Upper Limits

Adiprene® / Vibrathane® Urethanes

Chemtura

Adiprene®/ Vibrathane® Urethanes

About the cover: New high temperature Adiprene urethanes can be used in a wide range of demanding applications. Oil and gas exploration is perhaps one of the most intense.

Above: High performance off road vehicles produce a high degree of heat and stress. Equipment designers can now explore the use of Chemtura's urethanes in new, more severe applications.

What do we mean by high temperature? Application temperature, service life, engineering properties, and environmental conditions must all be carefully evaluated for your product. Our development team will drill down into your application to investigate these questions fully.

Chemtura's engineers are the experts in product selection and customized formulations. Like a finely tuned pit crew, our goal is to work with your team to identify the ultimate Adiprene® system to fit your performance requirements and processing capabilities.

High temperature urethanes for harsh environments:

We create products that succeed where ordinary urethanes fail.

Adiprene®/Vibrathane® Urethanes: In it for 150˚C.

Some urethanes will retain hardness below 150˚C but immediately lose their strength properties once they reach 150˚C. In other cases, the material retains its properties during initial heating, but deteriorates quickly after aging.

In contrast, Adiprene's platinum series of high temperature elastomers are in it for the long haul. Take our Adiprene Low Free PPDI 3000 Series cured with Lonzacure® MCDEA or Vibracure® A 133. They retain their strength up to 150˚C, even after three weeks of exposure at 150˚C (Figures 1 and 2).

Elements

Heat Resistance + Toughness = Chemtura.

High temperatures are often only one of your worries. Humidity, oil, solvents - all create conditions that wear on your machinery and pound on your productivity. Chemtura's high temperature series include products that provide a combination of heat, hydrolysis and oil swell resistance.

Typical High Temperature Performance of Adiprene® LFP 3000 Series compared with HNBR and a standard urethane.

Figure 1: Break Energy

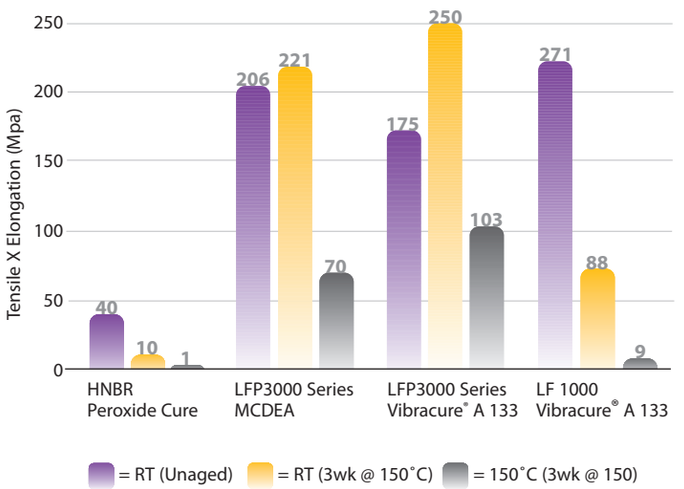
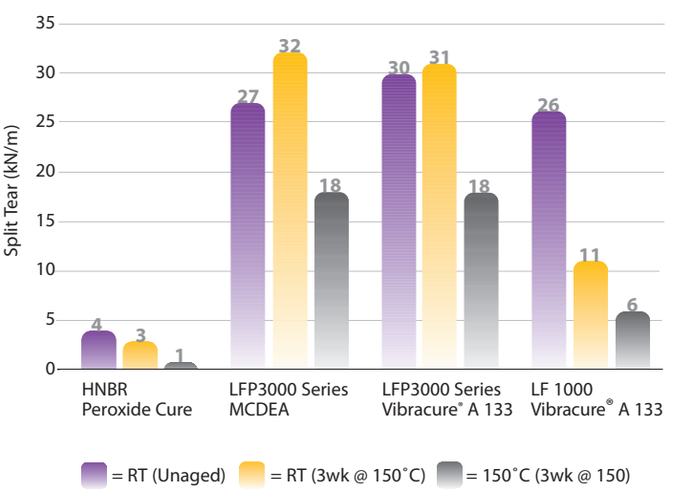


Figure 2: Split Tear



Left: Chemtura has the high temperature material for heat resistant, wear components in your conveying application.

Adiprene® / Vibrathane® Urethanes

PERFORMANCE CRITERIA[1]	RECOMMENDED ADIPRENE® FAMILY AND CURATIVE	MAX TEMPERATURE °C	HEAT AGE RESISTANCE	HYDROLYSIS RESISTANCE	OIL RESISTANCE	DYNAMIC PROPERTIES	PROCESSING
Platinum Our Platinum series is the top of the line! These products shine in applications where load, speed, extreme temperature, hydrolytic stability and solvent/oil resistance are required. They can retain their strength up to 150ºC, even after three weeks of exposure at 150ºC.	LFP 3000 Series / MCDEA	150°	■	■	■	■	□
	LFP 3000 Series / Vibracure® A 133	150°	■	▫	■	□	▫
Gold The Gold series will hold up to their fair share of punishment. They provide more flexibility in processing with minor sacrifices in performance. The LFP 3000 Series cured with HQEE are also suitable for water, oil, solvent and heat applications. Peak operating temperatures 130°C and 150°C.	LFP 1000 Series / MCDEA	150°	■	□	■	■	□
	LFP 1000 Series / Vibracure® A 133	150°	■	□	■	□	▫
	LFP 3000 Series / HQEE	130°	▫	■	■	■	▫
	LFH 3000 Series / MCDEA	130°	▫	■	■	■	■
Silver Silver products provide an excellent balance of performance and processing. They will withstand limited exposure to water, oil and solvent at high temperatures 130˚C.	LFH 2000 Series / MCDEA	130°	▫	▫	▫	■	■
	LFM 2000 Series / Caytur® 31	130°	▫	□	▫	▫	■
Bronze Winning a Bronze recognition is no simple feat! In many applications, they provide the perfect combination of performance, processing and price. Peak operating temperatures near 100°C.	Vibrathane® 8030 / HQEE	100°	▫	▫	▫	■	▫
	Vibrathane® 8045 / Vibracure® A 250	100°	▫	▫	▫	▫	■
	LF 1000 Series / Vibracure® A 133	100°	▫	□	■	■	■
Copper The Copper rating is an industry bench mark. The products can take short term exposure to high temperatures.	L100 / Vibracure® A 133	100°	□	▫	□	■	■

■ = Excellent ▫ = Good □ = Fair

HNBR	Hydrogenated acrylonitrile butadiene rubber
LFP	Low Free PPDI
LF 1000	Low Free TDI
LFH	Low Free HDI
LFM	Low Free MDI
PPDI	Para-phenylene diisocyanate
TDI	Toluene diisocyanate
HDI	Hexamethylene diisocyanate
MDI	Methylene di-p-phenyl diisocyanate
MCDEA	4,4'-Methylenebis (3-chloro-2,6-diethylaniline)

Vibracure® A 133	4,4'-Methylene-bis (2-chloroaniline)
HQEE	Hydroquinone-bis-hydroxyethylether
Caytur® 31	Dispersion of methylene dianiline - sodium chloride complex
Vibracure® A250	1,4 Butanediol with compatibilizer

(1) This chart includes recommendations for starting formulations. Field/in-use testing is highly recommended. Maximum operating temperatures are based on laboratory data and are time dependent.

Properties + Performance = Chemtura.

The choice of elastomer chemistry will determine the performance properties. Chemtura's selection guide will direct you to the most suitable Adiprene®/ Vibrathane® product.

Easy

Adiprene®/Vibrathane® Urethanes: In it for the long haul.

Chemtura has established a platinum-to-bronze ranking system to help you select your system. From isocyanate and polyol, to curative type, our engineers will assist you in customizing the best elastomer for your application. Please check out our selector guide for starting formulations.

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Above: Our new, high temperature urethanes could provide the solutions for your failing track pads, scrapers or seals.

Chemtura