



Formulated Systems

PRODUCT INFORMATION

PROVISIONAL TECHNICAL DATASHEET

10/22/2012

Introduction

DIPRANE™ LC 1010 is a polyester based urethane prepolymer which can be used for the production of a range of polyurethane elastomers from 45 to 95 Shore A hardness. The system has been specially developed for applications requiring a high degree of dynamic performance coupled with excellent physical properties and abrasion resistance. DIPRANE LC 1010 has been specially developed to utilise a catalyst package to be introduced at the mixing head. This allows the user to tailor the reactivity to suit the moulding process.

DIPRANE LC 1010 Series Four Component Elastomer System

Component Properties

Polyol Component

Product Reference	DIPRANE™ LC 1010 Polyol
Appearance	Whitish, waxy solid at 20°C Hazy, amber liquid at 40°C
Viscosity	25 - 35 poise at 40°C
Specific Gravity	1.16 – 1.18 at 40°C

Isocyanate Component

Product Reference	DIPRANE™ 530 Prepolymer
Appearance	Pale amber liquid
Isocyanate Component	16.4 – 16.6%
Viscosity	23 – 33 poise at 25°C
Specific Gravity	1.20 – 1.22 at 25°C

Chain Extender Component

Product Reference	DIPRANE™ C
Appearance	Whitish, crystalline solid below 20°C Colourless, clear liquid above 20°C
Specific Gravity	1.01 – 1.02 at 20°C

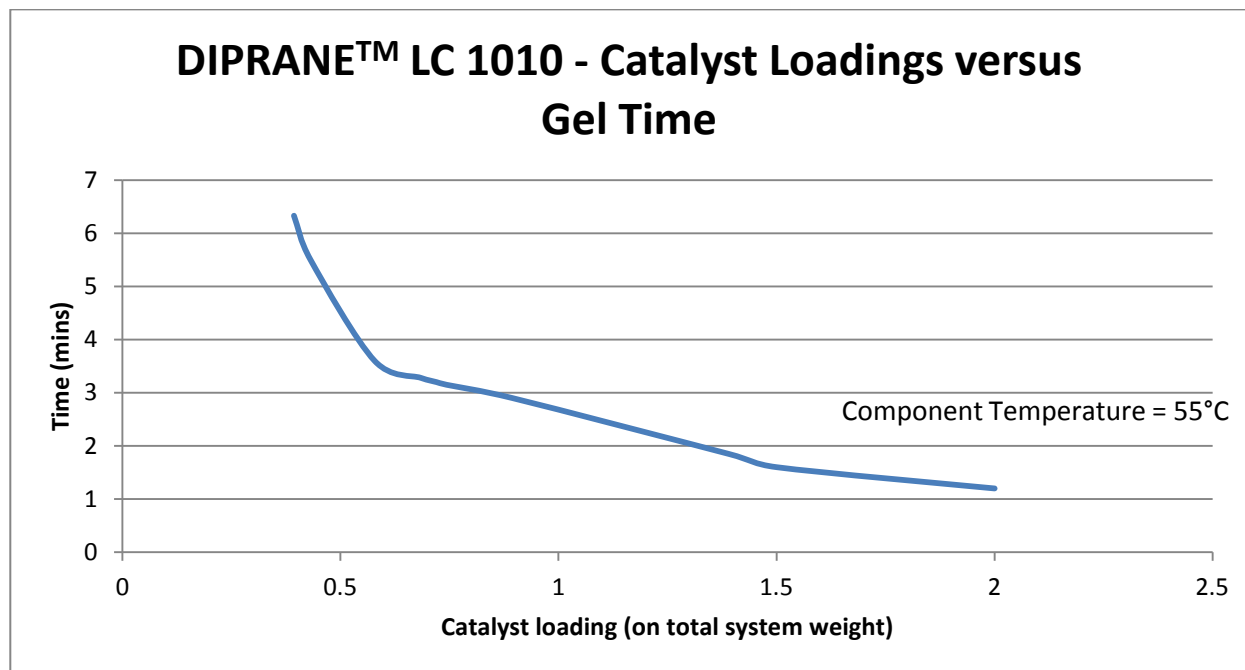
Catalyst

Product Reference	DIPRANE™ 1010 Catalyst 1245
Appearance	Pale amber liquid
Viscosity	0.04 – 0.08 poise at 25°C
Specific Gravity	1.07 at 20°C

These are typical values and should not be construed as specifications.

Mixing Ratios

DIPRANE™ LC 1010 Four Component Elastomer System can be blended to give a range of hardness from 45°A to 95°A. The mix ratio should be determined in accordance with Dow TS&D Team.



Cured System – Typical Properties

Hardness (Shore A)	45	50	55	60	65	70	75	80	85	90	95
Tensile Strength (MN/m ²)	18	21	25	30	33	35	36	37	38	38	33
100% Modulus (MN/m ²)	1.1	1.2	1.7	2.1	2.7	3.5	3.9	4.7	6.3	9.3	10.0
300% Modulus (MN/m ²)	1.7	2.3	3.1	4.3	6.0	7.3	8.1	9.6	12.5	16.4	16.4
Elongation at Break (%)	830	750	680	650	650	630	620	620	620	600	550
Angle Tear Strength (KN/m)	26	28	39	52	58	70	80	88	100	125	125
Compression Set at 70°C (%)	20	25	25	25	30	30	30	30	30	30	30
Resilience (%)	60	57	55	52	50	49	48	47	44	40	30
DIN Abrasion (mm ³ loss)	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30

These are typical values and should not be construed as specifications.

Processing Details

Please Note: It is essential that the polyol component is thoroughly rolled / mixed before use.

Strong turbulence and mixing with air should be kept to a minimum by adopting a careful mixing technique (e.g. drum/keg rolling) or using low air introducing mixers. It is recommended that any air introduced during mixing is subsequently removed through degassing by either machine or vacuum chamber. It is the responsibility of the customer to ensure that the product is mixed and degassed sufficiently for use.

The following information is given as a guide to processing this product. It is recommended that optimum conditions for a specific application are determined experimentally. Our Technical Service Department can offer more detailed advice.

Recommended Processing Temperatures

Polyol Component	50 – 55°C
Isocyanate Component	50 – 55°C
Chain Extender Component	25 – 30°C
Catalyst Component	25 – 30°C
Mould Temperature	65 – 90°C
Gel Time	Dependant on catalyst loading
Typical Demould Time	15 – 40 minutes

Recommended Cure Cycle

In order to achieve rapid attainment of mechanical properties of DIPRANE™ LC 1010 castings, a post-cure of 12 -16 hours at approximately 80°C is recommended followed by a minimum of 48 hours at ambient. It is important that moulds be heated to the recommended temperature in order to achieve satisfactory demould times and subsequent curing of the elastomer.

Additional Processing Details

Machine Mixing

Our Technical Service Department can offer advice on suitable two or three component polyurethane dispensing equipment for processing DIPRANE™ LC 1010 series elastomers.

Hand Mixing

When hand mixing, the following procedures should be adhered to:-

- 1) Pre-condition the components to the recommended temperature.
- 2) DIPRANE™ LC 1010 Polyol should be mixed by rolling the drum before use.
- 3) Weigh out the required quantities of DIPRANE™ LC 1010 Polyol, DIPRANE C and DIPRANE LC 1010 Catalyst 1245 into the mixing vessel and mix together.
- 4) Weigh the required amount of DIPRANE™ 530 Prepolymer into the vessel and mix thoroughly for approximately one minute.
- 5) Put the mixture under vacuum (5 torr min) for 1 - 2 minutes or until bubbling ceases.
- 6) Pour the reaction mixture into heated moulds, which have been treated with mould release agent.

Storage and Handling

	Shelf life
Polyol Component	Store in tightly sealed containers at a temperature of 0 - 30°C. Raise to the processing temperature and mix well before use. Avoid contact with moisture. Storage at low temperatures may result in freezing of the polyol component, should this occur it should be melted out by raising to the processing temperature and mixed thoroughly before use. 12 months

Isocyanate Component	Store in tightly sealed containers at a temperature of 15 - 30°C. Avoid contact with moisture. Storage below the recommended minimum temperature may result in freezing of the Isocyanate. If the Isocyanate does not fully melt out when raised to the processing temperature it may be necessary to re-melt at a temperature of 60 - 70°C following the procedures laid down in the information sheet 'Safe Handling – Pure, Modified and Polymeric MDI' Form No. 109-01224X-1009P&M.	6 months
Chain Extender Component	Store in tightly sealed containers at a temperature of 15 - 30°C. Raise to the processing temperature and mix well before use. Avoid contact with moisture.	12 months
Catalyst Component	Store in tightly sealed containers at a temperature of 15 - 30 °C. Raise to the processing temperature and mix well before use. Avoid contact with moisture.	12 months

More detailed information on the storage and handling of polyurethane components can be obtained by contacting Dow Technical Service Department.

Packaging

Polyol Component	25 kg, 225 kg
Isocyanate Component	25 kg, 240 kg
Chain Extender Component	25 kg, 205 kg
Catalyst Component	25 kg

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