



PRODUCT INFORMATION

PROVISIONAL TECHNICAL DATASHEET

5/27/2020

Introduction

DIPRANE™ LC 1007 Series is polyester based polyurethane elastomer system that can be used for the production of a range of polyurethane elastomers from 45A to 55 Shore D hardness. DIPRANE™ 530 or DIPRANE 531 Prepolymer can be reacted with DIPRANE™ LC 1007/45 Polyol curative to produce an elastomer of 45°A and with increasing quantities of DIPRANE™ C chain extender as a third component to allow the production of elastomers up to 55 Shore D 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 1007 Series 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 1007 Series **Four Component Elastomer System**

Component Properties

Polyol Component

Product Reference	DIPRANE™ LC 1007/45 Polyol Curative
Appearance	Whitish, waxy solid at 20°C Hazy, amber liquid at 40°C
Viscosity	2500 - 3500 mPa.s at 40°C
Specific Gravity	1.16 – 1.18 at 40°C

Isocyanate Component

Product Reference	DIPRANE™ 530 Prepolymer or DIPRANE™ 531 Prepolymer
Appearance	Pale liquid
Isocyanate Content	16.4 – 16.6%
Viscosity	1900 – 3100 mPa.s at 25°C
Specific Gravity	1.20 – 1.22 at 25°C 1.18 – 1.20 at 40°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 PL
Appearance	Pale amber liquid
Viscosity	40 - 80 mPa.s at 25°C
Specific Gravity	1.07 at 20°C

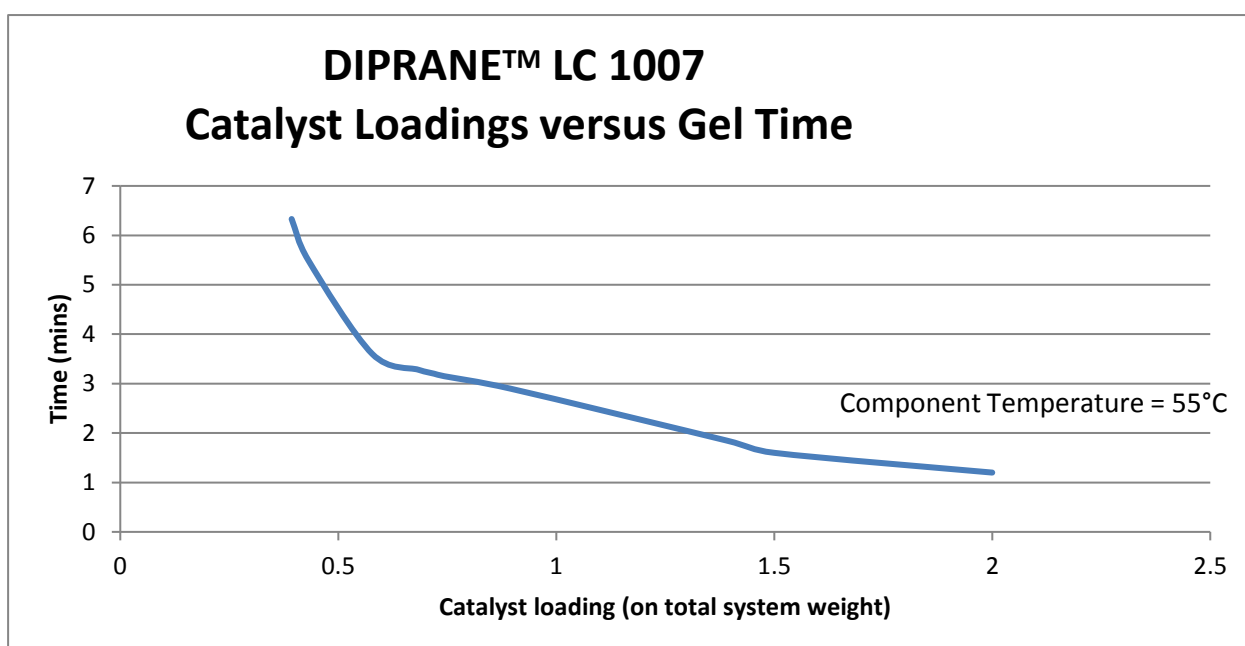
These are typical values and should not be construed as specifications.

Mixing Ratios

DIPRANE™ LC 1007/45 Polyol Curative can be blended in the following proportions to give a range of hardness from 45°A to 55°D

Hardness (Shore A)	45	50	55	60	65	70	75	80	85	90	95	-
Hardness (Shore D)	-	-	-	-	-	-	-	-	-	-	-	55
DIPRANE™ LC 1007/45 Polyol Curative	376.0	209.3	187.6	165.3	145.9	126.4	111.0	97.5	78.0	54.0	49.7	20.0
DIPRANE™ C	-	7.65	8.60	9.65	10.55	11.40	12.1	12.75	13.65	14.75	14.95	16.3
DIPRANE™ 530 or 531 Prepolymer	100	100	100	100	100	100	100	100	100	100	100	100
DIPRANE™ 1010 Catalyst PL	Loading should be determined by the end user. The graph below can be used as a guideline.											

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



Cured System – Typical Properties

Hardness (Shore A)	ISO 868	45	50	55	60	65	70
Tensile Strength (MPa)	ISO 527 – Type 5 @ 2mm thick	19	24	30	32	35	36
100% Modulus (MPa)	ISO 527	1.2	1.6	1.7	2.3	2.7	3.5
300% Modulus (MPa)	ISO 527	1.9	2.1	2.4	4.5	5.7	6.5
Elongation at Break (%)	ISO 527	750	750	680	620	580	610
Angle Tear Strength (KN/m)	ISO 34 Method B	33	36	39	47	58	67
Compression Set 22h at 70°C (%)	ISO 815 Type A	20	25	25	25	30	30
Resilience Lupke Pendulum (%)	ISO 4662	60	57	55	52	50	49
DIN Abrasion (mm ³ loss)	ISO 4649	<30	<30	<30	<30	<30	<30

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

Cured System – Typical Properties cont...

Hardness (Shore A)	ISO 868	75	80	85	90	95	-
Hardness (Shore D)	ISO 868	-	-	-	-	-	55
Tensile Strength (MPa)	ISO 527 – Type 5 @ 2mm thick	37	39	44	42	40	33
100% Modulus (MPa)	ISO 527	3.9	4.3	5.4	7.6	8.7	14.0
300% Modulus (MPa)	ISO 527	7.8	9.6	10.5	15.0	15.5	24.0
Elongation at Break (%)	ISO 527	570	540	530	520	550	480
Angle Tear Strength (KN/m)	ISO 34 Method B	68	82	85	95	110	115
Compression Set 22h at 70°C (%)	ISO 815 - Type A	30	30	30	30	30	--
Resilience Lupke Pendulum (%)	ISO 4662	48	47	44	40	30	25
DIN Abrasion (mm ³ loss)	ISO 4649	<30	<30	<30	<30	<30	<70

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

Processing Details

Polyol component

The polyol component forms a waxy solid at the recommended storage temperature of 0 – 30°C. Heat is required to liquefy the polyol and / or to condition the polyol to the processing temperature. It is recommended that the polyol be warmed slowly either:

- in an air circulating oven (preferred) or a hot box,
- with a drum blanket,
- or with band heaters.

Temperatures up to 60°C are recommended.

CAUTION: Exposure to temperatures above 60°C should be avoided because this will lead to degradation of the product.

It is recommended that the warming/melting process should be carefully controlled, taking care to avoid overheating or heating for extended periods of time. Hot spots can cause degradation and should, therefore, be avoided.

In general, warming for a longer time period at a lower temperature (40 – 50°C) is preferred compared to a short time period at a higher temperature (60°C).

Typically, at 45 – 50°C

- a 25kg drum (pail) of polyol requires 16 hours to melt;
- a 200kg drum requires 24 – 48 hours,

although this will depend on the initial temperature of the material and the heat distribution efficiency of the heating method. **It is recommended that the optimum conditions for a particular application are determined experimentally by the user.**

It is recommended that the polyol component is NOT stored:

- at 40 – 50°C for greater than 2 weeks;
- at 50 – 55°C for greater than 7 days;
- at 55 – 60°C for greater than 3 days.

In each case this assumes unopened, tightly sealed containers.

Please Note: It is advised that the polyol component is 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	20 – 30°C
Mould Temperature	80 – 90°C
Gel Time	Dependant on catalyst loading
Typical Demould Time	15 – 40 minutes

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

Recommended Cure Cycle

In order to achieve rapid attainment of mechanical properties of DIPRANE™ LC 1007 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 1007 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 1007/45 Polyol should be mixed by rolling the drum before use.
- 3) Weigh out the required quantities of DIPRANE™ LC 1007/45 Polyol, DIPRANE C and required level of DIPRANE Catalyst 1010 PL into the mixing vessel and mix together.
- 4) Weigh the required amount of DIPRANE™ 530 or 531 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

Product Stewardship

The Dow Chemical Company and its subsidiaries (“Dow”) has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our Product Stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our Product Stewardship program rests with each and every individual involved with Dow products — from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

Safety Considerations

Safety Data Sheets (SDS) are available from The Dow Chemical Company (Dow). SDS are provided to help customers satisfy their own handling, safety and disposal needs, and those that may be required by locally applicable health and safety regulations. SDS sheets are updated regularly. Therefore, please request and review the most current SDS before handling or using any product. Copies of the SDS are available on request through the nearest Dow Sales office.

Customer Notice

Dow strongly encourages its customers to review both their manufacturing processes and their applications of Dow products from the standpoint of human health and environmental quality to help ensure that Dow products are not used in ways for which they were not intended or tested. Dow personnel are available to answer your questions and to provide reasonable technical support. Dow product literature, including safety data sheets, should be consulted prior to use of Dow products.

Contact information:

For more information about this product please call The Dow Chemical Company.

North America: 1-800-441-4369
Latin America: (+55) 11-5184-8722
Europe: (+31) 11-567-2626
Asia/Pacific: (+60) 3-7965-5392
<http://www.dow.com/polyurethanes>

NOTICE: No freedom from infringement of any patent owned by Dow or others is to be inferred. Because use conditions and applicable laws may differ from one location to another and may change with time, Customer is responsible for determining whether products and the information in this document are appropriate for Customer's use and for ensuring that Customer's workplace and disposal practices are in compliance with applicable laws and other government enactments. The product shown in this literature may not be available for sale and/or available in all geographies where Dow is represented. The claims made may not have been approved for use in all countries. Dow assumes no obligation or liability for the information in this document. References to "Dow" or the "Company" mean the Dow legal entity selling the products to Customer unless otherwise expressly noted. NO WARRANTIES ARE GIVEN; ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED

