



Polyurethanes for industry



Dow Hyperlast

engineering polyurethane excellence



Dow Hyperlast

HYPERLAST™ polyurethane elastomers – an overview

Dow Hyperlast is a leading international systems house combining chemical and engineering expertise to create innovative polyurethane elastomers for practical industrial applications.

Headquartered in the UK, Dow Hyperlast's manufacturing and technical facilities are supported by a network of international sales and support partners providing a truly global service to customers.

Dow Hyperlast has over 30 years' experience of developing and delivering successful polyurethane products and polymeric plasticisers.

Dow Hyperlast products are used internationally in automotive, civil engineering, manufacturing, marine, offshore, rail, transport and many other industries. Flexibility is a key characteristic, enabling many products to be applied fast by mixing or spraying on site, while others are manufactured to meet the processors needs.

As interpreter between the chemical and engineering industries Dow Hyperlast employs a unique combination of chemists, polymer technologists and engineers. They are able to translate engineering performance needs into chemistry that can be processed to meet those needs.

Investment in research, testing, training and production ensures that Dow Hyperlast's technical specialists are the foremost in their field and that its products are renowned for their quality. Dow Hyperlast's commitment to its customers is demonstrated by its attainment of industry recognised standards including certification to ISO 9001:2000.

Dow Hyperlast works with its customers to develop the products they need – an approach which has earned it accolades such as the Queen's Award for Technological Achievement and which ensures that projects are progressed quickly from ideas to manufacture.

Polyurethanes are impressively versatile materials, varying from soft and flexible to hard and rigid, with an infinite variety in between. Toughness resilience, wear resistance, flexibility and tolerance of harsh and aggressive environments make them ideal for a huge range of applications. Tonnes protect sub-sea pipelines and a few grammes adds vital performance in Formula One racing cars. A spray-on coat can withstand abrasion from tumbling aggregates or provide vital waterproofing and concrete protection. Simple mouldings add elegance to furniture and extra ingredients make composites with ever more extraordinary properties.

Dow Hyperlast products are used for a multitude of applications which include anti-slip coatings to ballistics protection; electrical insulation; furniture edging; materials handling; rapid prototyping; security protection; shock, noise and vibration reduction; and concrete protection.

Understanding form and function, a willingness to work closely with the customer and skills in asking the right questions in terms that engineers use, means new projects start fast and progress rapidly to full-scale production.

The following pages act as an introduction and overview to Dow Hyperlast's extensive product portfolio.

Contents

Applications.....	5	DYNATHANE™ Microcellular Elastomers.....	6
AUTOTHANE™ Shock, Vibration and Harshness Management	7	HYPERKOTE™ High Performance Sprayable Coatings.....	4
DIOPLEX™ Polymeric Plasticisers.....	3	HYPERLAST™ Polyurethanes in Electrical and Electronic Applications.....	5
DIOREZ™ Polyester Polyols for High Performance Polyurethanes.....	3	Offshore and Marine Engineering	7
DIPRANE™, HYPERLAST™ and MONOTHANE™ Polyurethanes for Material Handling and Industrial Engineering		PYROLAST™ Modular Security Vault Panels.....	3
HYPERLAST™ Polyurethanes in Air and Liquid Filtration.....	5	Subsea Flowline Insulation	7
DURAMOULD™ Systems for Mould Making, Rapid Prototyping, Pattern and Tooling.....	6	TRAFFIDECK™ Waterproofing and Surfacing Systems.....	4
DURELAST™ Furniture Edge Profiling	6	XiTRACK™ Polyurethanes for the Rail Industry.....	4

PYROLAST™ Modular Security Vault Panels

PYROLAST™ is engineered primarily for use in modular vault panels, but has wider applications for security related products. A tough, high-performance polyurethane elastomer, PYROLAST™ is combined with traditional materials to withstand high levels of thermal and physical attack.

- *Fire proof and burglar proof*
- *Stronger yet lighter than conventional panel*

PYROLAST™ vault panels have a patented composite construction:

- *A hardened steel matrix gives anti-penetration properties*
- *Hardwood chip infill for excellent fire resistance and anti-thermal attack*
- *PYROLAST™ - tough, castable elastomer to encase the system*
- *Steel skin integral to the construction method and provides exterior painted surface*

PYROLAST™ panels are much lighter than conventional high-density concrete/steel panels making them easier and quicker to install and/or relocate.



DIOPLEX™ Polymeric Plasticisers

- *Migration resistant*
- *Food contact compliant*
- *Extensive range*
- *Dedicated plant*
- *Bespoke packaging*

DIOPLEX™ polymeric plasticisers offer the compounder an extensive range of plasticisers for the PVC and nitrile rubber industries. Once compounded, DIOPLEX™ plasticisers are migration resistant and are able to withstand aggressive environments such as high temperature, solvents, mineral oils and vegetable oils, allowing the

compound to retain flexibility and performance in operation.

Dow Hyperlast is recognised as a force in polymeric plasticisers. With state of the art production and the experience gained from the many years of manufacture and technical support given to the industry, Dow Hyperlast has an extensive range of polymeric plasticisers to offer. This means we can provide the compounder with an unparalleled selection within our chosen area of Industry.

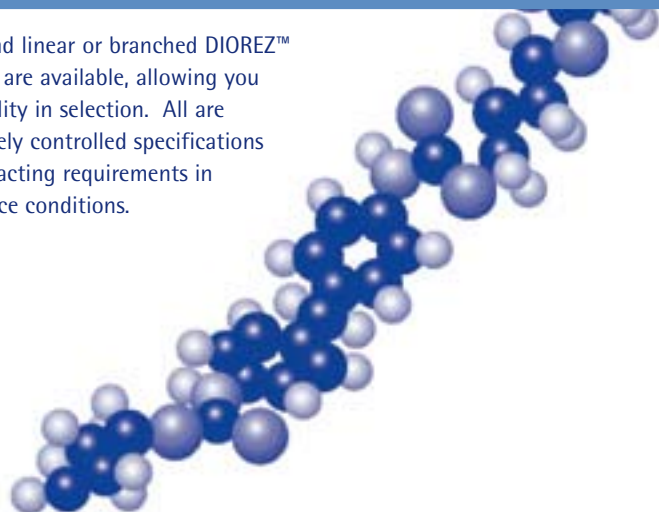


DIOREZ™ Polyester Polyols for High Performance Polyurethanes

- *Extensive range meets diverse needs*
- *Customised polyols available in low or high volume*
- *Consistent high quality and performance*

DIOREZ™ polyester polyols are designed for reaction with di-isocyanates to produce high quality polyurethanes such as microcellular elastomers, adhesives, fabric coating systems, foams, surface coatings and high performance solid thermosetting and thermoplastic elastomers.

Liquid or solid and linear or branched DIOREZ™ polyester polyols are available, allowing you maximum flexibility in selection. All are produced to closely controlled specifications and will meet exacting requirements in a variety of service conditions.





Dow Hyperlast

Rail - Polyurethanes for the Rail Industry

Applications in the heavy and light rail industry extend from stabilisation and vibration reduction on the Permanent Way to protection and safety improvements to buildings and bridges.

SERIES-SIX – vibration damping and stray current insulation for light and heavy rail.

XiTRACK™ – stabilisation of the Permanent Way reducing maintenance in track renewals and upgrade.

DYNATHANE™ – novel application for slab track embedment to reduce vibration and noise.

TRAFFIDECK™ – Waterproofing and anti-slip surfaces for footbridges, platforms and Car Parks improving safety for rail users.



TRAFFIDECK™ - Waterproofing and Surfacing Systems

TRAFFIDECK™ waterproofing and surfacing systems offer specifiers and installers a unique alternative to traditional waterproofing techniques, the systems have been researched and developed with the following objectives in mind:

- *High build capability*
- *Awkward detailing problems eliminated*
- *Speed of application*
- *Instant setting membrane*
- *Fast return to service*
- *Application at low temperatures*
- *Odourless*
- *Solvent free*

Each individual component has been developed with environmentally friendly considerations in mind, and are fully VOC compliant. They are truly innovative using cutting edge technology.

Traffideck systems are used across a range of market sectors and have many uses; key areas of business are parking decks, roofs and balconies, bridges and marine applications.



HYPERKOTE™ High Performance Sprayable Coatings

HYPERKOTE™ offers end clients a range of rapid cure and fast drying coatings designed for various industrial and automotive protective applications. The HYPERKOTE™ range of tough durable coatings provide:

- *Fast installation*
- *Non-Slumping*
- *Minimal Preparation of substrate*
- *Fast return to Service*
- *Solvent Free high build*
- *Corrosion protection*
- *Choice of colour*
- *Chemical Resistance*
- *Reduced Noise Transmission*

From flexible elastomers to high hardness chemically resistant coatings, the HYPERKOTE™ EMH range comprises of polymers that span from 85 Shore A to

80 Shore D, products that will suit a wide variety of applications.

Utilising solvent free, spray technology, the HYPERKOTE™ EMH range allows the formation of seamless coatings that are capable of covering details, protrusions and can be applied evenly to both horizontal and vertical surfaces. The extensive experience of Dow Hyperlast in this type of polymer technology has led to the optimisation of the HYPERKOTE™ EMH range in terms of process and performance.

HYPERKOTE™ materials are based on polyurethane and polyurea technology. They have been developed to protect and extend the design life of a variety of substrates. The products are solvent free and therefore have zero VOC.



HYPERLAST™ Polyurethanes for Material Handling and Industrial Engineering Applications

- *Physical properties engineered to match performance needs*
- *Versatile and easy to use*
- *Resists abrasion, corrosion, impact and tearing*
- *Precise dimensions with high adhesion to other materials*

The DIPRANE™, HYPERLAST™ and MONOTHANE™ polyurethane elastomer ranges demonstrate the versatility and toughness of urethane chemistry.

DIPRANE™ elastomers are able to withstand the wear and tear from countless impacts in ore and mineral extraction processes, to materials tailored to give specific performance such as solvent resistance or antistatic properties.

HYPERLAST™ elastomers are able to give excellent mechanical and dynamic performance combined with excellent hydrolysis resistance, which makes them more suitable for use in wet or humid environments.

MONOTHANE™ elastomers are designed for printing and mechanical handling applications. The MONOTHANE™ range is single component and ready formulated.

ROTAKOTE™ has been specifically designed for roller coverings in material handling applications. ROTAKOTE™ is a rapid reacting, elastomer system. It has been designed to be applied as a poured material onto a rotating core to produce a tough elastomeric roller covering.



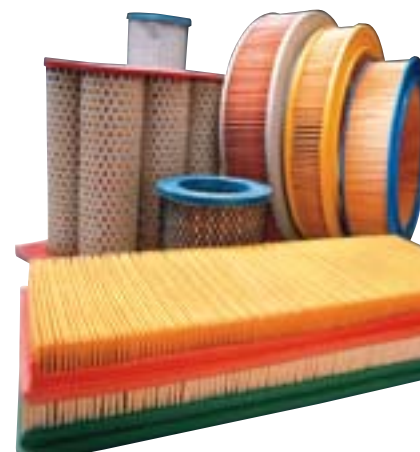
HYPERLAST™ Polyurethanes in Air and Liquid Filtration

- *Effective sealants and adhesives*
- *Resists solvents, fuel, oils, greases and salts*
- *Will perform consistently over a wide temperature range*
- *Available as flexible or rigid elastomers, foams and adhesives*
- *Can be supplied in a wide range of colours*

Dow Hyperlast has led the development and supply of polyurethanes to the filter industry for over 30 years, keeping inline and ahead of the increasingly stringent demands of this market. HYPERLAST™

elastomers and foams for air and liquid filtration are extremely versatile. There are no restrictions on shape and so the polyurethane can fit in awkward situations and difficult environments and the materials have exceptional tear resistance properties.

Processing costs are reduced as these materials do not require high-temperatures for moulding and curing and the simple machinery needed for processing polyurethane is comparatively inexpensive.



HYPERLAST™ Polyurethanes in Electrical and Electronic Applications

- *Protection of components from moisture*
- *Provides high-insulation performance*
- *Resists impact and high temperatures*
- *Offers excellent mechanical strength*

HYPERLAST™ polyurethanes for the electrical and electronics industries are designed to protect and insulate many different components in a variety of conditions.

HYPERLAST™ can be moulded or spray applied, and the materials are tailored to suit the customers' processing methods and performance requirements.





Dow Hyperlast

DURAMOULD™ Systems for Mould Making, Rapid Prototyping, Pattern and Tooling

- *Hand and machine processing options*
- *Wide variety of elastomers*
- *Excellent reproduction with minimal shrinkage*

DURAMOULD™ polyurethane elastomers and plastics provide a range of materials that have been specifically designed for use in the cast concrete, rapid prototyping and tooling industries. The product range includes a variety of different hardness systems that allow the designer and processor to simulate a variety of different materials.

DURAMOULD™ can be easily moulded, the materials have been tailored to meet the needs of short-run line production to one off individual castings. The aim is to provide you with a product to suit your processing methods and that meets your performance requirements.



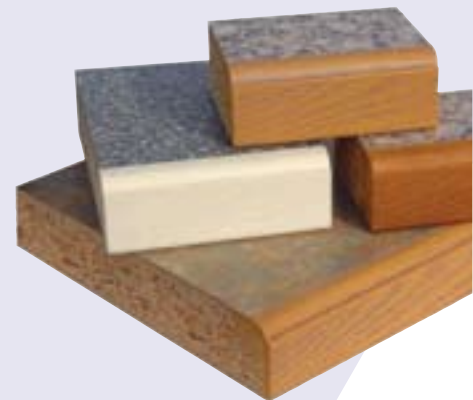
DURELAST™ – Furniture Edge Profiling

- *Colours that do not chip, peel, scratch or fade*
- *Suitable for proud, recessed, textured and complex profiles*
- *Seamless, hygienic moisture-resistant seals*
- *Simple, cost effective processing*
- *Resistant to impacts and abrasion*
- *Adheres well to wood surfaces and cannot be removed*

DURELAST™ polyurethane elastomers are high-performance materials designed for furniture profiling and architectural finishing.

They are used widely in domestic and commercial environments such as retailers, banks, airports, hotels, schools, kitchens and restaurants.

The DURELAST™ range is structured around six neutral coloured base materials, which offer a flexible choice of chemical and physical properties for individual application requirements.



DYNATHANE™ Microcellular Elastomers

- *Excellent Anti-Vibration performance*
- *Resists hydrolysis, fungal and microbial attack*
- *High volume compressibility and outstanding dynamic durability*
- *Can be processed in a variety of densities*

DYNATHANE™ provides a simple solution to impact, shock, noise and vibration problems and is ideal where weight or size restrictions limit elastomers. As such, it is suitable for a wide range of applications,

particularly in the mechanical engineering, construction and leisure industries. DYNATHANE™ performs consistently well under static and dynamic loads and has excellent load/ deflection characteristics. In addition, this material exhibits good abrasion resistance, thermal stability, low compression set and can be processed in a range of densities from 300 – 650 kg/m³. This system is based on MDI prepolymer technology, which offers high performance polyurethane and excellent economies in processing through short in- mould times.



Offshore and Marine Engineering

- *Withstanding aggressive environments*
- *Easy processing and application*
- *Spray or cast*
- *Impact and wear resistant*
- *Proven performance over many years*

Dow Hyperlast is a leading polyurethane engineering materials supplier to the marine and offshore industry, with a marine range of polyurethanes that is designed for the aggressive offshore environment.

The extensive HYPERLAST™ range of materials, which include soft flexible elastomers to tough rigid polyurethanes, is available.

These offer the processors and operators polymers that are highly durable, resilient and resistant to abrasion and water attack and can be applied by spray, mould or rotational casting.



Subsea Flowline Insulation

Since 1985, Dow Hyperlast has produced a range of elastomer systems based on solid and syntactic polyurethane.

Designed to be moulded or rotationally cast onto pipes, these engineered polyurethane systems offer stand-alone protection to oil and gas flowlines throughout the world.

Easy to process and suitable for all conventional lay methods, these specialist elastomer systems resist impact, sunlight and ozone to provide an integral system that maintains flow assurance requirements over the life of the field.

A complimentary range of polyurethane systems provides insulation and protection for field

joints, manifolds, risers, trees, spools and related subsea hardware.

Compatible with both polyurethane and polyolefinic systems, excellent bonds are achieved by careful pre-treatment of the parent coatings.

Increasing water depths and product temperature creates the need for novel solutions to insulation and protection. HYPERLAST™ Syntactic DW512 materials capable of providing long term flowline insulation at water depths of 3000 metres, have been developed by our R and D chemists, who with over 30 years formulating experience are constantly improving the materials' performance.



AUTOTHANE™ - Shock, Vibration and Harshness Management

- *Resistant to oils and fuels*
- *Ozone resistant*
- *Bespoke design service*
- *Global supply and local manufacture*

AUTOTHANE™ Microcellular elastomer controls shock, impact and vibration in automotive and commercial vehicle suspension systems. In use as jounce bumpers, tie - rod isolators, shock absorber mounts and many other applications, AUTOTHANE™ is proven

to perform in this extremely dynamic area allowing excellent handling and ride control.

The AUTOTHANE™ engineering team design and prove prototype products prior to them being released to the global licensee network that allows the automotive supply company a local manufactured source of AUTOTHANE™ components.





Dow Hyperlast

engineering polyurethane excellence

Dow Hyperlast,
Station Road, Birch Vale, High Peak,
Derbyshire SK22 1BR
United Kingdom
Telephone: +44 (0) 1663 746518
Fax: +44 (0) 1663 746605
Email: help@dowhyperlast.com
Web: www.dowhyperlast.com

Dow Hyperlast has a policy of continual improvement, so please ensure you are in possession of the latest issue of the Product Information sheet for the product(s) you are planning to use. Although every effort has been made to ensure the accuracy of the information contained herein, Dow Hyperlast gives no warranty that the information is accurate and shall in no circumstances be liable to any person if it is not. The customer must satisfy himself as to the suitability of any of Dow Hyperlast's products for their requirements. Trade marks such as DIOREZ™ are the property of Hyperlast Limited.

Ref: psg-corporate-eng-press-a8