Era Polymers

MDI Systems

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Hardness	Polyether / MDI		Polyester		Polycaprolactone PCL	Polycarbonate PCD	Erakote / Polyether		
Shore	EMD Full Prepolymer	EMD137 Quasi	EME Full Prepolymer	EME167 Quasi	EMC Full Prepolymer	HTM Full Prepolymer	EKF 2K Full Prepolymer	EKQ115	EKQ 3K Quasi
40A				EME167/40A					
45A									
50A									
55A		EMD137/55A		EME167/55A					
60A		EMD137/60A		EME167/60A					EKQ601A
65A		EMD137/65A		EME167/65A					EKQ65A
70A		EMD137/70A		EME167/70A	EMC700A				EKQ70A
75A		EMD137/75A		EME167/75A					EKQ75A
80A	EMD801A	EMD137/80A	EME80A	EME167/80A		HTM80A	EKF80A		EKQ80A
85A	EMD86A	EMD137/85A	EME851A	EME167/85A	EMC850A		EKF85A		EKQ85A
90A	EMD903A	EMD137/90A	EME90A	EME167/90A	EMC90A	HTM95A/90A	EKF90A		EKQ90A
93A / 48D / 20P&J	EMD93A							EKQ115/48D	
95A	EMD950A	EMD137/95A	EME95A	EME167/95A	EMC95A	HTM95A	EKF95A		EKQ95AF
50D	EMD521D								
60D	EMD57D	EMD137/60D		EME167/60D		HTM95A/60D		EKQ115/60D	EKQ60D
65D								EKQ115/65D	EKQ65D
70D / 5P&J				EME167/70D				EKQ115/70D	EKQ70D
80D	EMD750D								

Polyether		Polycarbonate	Caprolactones
• Excellent hydrolytic stability • Fungus resistance • Excellent mechanical properties • Low temperature flexibility • Excellent sliding abrasion resistance	**• Oil/Solvent resistance** • High impact abrasion resistance • Excellent mechanical properties • Temperature resistance • Excellent vibratory dampening	**• Excellent high heat resistance** • Excellent hydrolytic stability • Oil/Solvent resistance • High impact abrasion resistance • Extreme environments	**• High tear strength** • High tensile strength • Oil/Solvent resistance • High impact abrasion resistance • Low heat build up
Due to the inherent advantages in low heat build up, polyether-based urethanes are recommended for applications undergoing high stress.	Not recommended for use in high humidity or exposure to water, as volume swell and reduction of properties may result.	Excellent long term retention of properties in aggressive environments	Excellent mechanical and solvent resistance properties with superior wear and tear.

Product Reference Guide

Era	Era Polymers			TDI Systems											V 6
Hardness	**Cold Castables**			**Polyether**							**Polyester**				**Capa**
Shore	**CC**	**CCM**	**RT**	**E**	**EHP**	**XLE**	**ETX**	**ET**	**EMP**	**ETL**	**RN**	**XLS**	**SDR**	**HTE**	**ECP**
30A		MM30A	RT301A										SDR32A		
45A		MM45A	RT45A												
50A	CC50A		RT50A										SDR501A		ECP501A
55A		CCM55A								ETL55A	RN3038 / I93		SDR55A		
60A	CC5/65A	MM60A									RN3039 / I93				L-ECP61A / ECP61A
65A / 20D										ETL65A					
70A					EHP70A				EMP700A	ETL70A	L-RN70A / RN70A				ECP72A
75A		CCM75A		E77A						ETL75A	L-RN71A				
80A / 30D	CC80A	CCM80A								ETL80A				HTE80A	
83A				L-E83A / E83A				ET83A	EMP83A		RN83A				ECP83A
85A		MM85A			EHP85A					L-ETL85A / ETL85A	L-RN85A	XLS85A			
90A / 40D	CC90A	CCM90A		L-E90A / E90A	L-EHP90A / EHP90A	XLE90A		ET90A	EMP89A	L-ETL91A / ETL91A	L-RN92A / RN90A	XLS90A		HTE90A	ECP90A
93A				L-E93A / E93A	EHP93A	XLE93A			EMP92A						ECP93A
95A	CC95A	CCM95A		L-E95A / E95A	EHP95A	XLE95A		ET95A	EMP95A	L-ETL94A / ETL94A	RN95A	XLS95A		HTE95A	ECP95A
97A / 50D											L-RN501D / RN52D				
57D											RN560D				ECP571D
60D	CC60D			L-E60D	EHP60D			ET60D							
65D				L-E65D			ETX65D	ET65D		ETL65D					
70D				L-E70D	EHP70D	XLE70D	ETX70D	ET70D		ETL69D					
75D				L-E75D		XLE75D	L-ETX75D / ETX764D	ET75D		ETL752D					
80D							L-ETX801D / ETX80D								
85D							ETX85D								

Cold Castable	Polyether	Polyester	Caprolactones
• **Cast at ambient temperature** • High elongation and flexibility • Low shrinkage • Higher Performance (CC) • Longer Pot Life (CC)	• **Excellent hydrolytic stability** • Fungus resistance • Excellent mechanical properties • Low temperature flexibility • Excellent sliding abrasion resistance	• **Oil/Solvent resistance** • High impact abrasion resistance • Excellent mechanical properties • Temperature resistance • Excellent vibratory dampening	• **High tear strength** • High tensile strength • Oil/Solvent resistance • High impact abrasion resistance • Low heat build up
NOT recommended for abrasive resistance applications	Due to the inherent advantages in low heat build up, RECOMMENDED for applications undergoing high stress.	NOT recommended for use in high humidity or exposure to water, as volume swell & reduction of properties may result.	Exhibit excellent mechanical & solvent resistance properties with the added advantage of superior wear & tear.

Erapol Mix Ratios

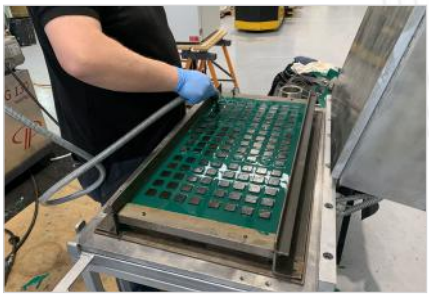
Tabulated below are commonly used ***Erapols*** and their mix ratios with the appropriate curatives.

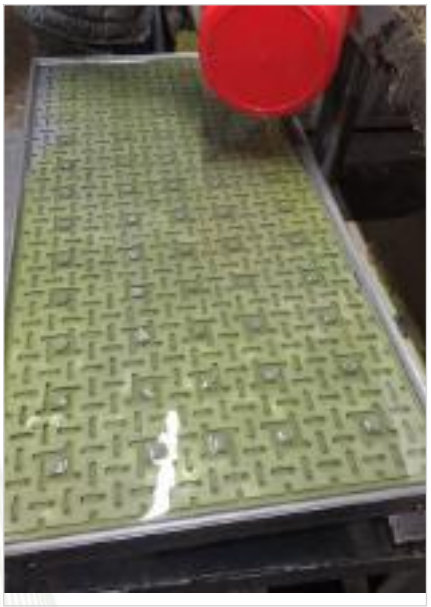
Erapol Grade	% NCO	Erapol Temp / °C	Moca / pph	Ethacure 300 / pph	Eracure 110 / pph	Moca Pot Life / min
E83A	3.10	75-85	9.9	7.9	8.4	15
E90A	4.20	75-85	12.7	10.2	10.9	10
E93A	5.00	75-85	15.1	12.1	12.9	8
E95A	6.25	75-85	18.9	15.1	16.2	6
EHP70A	2.50	75-85	7.6	6.1	6.5	37
EHP85A	3.50	70-80	11.1	8.9	9.5	17
EHP90A	4.60	75-85	13.9	11.1	11.9	8
EHP93A	5.20	75-85	15.7	12.6	13.4	8
EHP95A	5.80	75-85	17.5	14.1	15.0	5
EHP60D	7.50	60-70	22.7	18.2	19.4	3
EHP70D	9.00	60-70	27.2	21.8	23.3	2
XLE90A	4.50	75-85	13.6	10.9	11.6	14
XLE93A	5.20	75-85	15.7	12.6	13.4	12
XLE95A	6.00	75-85	18.1	14.5	15.5	8
XLE70D	9.00	60-70	27.2	21.8	23.3	3
XLE75D	9.30	60-70	28.1	22.5	24.0	2
ET83A	3.10	75-85	9.9	7.9	8.4	8
ET90A	4.20	75-85	12.7	10.2	10.9	6
ET95A	6.25	75-85	18.9	15.1	16.2	4
ET60D	7.40	60-70	21.2	17.0	18.1	3
ET65D	8.00	60-70	21.6	17.3	18.5	2
ET70D	9.20	60-70	24.9	19.9	21.3	1
ET75D	11.20	60-70	30.3	24.3	25.9	<1
ETX65D	8.00	60-70	22.9	18.4	19.6	4
ETX80D	9.50	60-70	25.7	20.6	22.0	3
ETX85D	12.00	60-70	32.4	26.0	27.7	3
ETL85A	4.20	75-85	12.7	10.2	10.9	10
ETL91A	5.00	75-85	15.1	12.1	12.9	6
ETL94A	6.25	75-85	18.9	15.1	16.2	5
ETL69D	8.05	55-65	21.8	17.4	18.6	3
RN70A	2.50	75-85	7.6	6.1	6.5	12
RN83A	3.20	75-85	9.7	7.8	8.3	8
RN90A	4.55	75-85	13.7	11.0	11.8	4
RN50D	5.10	75-85	15.4	12.4	13.2	4
XLS85A	3.50	75-85	10.6	8.5	9.0	14
XLS90A	3.90	75-85	11.8	9.4	10.1	13
XLS95A	5.40	75-85	16.3	13.1	14.0	8
ECP61A	3.75	75-85	11.3	9.1	9.7	19
ECP72A	3.30	75-85	10.0	8.0	8.5	15
ECP83A	3.65	75-85	11.0	8.8	9.4	10
ECP93A	5.20	75-85	15.7	12.6	13.4	7
ECP95A	5.80	75-85	17.5	14.1	15.0	4
ECP57D	7.20	60-70	21.8	17.4	18.6	3

Technical Data

Erapol Product Data Section










Polyether (PTMEG) TDI Prepolymers

		High Performance				
	ERAPOL PREPOLYMER	**E77A**	**E83A**	**E90A**	**E93A**	**E95A**
PREPOLYMER PROPERTIES	%NCO	2.60 ± 0.20	3.10 ± 0.20	4.20 ± 0.20	5.00 ± 0.20	6.25 ± 0.25
	Specific Gravity at 25°C	1.04	1.05	1.06	1.05	1.07
	Viscosity at 80°C (cPs)	1800–3200	1000 –1500	800 – 1300	500 – 900	300 – 700
	Colour	clear, light amber	clear, light amber	clear, light amber	clear, light amber	clear, light amber
MOCA PROCESSING	Moca Level at 110 -120°C (pph)	8.3	9.9	12.7	15.1	18.9
	Recommended % Theory Erapol	100	100	95	95	95
	Temperature (°C)	80 – 90	85 – 95	75 – 85	75 – 85	75 – 85
	Pot Life (mins)	25	20	10	8	6
	Demould at 100°C (hrs)	2	1	1	1	1
	Post Cure at 100°C (hrs)	16	16	16	16	16
ETHACURE 300 PROCESSING	Ethacure 300 Level at 20 – 30°C (pph)	6.6	7.9	10.2	12.1	15.1
	Recommended % Theory	100	100	95	95	95
	Erapol Temperature (°C)	80 – 90	65 – 75	65 – 75	65 – 75	65 – 75
	Pot Life (mins)	11	12	10	8	4
	Demould at 100°C (hrs)	2	1	1	1	1
	Post Cure at 100°C (hrs)	16	16	16	16	16
PHYSICAL PROPERTIES (MOCA)	Hardness (Shore A)	79 ± 3	83 ± 3	90 ± 3	93 ± 3	95 ± 3
	Tensile Strength / MPa (psi)	30 (4351)	33 (4786)	42 (6092)	43 (6237)	45 (6527)
	100% Modulus / MPa (psi)	4.8 (696)	4.6 (667)	9.3 (1349)	11.0 (1595)	14.3 (2074)
	300% Modulus / MPa (psi)	6.9 (1000)	8.3 (1204)	17.8 (2582)	17.9 (2596)	34 (4931)
	Elongation (%)	600	550	420	420	390
	Angle Tear Strength, Die C (kN/m)	59	72	85	86	90
	DIN Abrasion Resistance (mm^3)	42	50	55	60	70
	Compression Set / 22 hr at 70°C (%)	36	28	30	28	35
	Cured Density (g/cm3)	1.06	1.06	1.10	1.10	1.13

*The information presented here is based on laboratory testing.

			Ultra High Performance				
ET83A	**ET90A**	**ET95A**	**EHP70A**	**EHP85A**	**EHP90A**	**EHP93A**	**EHP95A**
3.10 ± 0.20	4.20 ± 0.20	6.25 ± 0.25	2.50 ± 0.20	3.50 ± 0.20	4.60 ± 0.20	5.20 ± 0.20	5.80 ± 0.20
1.05	1.06	1.06	1.08	1.06	1.06	1.05	1.10
1300 –1800	900 – 1300	300 – 700	1200 - 1600	900 – 1600	300 – 900	500 – 900	400 – 800
clear, light amber	clear, light amber	clear, light amber	clear, light amber	hazy, light amber	clear, light amber	clear, light amber	clear, light amber
9.9	12.7	18.9	7.6	11.1	13.9	15.7	17.5
100	95	95	95	100	95	95	95
75 – 85	75 – 85	75 – 85	75 - 85	70 – 80	75 – 85	75 – 85	75 – 85
8	6	4	35	17	8	8	5
1	0.5	0.5	3	2	1	1	0.5
16	16	16	16	16	16	16	16
7.9	10.2	15.1	6.1	8.9	11.1	12.6	14.1
100	95	95	95	100	95	95	95
65 – 75	65 – 75	65 – 75	75 - 85	70 – 80	65 – 75	65 – 75	65 – 75
6	3	2	20	14	7	7	5
1	<1	<1	2	2	2	1	<1
16	16	16	16	16	16	16	16
83 ± 3	90 ± 3	95 ± 3	70 ± 3	83 ± 2	90 ± 3	93 ± 3	95 ± 3
33 (4801)	33 (4786)	40 (5800)	31 (4525)	38 (5500)	40 (5802)	44 (6338)	44 (6396)
4.8 (696)	8.5 (1230)	11.3 (1640)	2.3 (334)	7.3 (1060)	7.2 (1044)	9.8 (1421)	13.0 (1885)
8.3 (1204)	16.0 (2320)	23.0 (3340)	5.5 (798)	13.1 (1900)	15.1 (2190)	18.2 (2640)	26.0 (3771)
500	450	400	635	565	500	500	410
75	85	98	46	72	80	118	122
45	55	65	52	30	55	41	70
30	35	38	-	27	24	25	27
1.08	1.11	1.13	1.04	1.05	1.10	1.10	1.13

Polyether (PTMEG) Lower Free TDI Prepolymers

	ERAPOL PREPOLYMER	L-E83A	L-E90A	L-E93A	L-E95A
PREPOLYMER PROPERTIES	%NCO	3.10 ± 0.20	4.20 ± 0.20	5.00 ± 0.20	6.00 ± 0.20
	Specific Gravity at 25°C	1.05	1.06	1.05	1.08
	Viscosity at 80°C (cPs)	1000 – 1500	800 – 1300	500 – 900	300 – 700
	Colour	clear, light amber	clear, light amber	clear, light amber	clear, light amber
MOCA PROCESSING	Moca Level at 110 -120°C (pph)	9.9	12.7	15.1	18.1
	Recommended % Theory	100	95	95	95
	Erapol Temperature (°C)	85 – 95	75 – 85	75 – 85	75 – 85
	Pot Life (mins)	20	10	8	8
	Demould at 100°C (mins)	60	60	60	30
	Post Cure at 100°C (hrs)	16	16	16	16
ETHACURE 300 PROCESSING	Ethacure 300 Level at 20 – 30°C (pph)	7.9	10.2	12.1	14.5
	Recommended % Theory	100	95	95	95
	Erapol Temperature (°C)	65 – 75	65 – 75	65 – 75	65 – 75
	Pot Life (mins)	12	10	8	6
	Demould at 100°C (mins)	60	60	60	30
	Post Cure at 100°C (hrs)	16	16	16	16
PHYSICAL PROPERTIES (MOCA)	Hardness (Shore A)	83 ± 3	90 ± 3	93 ± 3	95 ± 3
	Tensile Strength / MPa (psi)	33 (4786)	42 (6092)	43 (6237)	36 (5221)
	100% Modulus / MPa (psi)	4.6 (667)	9.3 (1349)	11.0 (1595)	12.5 (1813)
	300% Modulus / MPa (psi)	8.3 (1204)	17.8 (2582)	17.9 (2596)	20.4 (2959)
	Elongation (%)	550	420	420	490
	Angle Tear Strength, Die C (kN/m)	72	85	86	112
	DIN Abrasion Resistance 10N (mm^3)	50	55	60	54
	Compression Set / 22hr at 70 °C (%)	28	30	28	37
	Cured Density (g/cm^3)	1.06	1.10	1.10	1.12

*The information presented here is based on laboratory testing.

High Performance

L-EHP90A	L-E60D	L-E65D	L-E70D	L-E75D	L-ETX801D
4.60 ± 0.20	7.40 ± 0.20	8.30 ± 0.20	8.50 ± 0.20	9.20 ± 0.20	9.50 ± 0.30
1.06	1.06	1.11	1.08	1.10	1.10
300 – 900	300 – 700	300 – 700	500 – 700	500 – 700	300 – 800
clear, light amber	clear, light amber	clear, light amber	clear, light amber	clear, light amber	clear, light amber
13.9	21.2	23.8	24.3	26.3	25.7
95	90	90	90	90	85
75 – 85	60 – 70	60 – 70	60 – 70	60 – 70	60 – 65
13	5	5	5	5	6
45	30	30	30	20	20
16	16	16	16	16	24
11.1	17.0	19.0	19.5	21.1	20.6
95	90	90	90	90	85
65 - 75	55 – 60	55 – 65	60 – 70	60 – 70	60 – 65
11	4	6	5	4	5
45	30	30	20	15	20
16	16	16	16	16	24
90 ± 3	60D ± 3	65D ± 3	70D ± 3	75D ± 3	78D ± 3
38 (5569)	45 (6527)	49 (7107)	52.5 (7614)	54 (7832)	52 (7542)
8.1 (1175)	19.9 (2886)	29.7 (4308)	36.0 (5221)	41.0 (5947)	40.0 (5801)
14.6 (2118)	42.4 (6150)	-	-	-	-
615	300	260	215	185	220
88	110	121	169	208	145
48	63	94	129	133	146
-	27	41	44	50	55
1.09	1.16	1.16	1.17	1.19	1.18

Polyether (PPG) & Polyester Lower Free TDI Prepolymers

		Polyether		
	ERAPOL PREPOLYMER	**L-ETL85A**	**L-ETL91A**	**L-ETL94A**
PREPOLYMER PROPERTIES	%NCO	4.20 ± 0.20	5.00 ± 0.20	6.25 ± 0.25
	Specific Gravity at 25°C	1.07	1.08	1.08
	Viscosity at 80°C (cPs)	300 – 700	100 – 500	150 – 500
	Colour	amber	amber	amber
MOCA PROCESSING	Moca Level at 110 -120°C (pph)	12.7	15.1	18.9
	Recommended % Theory	95	95	95
	Erapol Temperature (°C)	75 – 85	75 – 85	75 – 85
	Pot Life (mins)	10	6	5
	Demould at 100°C (mins)	60	40	30
	Post Cure at 100°C (hrs)	16	16	16
ETHACURE 300 PROCESSING	Ethacure 300 Level at 20 – 30°C (pph)	10.2	12.1	15.1
	Recommended % Theory	95	95	95
	Erapol Temperature (°C)	60 – 70	60 – 70	60 – 70
	Pot Life (mins)	8	5	5
	Demould at 100°C (mins)	60	40	30
	Post Cure at 100°C (hrs)	16	16	16
PHYSICAL PROPERTIES (MOCA)	Hardness (Shore A)	85 ± 3	90 ± 3	95 ± 3
	Tensile Strength / MPa (psi)	28 (4061)	26 (3698)	34 (4931)
	100% Modulus / MPa (psi)	5.3 (769)	6.2 (899)	11.2 (1624)
	300% Modulus / MPa (psi)	11.0 (1595)	11.7 (1697)	21.8 (3162)
	Elongation (%	525	430	460
	Angle Tear Strength, Die C (kN/m)	70	80	90
	DIN Abrasion Resistance 10N (mm^3)	140	140	119
	Compression Set / 22hr at 70 °C (%)	45	45	49
	Cured Density (g/cm3)	1.11	1.13	1.14

*The information presented here is based on laboratory testing.

Polyester				
L-RN70A	**L-RN71A**	**L-RN85A**	**L-RN92A**	**L-RN501D**
2.50 ± 0.25	2.50 ± 0.25	3.50 ± 0.20	4.50 ± 0.20	5.70 ± 0.20
1.20	1.20	1.20	1.20	1.20
1700 – 2500	1700 – 2500	2600 – 2800	1600 – 2100	800 – 1200
clear, light amber	clear, light amber	clear, light amber	clear, light amber	clear, light amber
7.6	7.6	10.6	13.6	17.2
95	95	95	95	95
75 – 85	75 – 85	75 – 85	75 – 85	75 – 85
12	5	8	4	5
60	45	30	30	30
16	16	16	16	16
6.1	6.1	8.5	10.9	13.8
95	95	95	95	95
60 – 70	60 – 70	65 – 75	60 – 70	60 – 70
9	5	8	4	5
60	45	30	30	30
16	16	16	16	16
70 ± 3	71 ± 3	85 ± 3	90 ± 3	52D ± 3
40 (5801)	40 (5743)	54 (7832)	52 (7542)	55 (7905)
2.8 (406)	2.8 (406)	6.5 (943)	7.2 (1044)	13.5 (1958)
3.9 (565)	7.3 (1059)	16.1 (2335)	17.4 (2524)	27.5 (3988)
675	760	465	575	540
70	59	93	97	151
70	81	57	48	57
28	35	35	34	37
1.25	1.24	1.27	1.27	1.28

Polyether (PTMEG) & Polyester Extra Low Free TDI Prepolymers

		Polyether (PTMEG)		
	ERAPOL PREPOLYMER	**XLE90A**	**XLE93A**	**XLE95A**
PREPOLYMER PROPERTIES	%NCO	4.50 ± 0.20	5.20 ± 0.20	6.00 ± 0.20
	Specific Gravity at 25°C	1.03	1.05	1.09
	Viscosity at 80°C (cPs)	400 - 700	250 – 550	350 - 550
	Colour	clear, light amber	clear, light amber	clear, light amber
MOCA PROCESSING	Moca Level at 110 -120°C (pph)	13.6	15.7	18.1
	Recommended % Theory	95	95	95
	Erapol Temperature (°C)	75 - 85	75 – 85	75 -85
	Pot Life (mins)	14	12	7
	Demould at 100°C (mins)	30	30	25
	Post Cure at 100°C (hrs)	16	16	16
ETHACURE 300 PROCESSING	Ethacure 300 Level at 20 – 30°C (pph)	10.9	12.6	14.5
	Recommended % Theory	95	95	95
	Erapol Temperature (°C)	75 - 85	75 – 85	75 - 85
	Pot Life (mins)	8	6	5
	Demould at 100°C (mins)	20	20	15
	Post Cure at 100°C (hrs)	16	16	16
PHYSICAL PROPERTIES (MOCA)	Hardness (Shore A)	90 ± 3	93 ± 3	95 ± 3
	Tensile Strength / MPa (psi)	34 (4873)	42 (6092)	45 (6483)
	100% Modulus / MPa (psi)	8.5 (1233)	11 (1595)	12.5 (1813)
	300% Modulus / MPa (psi)	19.8 (2872)	28 (4061)	22.5 (3263)
	Elongation (%)	425	410	400
	Angle Tear Strength, Die C (kN/m)	79	72	108
	DIN Abrasion Resistance (mm^3)	53	56	33
	Compression Set / 22 hr at 70°C (%)	20	25	34
	Cured Density (g/cm^3)	1.09	1.11	1.13

*The information presented here is based on laboratory testing.

			Polyester		
	XLE70D	XLE75D	XLS85A	XLS90A	XLS95A
	9.00 ± 0.20	9.30 ± 0.20	3.50 ± 0.20	3.90 ± 0.20	5.40 ± 0.20
	1.03	1.13	1.19	1.19	1.19
	400 – 700	200 – 500	1500 – 1700	1300 – 1500	900 – 1100
	clear, light amber	clear, light amber	clear, light amber	clear, light amber	clear, light amber
	27.2	28.1	10.6	11.8	16.3
	95	95	95	95	95
	60 – 70	60 – 70	75 – 85	75 – 85	75 – 85
	3	3	14	13	8
	30	30	35	35	25
	16	16	16	16	16
	21.8	22.5	8.5	9.4	13.1
	95	95	95	95	95
	65 – 75	60 - 70	75 – 85	75 – 85	75 - 85
	2	2	10	7	4
	15	20	20	20	20
	16	16	16	16	16
	70D ± 3	75D ± 3	85 ± 3	90 ± 3	95 ± 3
	50 (7252)	51 (7426)	40 (5801)	45 (6570)	48 (6962)
	38.4 (5569)	44.8 (6498)	5.3 (769)	7.3 (1059)	12.8 (1856)
	-	-	13.9 (2016)	20.7 (3002)	26.8 (3887)
	220	220	535	475	460
	149	185	80	92	127
	84	97	59	52	65
	-	-	36	36	32
	1.19	1.20	1.26	1.26	1.28

Polyether (PTMEG) TDI Prepolymers – Shore D

		High Performance			
	ERAPOL PREPOLYMER	**ETX65D**	**ETX70D**	**ETX764D**	**ETX80D**
PREPOLYMER PROPERTIES	%NCO	8.00 ± 0.20	8.75 ± 0.25	8.75 ± 0.25	9.50 ± 0.30
	Specific Gravity at 25°C	1.10	1.10	1.10	1.10
	Viscosity at 80°C (cPs)	400 – 800	200 – 500	400 – 800	300 – 800
	Colour	clear, light amber	clear, light amber	clear, light amber	clear, light amber
MOCA PROCESSING	Moca Level at 110 -120°C (pph)	22.9	25.0	25.0	25.7
	Recommended % Theory	90	90	90	85
	Erapol Temperature (°C)	60 – 70	60 – 70	60 – 70	60 – 70
	Pot Life / Prepolymer at 65°C (minutes)	5	3	2	2
	Demould at 110°C (hours)	<1	<1	<1	<1
	Post Cure at 110°C (hours)	24	36	36	36
ETHACURE 300 PROCESSING	Ethacure 300 Level at 20 – 30°C (pph)	18.4	20.1	20.1	20.6
	Recommended % Theory	90	90	90	85
	Erapol Temperature (°C)	55 – 65	55 – 65	55 – 65	55 – 65
	Pot Life / Prepolymer at 80°C (minutes)	4	2	2	3
	Demould at 110°C (hours)	1	<1	<1	<1
	Post Cure at 110°C (hours)	24	36	36	36
PHYSICAL PROPERTIES (MOCA)	Hardness (Shore D)	65 ± 5	70 ± 5	75 ± 5	78 ± 5
	Tensile Strength / MPa (psi)	49 (7136)	50 (7251)	52 (7542)	55 (7977)
	100% Modulus / MPa (psi)	31.8 (4612)	32.0 (4641)	33.0 (4786)	38.0 (5511)
	300% Modulus / MPa (psi)	-	-	-	-
	Elongation (%)	245	225	160	220
	Angle Tear Strength, Die C (kN/m)	130	235	200	170
	DIN Abrasion Resistance (mm^3)	90	85	87	125
	Cured Density (g/cm^3)	1.17	1.13	1.19	1.13

*The information presented here is based on laboratory testing.

					Ultra High	
ETX85D	**ET60D**	**ET65D**	**ET70D**	**ET75D**	**EHP60D**	**EHP70D**
12.00 ± 0.30	7.40 ± 0.20	8.00 ± 0.25	9.20 ± 0.20	11.20 ± 0.25	7.50 ± 0.25	9.00 ± 0.25
1.15	1.06	1.11	1.13	1.11	1.10	1.11
300 – 800	300 – 700	300 – 700	300 – 700	300 – 700	400 – 800	200 - 600
clear, light amber	clear, light amber	clear, ight amber	clear, light amber	clear, light amber	clear, light amber	clear, light amber
32.4	21.2	21.6	24.9	30.3	22.7	27.2
85	90	85	85	85	95	95
60 – 70	60 – 70	60 – 70	60 – 70	60 – 70	60 – 70	60 – 70
2	3	2	1	<1	3	2
<1	1	1	<1	<1	<1	<1
36	16	16	16	16	16	16
26.0	17.0	17.3	19.9	24.3	18.2	21.8
85	90	85	85	85	95	95
55 – 65	55 – 65	55 – 65	55 – 65	55 – 65	55 – 65	55 – 65
3	2	2	1	<1	4	2
<1	1	1	1	1	<1	<1
36	16	16	16	16	16	16
83 ± 5	60 ± 3	65 ± 3	73 ± 3	75 ± 3	60 ± 3	70 ± 3
64 (9182)	43 (6237)	48 (6962)	52 (7542)	54 (7832)	49 (7136)	50 (7252)
-	19.3 (2799)	29.0 (4206)	34.5 (5004)	31.0 (4496)	24.1 (3495)	25.0 (3626)
-	42.7 (6193)	-	-	-	45.5 (6599)	-
40	330	280	210	200	400	245
171	120	115	193	110	168	192
145	62	110	105	115	68	68
1.21	1.16	1.13	1.13	1.20	1.16	1.15

Polyether (PPG) and (PTMEG/PPG) TDI Prepolymers

		Polyether (PPG)					
	ERAPOL PREPOLYMER	**ETL55A**	**ETL65A**	**ETL75A**	**ETL80A**	**ETL85A**	**ETL91A**
PREPOLYMER PROPERTIES	%NCO	2.40 ± 0.20	2.85 ± 0.25	3.30 ± 0.20	3.60 ± 0.20	4.20 ± 0.20	5.00 ± 0.20
	Specific Gravity at 25°C	1.04	1.06	1.02	1.06	1.07	1.08
	Viscosity at 80°C (cPs)	100 - 400	100 – 350	500 - 1000	550 - 950	300 – 700	100 – 500
	Colour	amber	amber	amber	amber	amber	amber
MOCA PROCESSING	Moca Level at 110 -120°C (pph)	7.3	8.6	10.0	10.9	12.7	15.1
	Recommended % Theory	95	95	95	95	95	95
	Erapol Temperature (°C)	75 - 85	75 – 85	75 - 85	75 - 85	75 – 85	75 – 85
	Pot Life (mins)	45	35	25	24	10	6
	Demould at 100°C (hrs)	3	3	3	3	1	1
	Post Cure at 100°C (hrs)	16	16	16	16	16	16
ETHACURE 300 PROCESSING	Ethacure 300 Level at 20 – 30°C (pph)	5.8	6.9	8.0	8.7	10.2	12.1
	Recommended % Theory	95	95	95	95	95	95
	Erapol Temperature (°C)	60 - 70	60 – 70	60 – 70	60 – 70	60 – 70	60 – 70
	Pot Life (mins)	40	30	20	20	8	5
	Demould at 100°C (hrs)	3	3	3	3	1	1
	Post Cure at 100°C (hrs)	16	16	16	16	16	16
PHYSICAL PROPERTIES (MOCA)	Hardness (Shore A)	55 ± 3	65 ± 3	77 ± 3	80 ± 3	85 ± 3	90 ± 3
	Tensile Strength / MPa (psi)	9 (1334)	8 (1160)	12(1740)	20 (2901)	28 (4061)	26 (3698)
	100% Modulus / MPa (psi)	2.1 (305)	2.5 (363)	3.0 (435)	3.6 (522)	5.3 (769)	6.2 (899)
	300% Modulus / MPa (psi)	3.4 (493)	3.6 (522)	4.9 (711)	7.1 (1030)	11.0 (1595)	11.7 (1697)
	Elongation (%)	850	950	780	620	545	430
	Angle Tear Strength, Die C (kN/m)	35	25	43	50	70	80
	DIN Abrasion Resistance (mm^3)	-	190	209	180	140	140
	Compression Set / 22 hr at 70°C (%)	40	45	-	-	45	45
	Cured Density (g/cm3)	1.09	1.08	1.11	1.11	1.11	1.13

*The information presented here is based on laboratory testing.

				Medium Performance			
ETL94A	**ETL69D**	**ETL752D**	**EMP700A**	**EMP83A**	**EMP89A**	**EMP92A**	**EMP95A**
6.25 ± 0.25	8.00 ± 0.20	8.00 ± 0.20	2.10 ± 0.20	3.20 ± 0.20	4.80 ± 0.20	5.00 ± 0.20	6.30 ± 0.20
1.08	1.10	1.11	1.05	1.05	1.08	1.05	1.05
150 – 500	300 – 800	450 - 850	1100 – 1500	300 – 800	300 – 800	300 – 700	300 – 700
amber	amber	amber	amber	amber	amber	amber	amber
18.9	21.6	22.9	6.3	9.7	14.5	15.1	19.0
95	85	90	95	95	95	95	95
75 – 85	55 – 65	55 - 65	75 – 85	75 – 85	75 – 85	75 – 85	75 – 85
4	3	5	15	6	6	5	3
1	<1	1	2	1	1	1	1
16	16	16	16	16	16	16	16
15.1	17.3	18.4	5.1	7.8	11.6	12.1	15.3
95	85	90	95	95	95	95	95
60 – 70	55 – 65	55 - 65	65 – 75	65 – 75	65 – 75	65 – 75	65 – 75
4	3	4	14	6	5	5	3
1	<1	1	2	1	1	1	1
16	16	16	16	16	16	16	16
95 ± 3	70D ± 3	75D ± 3	70 ± 3	83 ± 3	90 ± 3	93 ± 3	95 ± 3
28 (4061)	37 (5366)	52 (7484)	12 (1769)	25 (3626)	27 (3916)	31 (4496)	38 (5497)
11.8 (1711)	13.8 (2001)	34.0 (4931)	2.8 (406)	5.0 (725)	6.9 (1001)	9.0 (1305)	12.5 (1813)
17.2 (2495)	37.0 (5366)	-	4.7 (682)	9.0 (1305)	12.4 (1798)	17.2 (2495)	20.8 (3017)
350	300	265	635	450	400	540	400
89	110	173	34	75	80	90	90
145	160	170	135	100	80	85	105
50	50	37	27	35	45	45	42
1.14	1.15	1.18	1.06	1.07	1.10	1.10	1.14

Polyester TDI Prepolymers

	ERAPOL PREPOLYMER	RN70A	RN80A	RN83A	RN90A
PREPOLYMER PROPERTIES	%NCO	2.50 ± 0.25	2.80 ± 0.20	3.20 ± 0.20	4.55 ± 0.20
	Specific Gravity at 25°C	1.20	1.20	1.20	1.20
	Viscosity at 80°C (cPs)	1700 – 2500	2500 – 3000	1700 – 2300	1200 – 1800
	Colour	clear, light amber	clear, light amber	clear, light amber	clear, light amber
MOCA PROCESSING	Moca Level at 110 -120°C (pph)	7.6	8.5	9.7	13.7
	Recommended % Theory	95	95	95	95
	Erapol Temperature (°C)	75 – 85	75 – 85	75 – 85	75 – 85
	Pot Life (mins)	12	4	8	4
	Demould at 100°C (hrs)	1	< 1	1	1
	Post Cure at 100°C (hrs)	16	16	16	16
ETHACURE 300 PROCESSING	Ethacure 300 Level at 20 – 30°C (pph)	6.1	6.8	7.8	11.0
	Recommended % Theory	95	95	95	95
	Erapol Temperature (°C)	60 – 70	60 – 70	60 – 70	60 – 70
	Pot Life (mins)	9	3	6	4
	Demould at 100°C (hrs)	1	< 1	1	1
	Post Cure at 100°C (hrs)	16	16	16	16
PHYSICAL PROPERTIES (MOCA)	Hardness (Shore A)	70 ± 5	80 ± 3	83 ± 3	90 ± 3
	Tensile Strength / MPa (psi)	40 (5801)	38 (5511)	47 (6816)	53 (7687)
	100% Modulus / MPa (psi)	2.8 (406)	3.8 (551)	3.8 (551)	6.2 (899)
	300% Modulus / MPa (psi)	3.9 (565)	7.6 (1102)	7.0 (1015)	16.3 (2364)
	Elongation (%)	675	790	725	650
	Angle Tear Strength, Die C (kN/m)	70	73	70	100
	DIN Abrasion Resistance (mm^3)	70	95	65	60
	Compression Set / 22 hr at 70°C (%)	28	40	35	30
	Cured Density (g/cm^3)	1.25	1.24	1.25	1.25

*The information presented here is based on laboratory testing.

High Performance

RN95A	RN52D	RN560D	RN3038	RN3039	RN3050
5.80 ± 0.20	5.70 ± 0.20	6.00 ± 0.20	3.20 ± 0.20	4.30 ± 0.20	5.10 ± 0.20
1.20	1.20	1.20	1.20	1.20	1.20
1200 – 1800	1200 – 1800	800 - 1200	1800 – 2400	1600 – 2500	1300 – 1900
clear, light amber	clear, light amber	clear, light amber	clear, light amber	clear, light amber	clear, light amber
17.5	17.8	18.1	9.7	13.0	15.4
95	98	95	95	95	95
75 – 85	75 – 85	75 – 85	75 – 85	75 – 85	75 – 85
4	4	4	3	4	2
1	1	1	1	< 1	< 1
16	16	16	16	16	16
14.1	14.2	14.5	7.8	10.4	12.4
95	98	95	95	95	95
60 – 70	60 – 70	60 – 70	60 – 70	60 – 70	60 – 70
3	3	3	3	4	2
1	1	1	1	< 1	< 1
16	16	16	16	16	16
94 ± 3	52 ± 3 Shore D	55 ± 3 Shore D	85 ± 3	92 ± 4	50 ± 5 Shore D
52 (7540)	58 (8412)	52 (7484)	45 (6527)	50 (7252)	51 (7396)
11.0 (1600)	14.0 (2030)	12.5 (1813)	5.0 (725)	9.5 (1379)	12.4 (1798)
23 (3340)	28.0 (4061)	30.7 (4453)	11.0 (1595)	17.9 (2596)	20.7 (3002)
550	500	450	720	650	550
103	145	138	92	105	131
100	60	68	68	45	80
38	48	45	22	31	27
1.28	1.28	1.28	1.25	1.27	1.28

Specialty TDI Prepolymers

		Polycaprolactone			
	ERAPOL PREPOLYMER	**ECP501A**	**ECP61A**	**ECP72A**	**ECP83A**
PREPOLYMER PROPERTIES	%NCO	2.70 ± 0.20	3.75 ± 0.20	3.30 ± 0.20	3.65 ± 0.25
	Specific Gravity at 25°C	1.15	1.15	1.10	1.10
	Viscosity at 80°C (cPs)	1400 -1800	1200 – 1800	1200 – 2000	1000 – 1600
	Colour	light amber	clear, light amber	clear, light amber	clear, light amber
MOCA PROCESSING	Moca Level at 110 -120°C (pph)	8.2	11.3	10.0	11.0
	Recommended % Theory	95	95	95	95
	Erapol Temperature (°C)	75-85	75 – 85	75 – 85	75 – 85
	Pot Life (mins)	25	19	15	10
	Demould at 100°C (hrs)	< 2	2	2	1
	Post Cure at 100°C (hrs)	16	16	16	16
ETHACURE 300 PROCESSING	Ethacure 300 Level at 20 – 30°C (pph)	6.5	9.1	8.0	8.8
	Recommended % Theory	95	95	95	95
	Erapol Temperature (°C)	75-85	75 – 85	70 – 80	75 – 85
	Pot Life (mins)	20	15	15	4
	Demould at 100°C (hrs)	< 2	2	2	1
	Post Cure at 100°C (hrs)	16	16	16	16
PHYSICAL PROPERTIES (MOCA)	Hardness (Shore A)	50 ± 3	60 ± 5	71 ± 3	83 ± 3
	Tensile Strength / MPa (psi)	19 (2756)	29 (4206)	33 (4786)	41 (5946)
	100% Modulus / MPa (psi)	1.3 (188)	1.7 (247)	2.3 (333)	4.3 (624)
	300% Modulus / MPa (psi)	1.8 (261)	3.3 (479)	3.9 (565)	8.5 (1233)
	Elongation (%)	610	500	620	490
	Angle Tear Strength, Die C (kN/m)	27	37	54	63
	DIN Abrasion Resistance (mm^3)	75	71	50	45
	Compression Set / 22 hr at 70°C (%)	27	10	26	24
	Cured Density (g/cm^3)	1.11	1.15	1.15	1.16

*The information presented here is based on laboratory testing.

				High Temperature		
ECP90A	**ECP93A**	**ECP95A**	**ECP571D**	**HTE80A**	**HTE90A**	**HTE95A**
4.9 ± 0.20	5.20 ± 0.20	5.80 ± 0.20	7.10 ± 0.20	3.20 ± 0.20	4.25 ± 0.25	5.25 ± 0.25
1.11	1.10	1.10	1.11	1.10	1.10	1.11
700 – 1200	700 – 1200	700 – 1100	500 – 800	1700 – 2300	1400 – 2000	1300 – 2000
clear, light amber	clear, light amber	clear, light amber	clear, light amber	clear, light amber	clear, light amber	clear, light amber
14.8	15.7	17.5	21.4	9.7	12.8	15.9
95	95	95	95	95	95	95
75 – 85	75 – 85	75 – 85	60 – 70	70 – 80	70 – 80	60 – 70
5	7	4	3	20	6	3
< 1	< 1	< 1	< 1	2	1	<1
16	16	16	16	16	16	16
11.9	12.6	14.1	17.2	7.8	10.3	12.7
95	95	95	95	95	95	95
65 – 75	65 – 75	65 – 75	60 – 70	70 – 80	70 – 80	60 – 70
4	4	3	3	16	5	2
< 1	< 1	< 1	< 1	2	1	<1
16	16	16	16	16	16	16
90 ± 3	93 ± 3	95 ± 3	57 ± 3	83 ± 3	90 ± 3	95 ± 3
43 (6240)	45 (6570)	50 (7252)	50 (7252)	45 (6526)	50 (7250)	56 (8120)
6.5 (943)	7.6 (1102)	11.3 (1638)	18.9 (2741)	5.2 (1349)	8.6 (1250)	10.3 (1494)
17.0 (2465)	17.3 (2509)	31.9 (4496)	48.4 (7020)	11.2 (1620)	22.8(3310)	27.5 (3990)
520	410	400	345	600	480	430
84	90	120	120	63	82	98
53	66	58	80	50	65	55
31	32	30	23	25	28	32
1.20	1.18	1.19	1.21	1.15	1.20	1.18

Solvent & Acid Resistant Prepolymers

		Solvent Resistant			
	ERAPOL PREPOLYMER	**SDM3060A/30A**	**SDM3060A/60A**	**SDR32A**	**SDR501A**
PREPOLYMER PROPERTIES	%NCO	31.00 ± 1.00	31.00 ± 1.00	2.55 ± 0.20	2.50 ± 0.20
	Specific Gravity at 25°C	1.23	1.23	1.20	1.20
	Viscosity at 80°C (cPs)	150 @ 25°C	150 @ 25°C	300 – 800	1600 – 2400
	Colour	brown	brown	clear, light amber	clear, light amber
PROCESSING INFORMATION	**PROCESSING INFORMATION**	Part B / BDO	Part B / BDO	ISONOL 93	ISONOL 93
	Curative Level (pph)	3K System	3K System	5.3	5.2
	Recommended % Theory	-	-	95	95
	Erapol Temperature (°C)	20 – 30	20 – 30	70 – 80	75 – 85
	Curative Temperature (°C)	70 - 80 / 25	70 - 80 / 25	25	25
	Pot Life (mins)	30	8	>45	>45
	Demould at 115°C (hrs)	8	8	8	8
	Post Cure at 115°C (hrs)	16	16	16	16
PHYSICAL PROPERTIES	**PHYSICAL PROPERTIES**			ISONOL 93	ISONOL 93
	Hardness (Shore A)	30 ± 3	60 ± 3	32 ± 3	50 ± 3
	Tensile Strength / MPa (psi)	2 (290)	4 (537)	2 (232)	24 (3480)
	100% Modulus / MPa (psi)	0.7 (104)	3.2 (464)	0.7 (102)	1.6 (232)
	300% Modulus / MPa (psi)	-	-	1.0 (145)	3.3 (479)
	Elongation (%)	225	135	420	485
	Angle Tear Strength, Die C (kN/m)	14	19	6	30
	Cured Density (g/cm^3)	1.27	1.27	1.20	1.23

*The information presented here is based on laboratory testing.

			Acid Resistant			
SDR55A	**RN3038**	**RN3039**	**CRE70A**	**CRE81A**	**CRE90A**	**CRE95A**
4.80 ± 0.20	3.20 ± 0.20	4.30 ± 0.20	10.2 ± 0.2	10.2 ± 0.2	10.2 ± 0.2	12.0 ± 0.2
1.20	1.20	1.20	1.05	1.05	1.05	1.05
1000 – 1700	1800 – 2400	1600 – 2500	700 – 1300	700 – 1300	700 – 1300	400 - 800
clear, light amber	clear, light amber	clear, light amber	water clear	water clear	water clear	water clear
ISONOL 93	ISONOL 93	ISONOL 93	PART B	PART B	PART B	BDO
10.0	6.7	8.9	41.6	32.5	10.4	12.2
95	95	95	95	95	95	95
70 – 80	75 – 85	75 – 85	65 – 75	65 – 75	75 – 85	75 – 85
25	25	25	25	25	25	25
35	45	35	25	13	20	50
8	5	5	1	1	8	8
16	16	16	16	16	16	16
ISONOL 93	ISONOL 93	ISONOL 93	PART B	PART B	PART B	BDO
55 ± 3	52 ± 3	60 ± 3	70 ± 3	80 ± 3	90 ± 3	95 ± 3
5 (725)	25 (3626)	29 (4134)	15 (2176)	13 (1885)	18 (2611)	17 (2466)
1.9 (276)	1.0 (145)	2.9 (421)	2.9 (421)	5 (725)	10.9 (1581)	10.6 (1537)
3.4 (493)	2.0 (290)	6.5 (943)	6.3 (914)	11.3 (1639)	-	12.1 (1755)
340	540	415	490	325	290	370
14	25	36	31	39	60	65
1.15	1.23	1.25	1.00	1.01	1.01	1.01

Polyether (PTMEG) MDI Prepolymers

	Erapol Prepolymer	EMD750A	EMD801A	EMD86A
PREPOLYMER PROPERTIES	%NCO	4.80 ± 0.20	5.10 ± 0.20	6.50 ± 0.25
	Specific Gravity at 25°C	1.05	1.05	1.05
	Viscosity at 80°C (cPs)	2300-2800	1700-2700	1200 –2000
	Colour	clear to hazy	clear to hazy	clear to hazy
PROCESSING	BDO Level (pph)	4.9	5.2	6.6
	Recommended % Theory	95	95	95
	Prepolymer Temperature (°C)	75 - 85	75 - 85	70 – 80
	Curative Temperature (°C)	20 - 30	25-30	25 – 30
	Pot Life (mins)	16	7	6
	Demould at 110°C (mins)	90	90	60
	Post Cure at 110°C (hrs)	16	16	16
PHYSICAL PROPERTIES (BDO)	Hardness (Shore A)	75 ± 3	80 ± 3	85 ± 3
	Tensile Strength / MPa (psi)	30 (4424)	32 (4641)	31 (4496)
	100% modulus	4 (580)	5 (740)	6 (928)
	300% modulus	7 (1044)	10 (1479)	15 (2205)
	Elongation (%)	635	525	550
	Angle Tear Strength, Die C (kN/m)	67	69	85
	DIN Resilience (%)	68	72	69
	DIN Abrasion Resistance (mm^3)	19	23	48
	Cured Density (g/cm^3)	1.07	1.07	1.10

*The information presented here is based on laboratory testing.

Polyether (PTMEG)

EMD903A	EMD93A	EMD950A	EMD521D	EMD57D
7.80 ± 0.25	8.80 ± 0.25	9.60 ± 0.25	11.4 ± 0.20	13.6 ± 0.20
1.05	1.05	1.05	1.05	1.10
1300-1500	700 – 1500	800 – 1200	500-800	1400 - 2200
white translucent	white translucent	white translucent	white translucent	clear to hazy
8.2	8.9	9.8	11.6	13.8
98	95	95	95	95
70 – 80	70 – 80	70 – 80	70 – 80	40 - 50
25 – 30	25 – 30	25 – 30	25 – 30	25 - 30
7	4	4	3	6
30	50	45	20	45
16	16	16	16	16
90 ± 3	93 ± 3	95 ± 3	52D ± 3	57D ± 3
36 (5178)	35 (5076)	29 (4221)	34 (4931)	34 (4989)
9 (1349)	10 (1392)	11 (1610)	17 (2466)	19 (2828)
17 (2437)	18 (2596)	19 (2741)	29 (4206)	30 (4322)
490	510	495	350	385
100	120	121	98	130
68	60	60	52	41
60	51	43	75	67
1.10	1.10	1.11	1.14	1.15

Polyester & Polycaprolactone MDI Prepolymers

		Polyester		
	Erapol Prepolymer	**EME80A**	**EME851A**	**EME90A**
PREPOLYMER PROPERTIES	%NCO	5.80 ± 0.20	7.00 ± 0.20	7.70 ± 0.20
	Specific Gravity at 25°C	1.13	1.17	1.13
	Viscosity at 80°C (cPs)	1000 - 2000	1500 - 2000	1200 - 1800
	Colour	white translucent	white translucent	white translucent
PROCESSING	BDO Level (pph)	5.9	7.1	7.8
	Recommended % Theory	95	95	95
	Prepolymer Temperature (°C)	75 - 85	75 - 85	75 - 85
	Curative Temperature (°C)	25 - 30	25 - 30	25 - 30
	Pot Life (mins)	12	6	5
	Demould at 110°C (mins)	120	60	30
	Post Cure at 110°C (hrs)	16	16	16
PHYSICAL PROPERTIES (BDO)	Hardness (Shore A)	80 ± 3	85 ± 3	90 ± 3
	Tensile Strength / Mpa (psi)	38 (5555)	36 (5207)	36 (5221)
	100% modulus	5.9 (856)	5.4 (783)	9.0 (1310)
	300% modulus	12.7 (1842)	10.3 (1494)	18.3 (2650)
	Elongation (%)	625	564	550
	Angle Tear Strength, Die C (kN/m)	88	94	107
	DIN Resilience (%)	34	51	44
	DIN Abrasion Resistance (mm^3)	57	52	33
	Cured Density (g/cm^3)	1.25	1.22	1.24

*The information presented here is based on laboratory testing.

	Polycaprolactone			
EME95A	**EMC700A**	**EMC850A**	**EMC90A**	**EMC95A**
9.00 ± 0.20	4.80 ± 0.20	7.30 ± 0.20	7.90 ± 0.20	9.70 ± 0.20
1.13	1.13	1.13	1.15	1.18
700 - 1000	1300 - 2300	1000 - 2000	700 - 1000	200 - 700
water clear	water clear	white translucent	white translucent	white translucent
9.1	4.9	7.4	8.0	9.9
95	95	95	95	95
75 - 85	75 - 85	75 - 85	75 - 85	75 - 85
25 - 30	25 - 30	25 - 30	25 - 30	25 - 30
5	19	12	9	6
45	180	60	120	45
16	16	16	16	16
95 ± 3	70 ± 3	85 ± 3	90 ± 3	95 ± 3
31 (4496)	39.5 (5729)	29 (4250)	44 (6440)	38 (5511)
12.4 (1800)	3.6 (522)	6.4 (928)	9.4 (1363)	12.0 (1740)
21.9 (3180)	6.8 (986)	15.7 (2277)	20.7 (3002)	26.2 (3800)
465	505	395	530	420
117	70	80	110	100
21	66	55	49	42
43	65	15	41	63
1.25	1.14	1.16	1.17	1.19

Polyether (PTMEG) MDI Quasi System – 4 Component

		EMD137/55A	EMD137/60A	EMD137/65A	EMD137/70A
EMD-137 ISOCYANATE PREPOLYMER	Specific Gravity @ 25°C	1.09	1.09	1.09	1.09
	Colour	cloudy	cloudy	cloudy	cloudy
EMD-13N POLYOL CURATIVE	Specific Gravity @ 25°C	1.01	1.01	1.01	1.01
	Colour	hazy	hazy	hazy	hazy
ERACURE 45	Specific Gravity @ 25°C	1.00	1.00	1.00	1.00
	Colour	clear	clear	clear	clear
EPROCESSING INFORMATION	EMD137 – Isocyanate Level	100	100	100	100
	EMD137N – Polyol / BDO Level	199 / 5.0	180 / 5.6	150 / 7.0	120 / 8.4
	Eracat MF -Catalyst by weight (ppw)	0.9	1.3	1.2	0.7
	Recommended % Theory	95	95	95	95
	EMD137 – Isocyanate Temp (°C)	40-45	40-45	40-45	40-45
	EMD137N – Polyol Temp (°C)	40-45	40-45	40-45	40-45
	Eracure 45 Temp (°C)	25-30	25-30	25-30	25-30
	Pot Life (mins)	5 – 8	5 – 8	5 – 8	5 – 8
	Demould at 80-100°C (mins)	20	20	20	20
	Post Cure at 80-100°C (hrs)	16	16	16	16
PHYSICAL PROPERTIES	Hardness (Shore A)	60 ± 3	60 ± 3	65 ± 3	70 ± 3
	Tensile Strength / MPa (psi)	14 (1973)	17 (2466)	22 (3191)	23 (3336)
	100 % Modulus / MPa (psi)	1.4 (203)	1.5 (218)	2.3 (334)	3.0 (435)
	300 % Modulus / MPa (psi)	2.6 (377)	3.8 (551)	6.1 (885)	8.0 (1160)
	Elongation (%)	555	454	450	430
	Angle Tear Strength, Die C (kN/m)	28	30	48	52
	DIN Resilience (%)	71	76	73	72
	DIN Abrasion Resistance 10N (mm^3)	79	30	33	30
	Cured Density (g/cm^3)	1.04	1.05	1.06	1.06

*The information presented here is based on laboratory testing.

High Performance					
EMD137/75A	**EMD137/80A**	**EMD137/85A**	**EMD137/90A**	**EMD137/95A**	**EMD137/60D**
1.09	1.09	1.09	1.09	1.09	1.09
cloudy	cloudy	cloudy	cloudy	cloudy	cloudy
1.01	1.01	1.01	1.01	1.01	1.01
hazy	hazy	hazy	hazy	hazy	hazy
1.00	1.00	1.00	1.00	1.00	1.00
clear	clear	clear	clear	clear	clear
100	100	100	100	100	100
105 / 9.1	90 / 9.8	60 / 11.2	45 / 11.9	30 / 12.6	0 / 13.7
0.6	0.4	0.3	0.3	0.2	0.0
95	95	95	95	95	95
40-45	40-45	40-45	40-45	40-45	40-45
40-45	40-45	40-45	40-45	40-45	40-45
25-30	25-30	25-30	25-30	25-30	25-30
5 – 8	5 – 8	5 – 8	5 – 8	5 – 8	4 – 7
20	15	15	15	15	15
16	16	16	16	16	16
75 ± 3	80 ± 3	85 ± 3	90 ± 3	95 ± 3	60D ± 3
26 (3771)	27 (3916)	28 (4061)	30 (4351)	30 (4351)	33 (4786)
4.0 (580)	5.3 (769)	7.2 (1044)	8.8 (1276)	11.0 (1595)	21.4 (3104)
9.8 (1421)	11.0 (1595)	13.8 (2002)	16.3 (2364)	18.3 (2654)	31.6 (4583)
425	430	445	430	400	335
68	80	91	102	117	146
71	70	72	68	66	46
25	30	34	36	44	57
1.07	1.07	1.10	1.11	1.13	1.17

Polyester MDI Quasi System – 4 Component

		EME167/55A	EME167/60A	EME167/65A	EME167/70A
EME 167 ISOCYANATE PREPOLYMER	Specific Gravity at 25°C	1.20	1.20	1.20	1.20
	Colour	clear, light amber	clear, light amber	clear, light amber	clear, light amber
PC562 POLYOL CURATIVE	Specific Gravity at 25°C	1.18	1.18	1.18	1.18
	Colour	hazy	hazy	hazy	hazy
ERACURE 45	Specific Gravity at 25°C	1.00	1.00	1.00	1.00
	Colour	clear	clear	clear	clear
PROCESSING INFORAMTION	EME167 – Isocyanate Level	100	100	100	100
	PC562 – Polyol Curative / BDO Level	218 / 7.2	178 / 9.0	155 / 10.0	126 / 11.3
	Eracat MF – Catalyst by Weight (ppw)	1.5	0.8	0.7	0.5
	Recommended % Theory	95	95	95	95
	EME167 – Isocyanate Temp (°C)	45 - 50	45 - 50	45 - 50	45 - 50
	PC562 – Polyol Temp (°C)	45 - 50	45 - 50	45 - 50	45 - 50
	Eracure 45 Temp (°C)	25 - 30	25 - 30	25 - 30	25 - 30
	Pot Life (mins)	5 – 8	5 – 8	5 – 8	5 – 8
	Demould at 80 -100°C (mins)	25	25	25	25
	Post Cure at 80 -100°C (hrs)	16	16	16	16
PHYSICAL PROPERTIES	Hardness (Shore A)	55 ± 3	60 ± 3	65 ± 3	70 ± 3
	Tensile Strength / MPa (psi)	29 (4206)	30 (4351)	30 (4351)	31 (4496)
	100% Modulus / MPa (psi)	1.9 (276)	2.5 (363)	2.9 (421)	3.8 (551)
	300% Modulus / MPa (psi)	4.1 (595)	4.8 (696)	7.4 (1073)	10.5 (1523)
	Elongation (%)	510	500	480	450
	Angle Tear Strength, Die C (kN/m)	32	45	47	50
	DIN Resilience (%)	55	54	50	47
	DIN Abrasion Resistance (mm^3)	11	12	13	14
	Cured Density (g/cm^3)	1.19	1.20	1.20	1.21

*The information presented here is based on laboratory testing.

High Performance

EME167/75A	EME167/80A	EME167/85A	EME167/90A	EME167/95A	EME167/60D	EME167/70D
1.20	1.20	1.20	1.20	1.20	1.20	1.20
clear, light amber	clear, light amber	clear, light amber	clear, light amber	clear, light amber	clear, light amber	clear, light amber
1.18	1.18	1.18	1.18	1.18	1.18	1.18
hazy	hazy	hazy	hazy	hazy	hazy	hazy
1.00	1.00	1.00	1.00	1.00	1.00	1.00
clear	clear	clear	clear	clear	clear	clear
100	100	100	100	100	100	100
105 / 12.3	84 / 13.2	66 / 14.0	55 / 14.5	36 / 15.4	18.5 / 15.9	0 / 16.8
0.5	0.3	0.3	0.2	0.1	0.0	0.0
95	95	95	95	95	95	95
45 - 50	45 - 50	45 - 50	45 - 50	45 - 50	45 - 50	45 - 50
45 - 50	45 - 50	45 - 50	45 - 50	45 - 50	45 - 50	45 - 50
25 - 30	25 - 30	25 - 30	25 - 30	25 - 30	25 - 30	25 - 30
5 – 8	4 – 7	4 – 7	3 – 5	3 – 5	3 – 5	3 – 5
25	20	20	20	20	20	20
16	16	16	16	16	16	16
75 ± 3	80 ± 3	85 ± 3	90 ± 3	95 ± 3	60D ± 3	70D ± 3
31(4496)	33 (4786)	33 (4786)	33 (4786)	32 (4641)	33 (4801)	34 (4888)
5.7 (827)	6.8 (986)	8.9 (1291)	12 (1740)	14.5 (2103)	23.0 (3336)	32.0 (4598)
14.0 (2031)	27.5 (3989)	27.9 (4050)	31.0 (4496)	31 (4496)	31.0 (4496)	-
420	410	400	385	370	290	195
56	73	93	94	109	148	239
46	46	43	43	42	42	56
14	21	29	40	59	77	106
1.21	1.21	1.22	1.22	1.23	1.23	1.25

Cold Castable Polyether TDI Systems

		High Performance						
		CC50A	CC5/65	CC80A	CC90A	CC95A	CC60D	RT301A
PART A PROPERTIES	Specific Gravity at 25°C	1.06	1.06	1.06	1.06	1.06	1.06	1.08
	Colour	clear, light amber	clear, light amber	clear, light amber	clear, light amber	clear, light amber	clear, light amber	clear, light amber
PART B PROPERTIES	Specific Gravity at 25°C	1.15	1.10	1.01	1.26	1.20	1.20	1.02
	Colour	clear, light amber	clear, light amber	clear, light amber	clear, light amber	clear, light amber	clear, light amber	clear, light amber
PROCESSING INFORMATION	Mix Ratio by Weight (A/B)	100 / 100	100 / 100	100 / 45	100 / 50	100 / 15	100 / 16.5	100 /110
	Temperature of Part A (°C)	25 – 30	25 – 30	25 – 30	25 – 30	25 – 30	25 – 30	25 – 30
	Temperature of Part B (°C)	25 – 30	25 – 30	25 – 30	25 – 30	25 – 30	25 – 30	25 – 30
	Pot Life at 25°C (mins)	10	12	17	10	8	6	15
	Demould at 25°C (hrs)	24	24	24	16	16	7	24
	Accelerated Cure at 70°C (hrs)	8	8	8	8	8	8	8
	Complete Cure at 25°C (days)	7	7	7	7	7	7	7
PHYSICAL PROPERTIES	Hardness (Shore A)	50 ± 5	60 ± 5	80 ± 3	90 ± 5	95 ± 3	60D ± 3	30 ± 5
	Tensile Strength / MPa (psi)	15 (2176)	16 (2321)	28 (4061)	26 (3771)	44 (6382)	50 (7281)	3 (391)
	Elongation (%)	650	600	510	500	380	250	>2200
	DIN Abrasion Resistance (mm3)	120	135	110	75	85	96	>300
	Linear Shrinkage at 23°C (%)	0.2	0.2	0.2	0.2	0.2	0.2	0.1
	Cured Density (g/cm^3)	1.10	1.10	1.10	1.10	1.12	1.10	1.06

*The information presented here is based on laboratory testing.

		General Purpose							
RT45A	**RT50A**	**CCM55A**	**CCM75A**	**CCM80A**	**CCM90A**	**CCM95A**	**CCM65D**	**MM45A**	**MM85A**
1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.02	1.02
clear, light amber	clear, light amber	clear, light amber	clear, light amber	clear, light amber	clear, light amber	clear, light amber	clear, light amber	clear, light amber	clear, light amber
1.02	1.02	1.20	1.04	1.01	1.20	1.20	1.20	1.00	1.20
clear, light amber	clear, light amber	clear, light amber	clear, light amber	clear, light amber	clear, light amber	clear, light amber	clear, light amber	clear, light amber	clear, light amber
100 / 100	100 / 48	100 / 56	100 / 45	100 / 35	100 / 20	100 / 15	100/19	100 / 54	100 / 21
25 – 30	25 – 30	25 – 30	25 – 30	25 – 30	25 – 30	25 – 30	25 – 30	25 – 30	25 – 30
25 – 30	25 – 30	25 – 30	25 – 30	25 – 30	25 – 30	25 – 30	25 – 30	25 – 30	25 – 30
12	14	20	13	13	9	7	6	13	5
24	24	24	24	24	16	16	16	16	16
8	8	8	8	8	8	8	8	8	8
7	7	7	7	7	7	7	7	7	7
45 ± 5	50 ± 5	55 ± 5	73 ± 3	80 ± 3	90 ± 5	95 ± 5	65D ± 5	45 ± 5	85 ± 5
7 (1030)	5 (725)	15 (2176)	20 (2901)	24 (3481)	20 (2944)	23 (3350)	37 (5370)	10 (1479)	16 (2292)
>2200	435	550	850	500	370	320	300	1035	600
>300	250	185	195	175	260	145	240	>300	290
0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.3	0.1	0.2
1.06	1.07	1.10	1.09	1.10	1.10	1.10	1.10	1.07	1.11

Cold Castable Polyether MDI Systems

		Flexible			Quick Cure	
		EMD25ACC	**EMD35ACC**	**EMD45ACC**	**QCM40A**	**QCM60AS**
PART A PROPERTIES	Specific Gravity at 25°C	1.15	1.15	1.15	1.15	1.12
	Colour	clear, light amber	clear, light amber	clear, light amber	light amber	light amber
PART B PROPERTIES	Specific Gravity at 25°C	1.03	1.03	1.03	1.03	1.02
	Colour	clear	clear	clear	clear	clear
PROCESSING INFORMATION	Mix Ratio by Weight (A/B)	100 / 230	100 / 210	100 / 120	100 / 185	100 / 100
	Temperature of Part A (°C)	20 – 30	20 – 30	20 – 30	20 – 30	20 – 30
	Temperature of Part B (°C)	20 – 30	20 – 30	20 – 30	20 – 30	20 – 30
	Pot Life (mins)	15	15	23	7	15
	Demould at 25°C (hrs)	4	4	4	1	1
	Accelerated Cure at 60°C (hrs)	16	16	16	16	16
	Complete Cure at 25°C (days)	7	7	7	3	3
PHYSICAL PROPERTIES	Hardness (Shore A)	25 ± 5	37 ± 5	45 ± 5	40 ± 3	60 ± 3
	Tensile Strength / MPa (psi)	1 (145)	5 (725)	4 (580)	2 (290)	6 (870)
	Elongation (%)	1200	700	670	300	290
	Angle Tear Strength, Die C (kN/m)	5	7	7	8	32
	DIN Abrasion Resistance (mm3)	>300	>300	>300	240	90

*The information presented here is based on laboratory testing.

		High Performance			Grout
QCM70A	QCM90AS	CMD88A	CMD90AS	CMD93A	MGP168
1.16	1.16	1.13	1.13	1.13	1.06
light amber	light amber	white translucent	white translucent	white translucent	light amber
1.03	1.03	1.02	1.02	1.02	1.05
clear	clear	white	white	white	grey
100 / 90	100 / 65	100 / 56	100 / 60	100 / 42	100/100
20 – 30	20 – 30	25 – 35	25 – 35	25 – 35	20 - 30
20 – 30	20 – 30	25 – 35	25 – 35	25 – 35	20 - 30
7	10	10	8	7	4
1	2	3	2	2	1
16	16	16	16	16	-
3	3	3	3	3	1
70 ± 3	90 ± 3	88 ± 3	90 ± 3	93 ± 3	80 ± 5
10 (1450)	32 (4641)	32 (4641)	24 (3481)	27 (3916)	13 (1130)
310	250	350	525	410	405
41	75	65	117	137	45
55	58	35	57	48	210

1K Blocked Series

	ERAPOL PREPOLYMER	1K10A	1K201A	1K30A	1K40A
PREPOLYMER PROPERTIES	Viscosity at 80°C (cPs)	600 - 1200	1000 – 2000	2000 - 3000	2500 - 3500
	Colour	amber	amber	amber	amber
	Specific Gravity at 25°C	1.20	1.20	1.20	1.20
PROCESSING INFORMATION	1K - Melting Temp (°C)	70 - 75	70 - 75	70 - 75	70 - 75
	1K Mould Temp (°C)	135 - 140	135 - 140	135 - 140	135 - 140
	Cure Time at 135 – 140 (°C) (hours)	6 - 8	6 - 8	6 - 8	6 - 8
PHYSICAL PROPERTIES	Hardness (Shore A)	10 ± 5	20 ± 5	30 ± 5	40 ± 5
	Tensile Strength / MPa (psi)	2 (319)	3 (377)	5 (754)	9 (1334)
	Elongation (%)	625	500	575	680
	Angle Tear Strength, Die C (kN/m)	6	13	15	15
	DIN Resilience (%)	28	25	34	34
	Cured Density (g/cm^3)	1.19	1.20	1.21	1.20
SOLVENT SWELL TEST (% WEIGHT INCREASE IN 24 HOURS)					
	Xylene	15.3	11.1	9.8	8.7
	Cyclohexane	0.3	0.2	0.1	0.2
	Toluene	30.6	29.2	23.3	20.5
	IOA	1.9	2.1	0.9	0.8
	Dibasic	79.6	77.1	41.5	39.3
	MEK	103.5	100.1	74.6	57.8

*The information presented here is based on laboratory testing.

Solvent Resistant

1K50A	1K55A	1K60A	1K701A	1K801A	1K901A
2500 –3500	2500 –3500	3500 - 5500	1500 - 2000	2000 - 3000	1500 - 2500
amber	amber	amber	amber	amber	amber
1.20	1.20	1.20	1.20	1.20	1.20
70 - 75	70 - 75	70 - 75	70 - 75	70 - 75	70 - 75
135 - 140	135 - 140	135 - 140	135 - 140	135 - 140	135 - 140
6 - 8	6 - 8	6 - 8	6 - 8	6 - 8	6 - 8
50 ± 5	55 ± 5	60 ± 3	70 ± 3	80 ± 3	90 ± 3
13 (1885)	10 (1450)	14 (2031)	15 (2175)	10 (1450)	10 (1450)
850	790	725	550	470	410
24	21	32	52	42	48
33	32	29	37	28	29
1.20	1.21	1.21	1.12	1.19	1.18
7.4	6.4	37.1	30.6	21.6	8.7
0.1	0.1	0.9	0.6	0.5	0.1
17.5	15.5	60.5	54.8	36.9	15.1
1.3	0.7	3.0	2.4	1.5	0.7
40.3	32.2	27.3	20.4	15.3	6.8
57.4	53.8	69.4	56.7	40.5	23.7

Spray Systems

		Polyurethane Hybrid				
	ERASPRAY	GENERAL PURPOSE				
		ESM700	ESM800	ESM900	ESM955	ESP880
		MDI				
PART A PROPERTIES	Specific Gravity at 25°C	1.15	1.15	1.10	1.10	1.11
	Colour	amber	amber	amber	amber	amber
PART B PROPERTIES	Specific Gravity at 25°C	1.01	1.04	1.02	1.02	1.02
	Colour	amber	amber	amber	amber	hazy amber
PROCESSING INFORMATION	Mix Ratio by Weight (A/B/C)	-	-	-	-	-
	Mix Ratio by Volume (A/B)	100/100	100/100	100/100	100/100	100/100
	Temperature of Part A (°C)	50 – 60	50 – 60	50 – 60	50 – 60	50 – 60
	Temperature of Part B (°C)	40 – 50	40 – 50	40 – 50	40 – 50	40 – 50
	Pot Life at 20°C (minutes)	-	-	-	-	-
	Pot Life at 40°C (seconds)	10 - 18	8 - 12	8 - 15	8 - 15	10 - 15
	Cured density (g/cm^3)	6	6	6	5	5
PHYSICAL PROPERTIES	Hardness (Shore A)	70 ± 5	80 ± 5	90 ± 5	95 ± 5	88 ± 5
	Tensile Strength / MPa (psi)	7 (1044)	7 (1044)	14 (2016)	17 (2393)	27 (3916)
	Elongation (%)	260	260	190	185	320
	Angle Tear Strength, Die C (kN/m)	32	25	42	61	71
	DIN Abrasion Resistance (mm^3)	180	170	120	188	49
	Cured density (g/cm^3)	1.02	1.02	1.02	1.06	1.00

*The information presented here is based on laboratory testing. ⊙ AS/NZS 4020: 2005 potable water approved.

			Polyurea		Aliphatic	Potable Water ⊙	
HIGH PERFORMANCE			HIGH PERFORMANCE		SPECIALTY		
ESP950	ES81A HB	ES321	HE50D	ESM610D	AL930	ES900PW	STPW
	TDI		MDI		ALIPHATIC	MDI	
1.11	1.06	1.04	1.12	1.15	1.04	1.10	1.13
amber	amber	clear	amber	amber	water clear	amber	amber
1.01	0.96	1.14	1.02	1.08	0.99	1.02	1.00
hazy amber	hazy amber	amber	amber	brown	hazy to milky	amber	amber
-	100/60/1	-	-	-	-	-	-
100/100	-	300/100	100/100	100/100	100/100	100/100	100/100
50 – 60	20 – 30	60 - 80	40 - 60	40 - 60	40 - 60	50 – 60	40 - 60
40 – 50	20 – 30	40 - 60	40 - 60	40 - 60	40 - 60	40 - 50	40 - 60
-	50 - 60	-	-		-	-	-
5 - 10	-	20 - 25	5 - 10	5 - 10	35 - 40	8 - 15	5 - 10
5	7	5	5	5	6	6	5
95 ± 5	75 ± 5	88 ± 3	50D ± 3	60D ± 3	93 ± 3	90 ± 5	95 ± 5
23 (3336)	11 (1595)	35 (5076)	16 (2364)	22 (3190)	16 (2320)	14 (2016)	17 (2465)
350	280	380	350	160	475	190	175
64	55	80	85	79	39	42	75
98	55	65	192	155	190	120	165
1.00	1.05	1.00	1.03	1.03	1.00	1.02	1.03

Era Polymers Specialty Products

Era Divisions

Era Polymers has grown to offer more than 750 Polyurethane systems. We have diversified to include a number of divisions within the company. These six include:

Era Coatings | Era Elastomers | Era Foams | Era Equipment | Era Tolling | Era Trading

Specialty Elastomers*

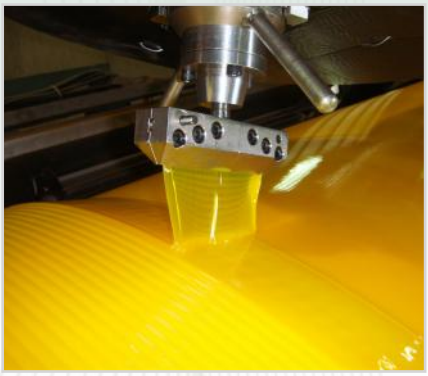
2KE Blocked Series
Used for coating fibres impregnated with coarse carbide grains to produce tough abrasive discs used for cleaning metal surfaces.

High Hardness Cold Castable Series
A range of high hardness castable elastomers, used for tooling and rigid applications.

Eratrowel Series
Two and three component cold cast TDI & MDI trowellable systems.

Eragel
Both MDI and TDI based elastomers with extremely low hardness, used in footwear, mousepads and pillow covers.

Erakote Systems
Rapid reacting elastomers available as two or three component systems. They are poured onto a rotating core to produce a tough elastomeric roller covering, suitable for steel and paper mill rollers.



GL Series
A water clear laminating polyurethane system used in security glass applications

FRAS Systems
Fire **R**etardant **A**nti **S**tatic, additives used to make Elastomers self - extinguishing and non sparking for applications in explosive environments such as underground mining.

*** See product brochure for more details**

Era Polymers Specialty Products

Rubber Binders*

A range of single component, moisture cured polyurethane. Designed to bind reconstituted rubber for surfacing solutions.

Floor Coatings*

A range of Polyurethane Floor Coatings that are hard wearing, easy to maintain and will enhance the natural appearance of interior timber floors.

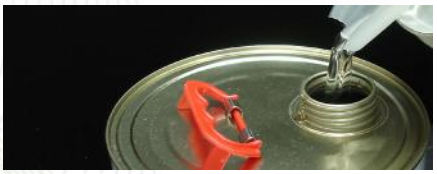
Foam Systems*

Our broad range of Rigid Foams can be used for many applications such as insulation, building panels and surfboards.

Our Flexible Polyurethane Foam systems are used for applications such as Pipe Cleaning Pigs and a variery of speciality consumer and commercial products.

Ancillary Products

Our polyurethane systems are complemented with a diverse range of ancillary products, they include release agents, adhesives, primers, pigments, solvents and additives.



Curatives

Elastomer Curatives used by processors all around the world, include:

- ***MOCA***
- ***MCDEA***
- ***HQEE***
- ***Ethacure 300***
- ***Isonol 93***
- ***1, 4 Butane Diol***

Blended Curatives:

These are specialty curatives only available from Era Polymers.
They have been developed in our laboratories for use with specific grades to achieve properties not available with the Standard Curatives.

- ***Eracure 105***
- ***Eracure 106***
- ***Eracure 110***
- ***Eracure 112***
- ***Eracure 210***
- ***Eracure 211***
- ***Eracure C31***
- ***Eracure C32***

*** See product brochure for more details**

Era Polymers Specialty Products

Era Polymers Primers*

ERAPOL TO METAL PRIMER

Erabond Metal
1-Component Phenolic primer with good adhesion to property prepared steel, iron, aluminium and manganese. Available in clear or red.

Erabond 6100FC
2-Component Polyurethane Primer with good adhesion to steel, ductile iron and galvanised steel. In addition it has good anticorrosive properties for immersion applications.

ERAPOL TO ERAPOL PRIMER

Erabond PU
1-Component Polyurethane primer for bonding to flexible substrates like cured Polyurethane or Rubber.

ERAPOL TO CONCRETE PRIMERS

Erabond LV452
1-Component, low solids Polyurethane primer for bonding to most concrete like substrates.

Erabond 2K Epoxy
2-Component Epoxy primer for bonding Sprayable and Roll on polyurethane systems to concrete.

Agency Products

Whilst the range of Polyurethane Systems we manufacture is extensive, we expertly source a complimentary range of products from around the world to strengthen our product range. We also sell and service a range of equipment for the processing of Polyurethane Elastomers, Foams and Sprays, as well as equipment for Foam cutting and Elastomer Roll Grinding.

Stepan — Polyurethane Foams based on New Blowing Agents

POLYTEC EMC — Casting Equipment

ingevity — CAPA Polycaprolactones for Superior Elastomers and Adhesives

ICP ADHESIVES & SEALANTS — 1 & 2 Component Disposable Polyurethane Foam Systems

SAIP ADVANCED POLYURETHANE EQUIPMENT — High and Low Pressure Equipment for Foams

FECKEN FK KIRFEL — Cutting Equipment

GAMA — High Pressure Spray Equipment for Foams and Elastomers

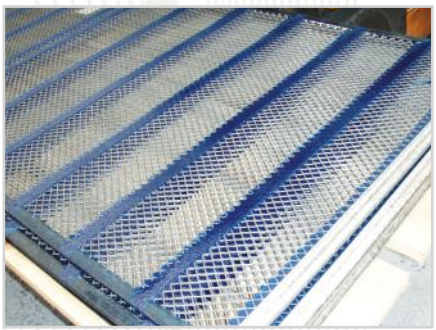
irathanefutura — Spray/Polyurethane/Polyurea Elastomers and Primers

SUMMERS EQUIPMENT INC. — Dual Drive Plantary Mixer

FRICTION COATING — Grinding Wheels for Rollers

Green Mountain International, LLC — Hydrophobic and Hydrophilic Polyurethane Water Stopping Grouts

DOW CORNING — Mould Making Silicone Rubber



*** See product brochure for more details**

Pigments

Era Polymers offer a wide range of Pigments that can be used in our Polyurethane Elastomer products. All materials are supplied uncoloured which allows you, as the processor, to add your choice of pigment.

Pigments are dispersed in Diisononyl phthalate (DINP) to ensure complete chemical compatibility. A variety of colours are available as concentrated liquid pastes, which include the following:

Red 100	Brown 700	Green 400	Blue 500
Red 120	Brown 745	Green 420	Blue 525
Orange 220	Brown 725	Green 430	Blue 530
Orange 200N	Yellow 320	Grey 900	Black 615
Orange 240	Yellow 315	White 810	

* The colours replicated are as close to actual product colours as modern printing will allow.

Applications



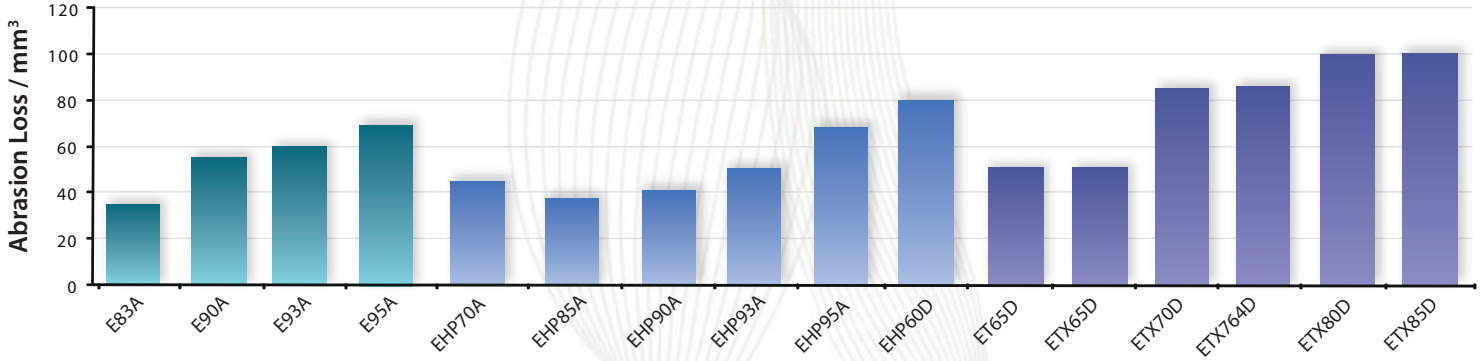




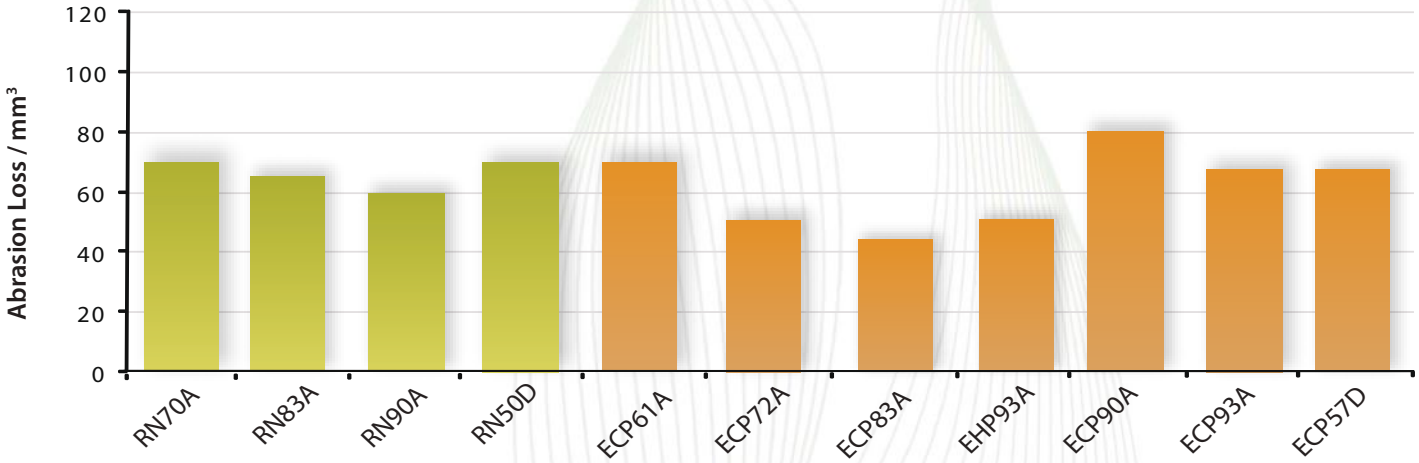


DIN Abrasion Resistance Charts

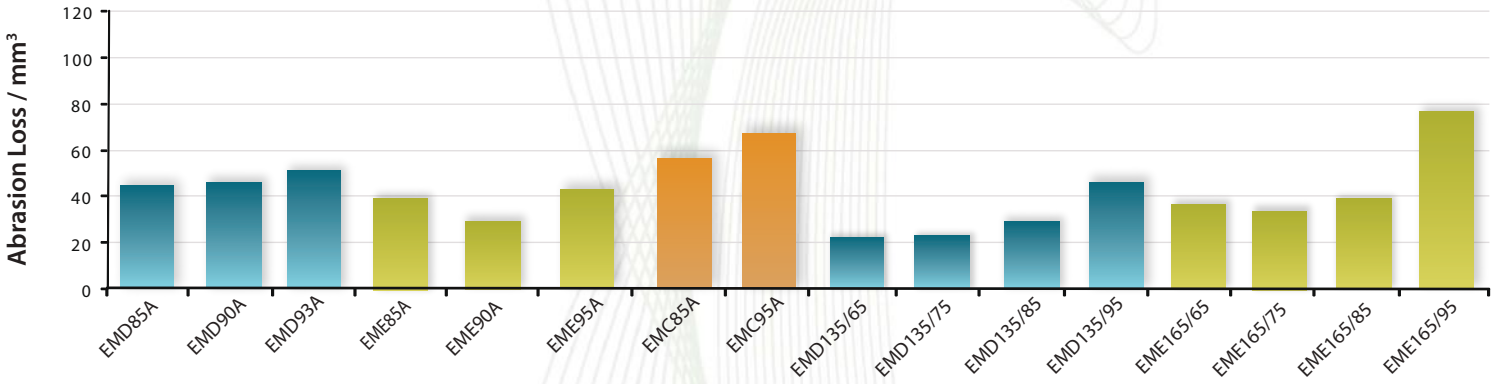
DIN Abrasion Resistance - High Performance TDI Polyethers



DIN Abrasion Resistance - High Performance TDI Polyesters

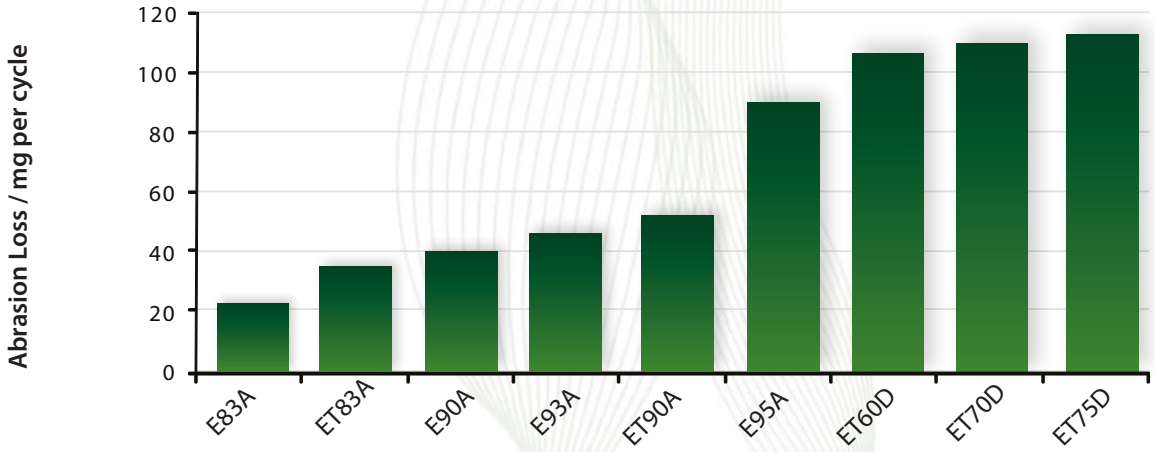


DIN Abrasion Resistance - High Performance MDI Systems

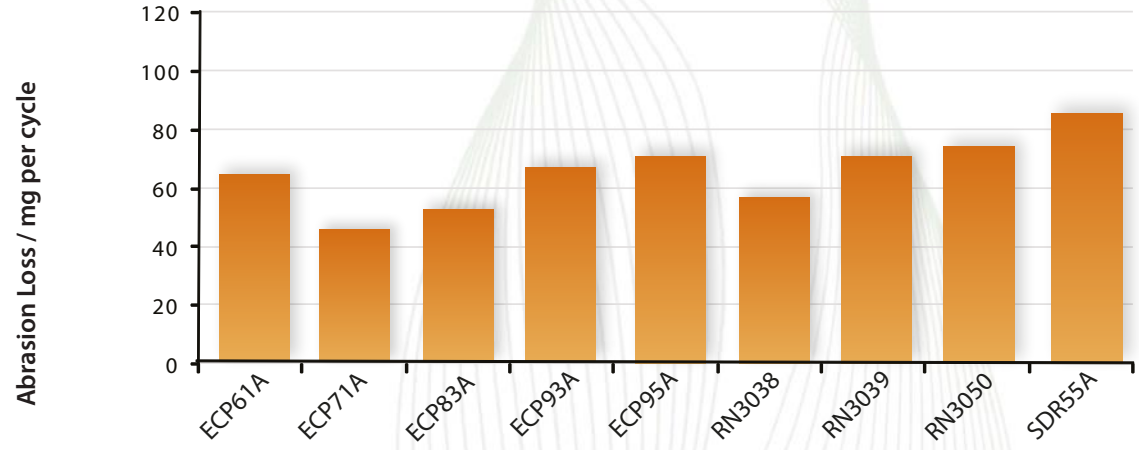


Taber Abrasion Resistance Charts

Taber Abrasion Resistance - High Performance Polyethers

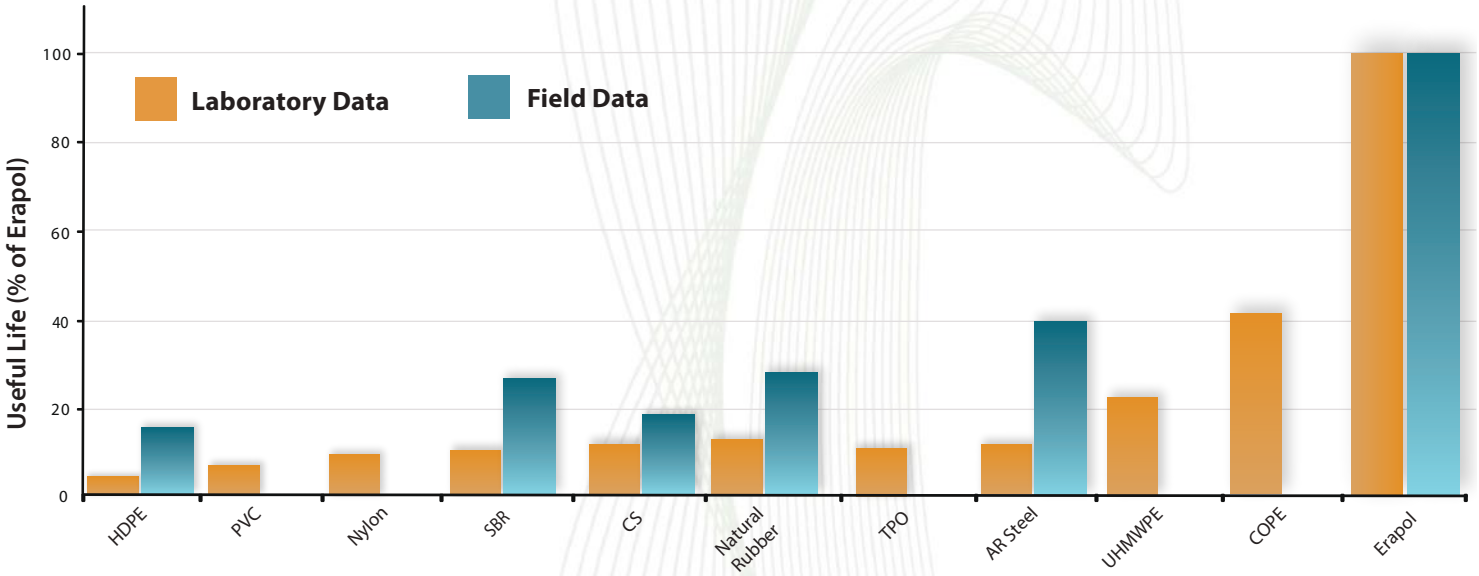


Taber Abrasion Resistance - High Performance Polyesters / CAPAs



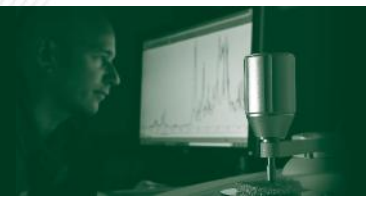
Abrasion Resistance Performance

Laboratory vs. Field Data For Commonly Used Materials



Abbreviations: **HDPE** – High Density Polyethylene, **PVC** – Polyvinyl Chloride, **SBR** – Styrene Butadiene Rubber, **CS** – Carbon Steel, **TPO** – Thermoplastic Olefin, **AR Steel** – Abrasion Resistant, **UHMWPE** – Ultra High Molecular Weight Polyethylene, **COPE** – Copolyester/ether, ***Erapol*** – Polyurethane

Chemical Resistance



Erapols are chemically resistant to the following solvents, oils and chemicals. This is an abbreviated table. For more detailed information please contact our Technical Service Department.

The following ratings are used to describe the general performance of ***Erapols*** when immersed at ambient temperatures;

A. Recommended – little or no effect.

B. Minor to moderate effect.

C. Moderate to severe effect.

X. Not recommended.

Acetic acid	C	Cyclohexane	B	Oleic acid	B
Acetone	X	Ferric chloride	A	Olive oil	A
Ammonia hydroxide	A	FREON-12 (54°C)	A	Oxygen-cold	A
Ammonium nitrate	X	FREON-113	B	Ozone	A
Ammonium persulfate	X	Gasoline	A	Palmitic acid	A
Animal fats	A	Gelatin	A	Phosphoric acid (20%)	A
ASTM oil #1 (70°C)	A	Glucose	A	Phosphoric acid (45%)	A
ASTM reference fuel	A	Glue	A	Potassium chloride	A
Barium chloride	A	Glycerin	A	Potassium cupro cyanide	A
Barium hydroxide	A	Hydrochloric acid (cold) 37%	X	Potassium cyanide	A
Barium sulfate	A	Hydrochloric acid (hot) 37%	X	Potassium dichromate	A
Barium sulfide	A	Hydrofluoric acid conc. (cold)	X	Potassium nitrate	A
Borax	A	Hydrofluoric acid conc. (hot)	X	Potassium sulfate	A
Boric acid	A	Hydrogen gas	A	Producer gas	A
Butane	A	Isopropyl acetate	A	Radiation	A
Calcium bisulphite	A	Kerosene	B	Soap Solutions	A
Calcium chloride	A	Liquefied petroleum gas	A	Sodium chloride	A
Calcium hydroxide	A	Magnesium chloride	A	Sodium hydroxide (20%)	B
Calcium nitrate	A	Magnesium hydroxide	A	Sodium phosphate	A
Calcium sulfide	A	Mercury	A	Sodium sulfate	A
Carbon dioxide	A	Mineral oil	A	Sodium thiosulfate	A
Carbon monoxide	A	Natural gas	B	Stearic acid	A
Castor oil	A	Nickel sulfate	A	Sulphuric acid (dilute)	B
Citric acid	A	Nitric acid conc.	X	Sulphuric acid (conc)	X
Copper chloride	A	Nitric acid dilute	C	Sulphuric acid (20% oleum)	X
Copper cyanide	A	Nitric acid red fuming	X	Tannic acid (10%)	A
Copper sulphate	A	Nitrogen	A	Tartaric acid	A
Cottonseed oil	A	Octadecane	A	Toluene	C

The table below lists commonly experienced problems and their causes.

Problem	Possible Cause: Off Ratio	Poor Mix	High Exotherm	Incorrect Processing Temperature	Poor Vacuum	Nitrogen or Solvent	Leaks in Mixing Head	Dirty Moulds	Casting Technique	Loss of Prepolymer NCO	Insufficient Cure	Curative Contamination	Low Green Strength
Low Hardness	•	•								•	•		
Wet Spots	•	•											
Poor Tear	•	•								•	•		
Cheesy Appearance	•	•		•							•		•
High Shrinkage	•		•	•								•	
Air Bubbles					•	•	•	•	•			•	
Snow Flake Effect			•						•				
White Skin			•						•				
Voids in Part			•	•				•	•				
Short Pot Life	•			•								•	
Cracking	•	•	•	•					•				•
Foaming						•	•					•	
Striations		•											
Low Tensile Strength	•	•								•	•		

Approximate Viscosities of Common Materials
Material Viscosity in Centipoise

Water 1 cps	SAE 20 Motor Oil 140 – 420 cps	Castor Oil 1,000 cps	Chocolate Syrup 25,000 cps	Sour Cream 100,000 cps
Milk 3 cps	SAE 30 Motor Oil 420 – 650 cps	Karo Syrup 5,000 cps	Ketchup 50,000 cps	Peanut Butter 250,000 cps
SAE 10 Motor Oil 85 – 140 cps	SAE 40 Motor Oil 650 – 900 cps	Honey 10,000 cps	Mustard 70,000 cps	

Conversion Factors

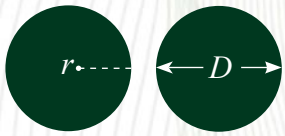
GEOMETRIC FORMULAE

CIRCLE

Area = πr^2 or $\pi D^2 / 4$

Circumference = πD or $2\pi r$

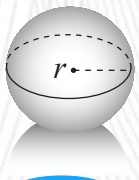
(r = radius, D = diameter, π= 3.1416)



SPHERE

Surface Area = $4\pi r^2$ or πD^2

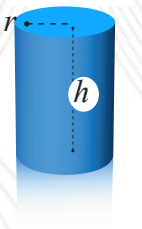
Volume = $\frac{4}{3} \pi r^3 = \frac{1}{6} \pi D^3 = D^3 \times 0.5236$



CYLINDER

Volume = $\pi r^2 h$

(h = height)



RECTANGLE OR SQUARE

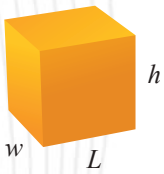
Area = L x h

(L = Length)

BOX

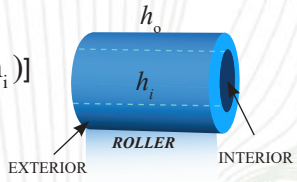
Volume = L x w x h

(w = width)



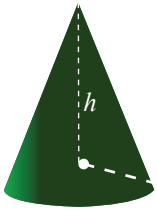
ROLLER

[Volume(outer) = $(\pi r_o^2 h_o)$] - [Volume(inner) = $(\pi r_i^2 h_i)$]



CONE

V = $\frac{1}{3} \pi r^2 h$



VOLUME TO MASS CALCULATION

mass = density x volume

THICKNESS

1 mil = 25 microns = 0.025 mm
1 mm = 40 mils = 1000 microns

AREA

1 m^2 = 10.76 ft^2
1 ft^2 = 0.093 m^2

LENGTH

1 m = 3.28 feet
1 cm = 0.4 inches
1 foot = 0.305 m
1 inch = 2.5 cm

PHYSICAL PROPERTIES

1 kN/m = 0.175 x pli
1 N/mm^2 = 145psi = 1 MPa

WEIGHT

1 kg = 2.2 lbs
1 lb = 0.455 kg

VOLUME

1 US Gallon = 3.8 Litres
4 US Gallon = 15.1 Litres
44 US Gallon = 166.3 Litres
55 US Gallon = 208.1 Litres

TEMPERATURES

°C = $\frac{5}{9}$ x (°F - 32)
°F = ($\frac{9}{5}$ x °C) + 32

PRESSURES

100 kPa = 0.1 MPa = 14.5 psi = 1 bar

DENSITY

1 g/L = 0.062 lb/ft^2
1 lb/sq.ft = 4.82 kg/m^2
1 ft^3 = 0.028 m^3
kg/m^3 = lb/ft^3 x 16

Glossary of Terms

Additive – A material which does not take part in the chemical reaction but is included to alter the final product eg. fillers, pigments, flame retardants etc.

Casting – The filling of moulds with liquid polyurethane.

Catalyst – An ingredient in polyurethane systems which initiates a chemical reaction or increases the rate of chemical reaction.

Chain Reaction – Lengthening of the main chain or backbone of polymer molecules by end to end attachment.

Component – A separately metered stream of liquid which will be directly introduced into the mixing head.

Cross Linking – The formation of chemical links between the molecular chains.

Cure – Refers to the hardening or build-up of properties of a polymer material by cross-linking of polymer chains.

Curing Agent – Material that starts the reaction with the Prepolymer when added.

Cycle Time – A term most commonly used in situations where many items are being manufactured on an automatic or semi–automatic production line. It includes the time required for mould preparation, including release agent application, dispensing of components, reaction, cure and demould.

Degradation – The deterioration of a substance caused by contact with its environment.

Demould Time – The time between dispensing the liquid components into the mould and removing the article being produced.

Dew Point – The temperature at which a vapour begins to condense.

Elastomer – A flexible or semi-rigid rubber-like material not necessarily made from what is conventionally thought of as a rubber.

Elongation – The increase in length of a specimen at the instant before rupture occurs. Expressed as a percent of original length.

Exotherm – Heat generated by a chemical reaction.

Flame Retardant – A substance which is added to a polymer formulation to reduce or retard its tendency to burn.

Hardness – The surface property relating to the resistance of indentation.

Hydroxyl Group – The combined oxygen and hydrogen radical (–OH) which forms the reactive group in polyols.

Impact Resistance – Ability to withstand mechanical force without failure or loss of properties.

Isocyanate – The group of chemical compounds having one or more NCO groups attached to the main chain.

MDI – An abbreviation for diphenyl**M**ethane **D**i **I**socyanate.

Microcellular – An elastomer of cellular or foam structure.

Mil – One thousandth of an inch, 0.001 inch. A unit used to measure coating thickness.

Moulding – The process of producing a finished article from a closed mould.

NDI – **N**aphthalene **D**i **I**socyanate.

NCO – **N**itrogen, **C**arbon, **O**xygen. The chemical formula for an isocyanate group.

Polyester – Polymeric compound, with the reactive hydroxyl groups containing ester linkages.

Polyether – Polymeric compounds with reactive hydroxyl group containing ether linkages.

Polymer – A high molecular weight compound, natural or synthetic, whose chemical structure can be represented by a repeated small unit.

Polyol – A chemical compound with more than one reactive hydroxyl group attached to the molecule.

Post Cure – Refers to the period after casting, either in mould or after demoulding, before the material has developed full physical properties by cross linking of polymer chains.

Pot Life – The length of time after mixing together of the two components during which the polymer remains sufficiently liquid to be poured.

Prepolymer – A chemical intermediate manufactured by reacting raw isocyanate with polyol.

PTMEG – **P**oly **T**etra **M**ethylene **E**ther **G**lycol

PU – Abbreviation for Polyurethane

RIM – **R**eaction **I**njection **M**oulding. A process of injecting a fast reacting mixture of polyurethane into a mould.

System – A rather ambiguous term used to describe almost any combination of mechanical parts or chemicals which have some relationship to each other. Often used to describe the supply of all chemical components needed to produce a polyurethane.

TDI – An abbreviation for **T**oluene **D**i **I**socyanate.

Thermoset – A polymer that irreversibly cures from a liquid state to a solid state.

Thermoplastic – A polymer that turns to a liquid when heated and freezes to a solid state when cooled.

Thixotropic – A material that resists slumping or sagging when applied to a vertical surface.

Viscosity – A measure of how easily a liquid flows. The lower the number the thinner the liquid.

Volatile Organic Components (VOC) – Organic materials which evaporate at normal temperatures and pressures, organic materials which have vapour pressure greater than 0.1 mm Hg at one atmosphere.

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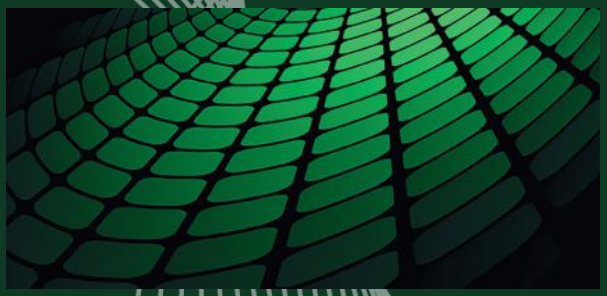

Goddess Hera

(H)**Era** in Greek religion, wife of Zeus, Queen of the Olympian Gods and patron Goddess of the Isle of Samos.

A father's passionate love of the island prompted his son to commemorate its history in the naming of our company.

Era Elastomers

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