SMI Pollycoatings

www.smipumps.co.za

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Automotive

Underneath every kilometer traveled lies a silent hero - SMI Pumps that braves the elements and protects your ride. Our spray-on bed liners guarantee no cracking, warping, bubbling, or flaking for three years!

ProClassic

Tried and tested over 30 years, SMI Pumps Pro-Classic is the go-to spray-on for protecting your ride. No more slipping cargo - this lining's flexibility keeps everything in place. Plus, it sticks to anything from steel and wood to fibreglass and aluminum.

ProGuard

Whether you need fire-rated, food-safe, abrasion resistant, or high chemical resistant solutions, we've got the perfect high-performance application for you. Choose from our range of high-pressure polyure-thane, polyu rea, or hybrid chemicals.

ProClassic

Say hello to the latest in aliphatic polyurea technology. With excellent physical properties and UV protection, SMI Pumps Pro-Trend is on par with high-end automotive paints. This means your lining stays pristine - no yellowing or discolouration - even in white or light colours.

More reason to choose SMI Pumps

Spray it on and seal it in just 30 seconds! With smooth application and superior interlaminar adhesion, our linings can be built up to virtually any thickness.

- Reduced fire risk with no static electricity build-up
- Reduces surface noise
- Secure of theft or accidental detachment
- Safe from sun exposure
- Can add any accessories
- Prevents corrosion with a direct, airtight, and water-tight bond
- Low maintenance. Drop-liners need Tectyl coating re-application every 6 months
- Increases your resale value

Waterproofing

Why choose SMI Pumps?

Because you can spray it on and seal it in just 30 seconds! With easy application and exceptional interlaminar adhesion, our linings can be built to nearly any thickness.

SMI Pumps Pro-HCP makes waterproofing a breeze with its unmatched adhesion and smooth finish. Featuring advanced aluminised chemicals, it not only keeps water out but also reflects heat, helping you save on cooling costs. Perfect for pools, decks, flooring, and more.

SMI Pumps Pro-HCP is suitable for use on concrete, steel, IBR sheeting, fiberglass, tiled roofs, asbestos, and Nutech surfaces.

Waterproofing

Product Features

- UV stable
- Chemical and corrosion resistant
- 300% elongation, 95% elastic recovery
- Solvent-free
- Non-toxic
- No special permitting or clothing required

Why choose SMI Pumps?

SMI Pumps Flexicrete is a custom-engineered co-polymer blend for cement, enhancing adhesion, strength, and flexibility, while offering resistance to chemicals, water, frost, and dust.

Applications

Corrosion protection of steel-reinforcing rods in concrete and steel structures.
Damp-resistant layers.
Flooring for dairies, food factories, and fertiliser stores where improved chemical resistance is required.
Industrial flooring, screeds, and topping.
Leveling floors before laying tiles, wood blocks, etc.
Lining of effluent ducts, tunnels, and canals.
Nosing for indoor and outdoor stairs.
Patching and repairing concrete areas.
Screeds for bathrooms and showers.
Waterproofing flat roofs and balconies.
Water-resistant adhesives for tiles, aggregates, glass, steel, etc.
Water-resistant rendering for interior or exterior walls.

Industrial

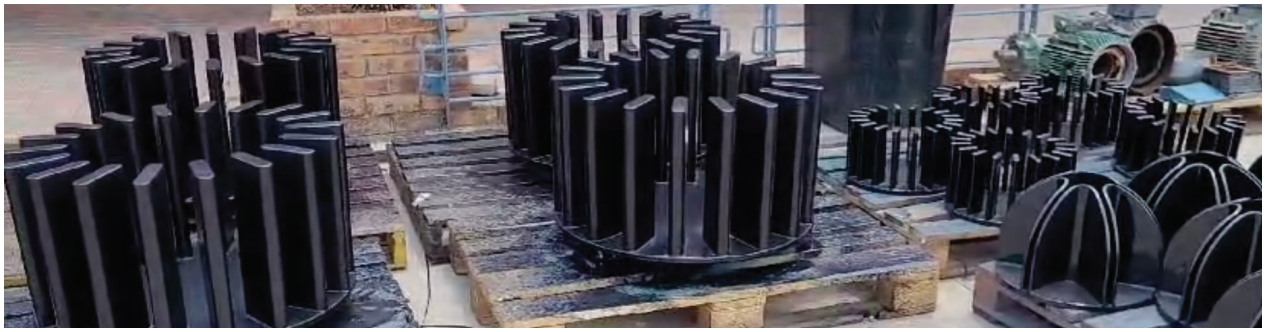
No matter if it's a large warehouse or a busy manufacturing plant, rely on SMI Pumps Flexicrete to safeguard and maintain your industrial space. Our spray-on coatings are built to withstand the harshest conditions. Once applied, they firmly bond with surfaces, preventing lifting or delamination. Plus, our coatings can be tailored to your specific needs.

Looking for a thin layer of subtle protection? We've got you covered.

In need of a thicker layer for robust protection? We've got that covered too!

Worried about downtime?

It's almost nonexistent. Thanks to our fast-setting formula, you'll be back to business in under 24 hours.



Equipment

Need a reliable polyurethane or polyurea dispenser that gets the job done? Our dispensers are designed for ease of use while delivering precise and consistent material application every

Low-Pressure Industrial Applicator

If you're looking for a compact, lightweight, and durable applicator that can handle larger jobs, this dispenser is the perfect choice. It delivers plenty of material to efficiently cover large areas like decks, floors, and industrial spaces, while still handling smaller projects like trucks, boats, and trailers with ease.

High-Pressure Applicator

Need to apply high-performance elastomers or foams? Graco's high-pressure dispenser is the perfect solution. It provides precise control and accuracy for proportioning plural-component materials. Whether you're tackling small projects or need high output, we offer a variety of models to meet your requirements.

Low-Pressure Automotive Applicator

Perfect for smaller coating jobs, this dispenser is lightweight and compact. It's easy to transport and won't take up space in your work-shop.

Lightweight Polyurethane Applicator

An ideal alternative to a dispensing system, the AirDriven Cartridge Spraygun is the entry level spray-on elastomer applicator. Compact and lightweight, it's your partner for small onsite jobs. Pneumatically-driven, it doesn't need electricity.

Supplies

Why choose SMI Pumps?

From replacement parts to accessories, we stock everything you need for your coating applications. We've partnered with industry leaders to ensure you get the best results every time.

Mixing tubes

Masking Tape

Wire trim

Nozzels

At SMI Pumps, we boast a 3-year national warranty, OEM approval, and ISO certification, ensuring top-notch quality and reliability in all our products.

Spray-On Polyurethane

Better coverage and much faster than conventional methods.

It's Seamless

A seamless coating that creates an air- and watertight bond.

All-Weather

It can take all Mother Nature can throw at it, and still flexes.

Endless Applications

Waterproofing, Flooring, Agriculture, Mining, and Industrial applications.

Chemical warfare

It's resistant against most acids, fuels, fertilisers, and chemical solutions.

Sticks to virtually Any Surface

Concrete, Steel, Wood, IBR, Aluminium, Fiberglass, Foams, and Polystyrene.

Other Application Possibilities

Waterproofing; Workshop, Warehouse, & Container flooring; Store Rooms; Sleeping Quarters; Abattoirs; Separation Tanks; Battery Boxes; Parking Decks; Refrigeration Rooms; Dams & Feeding Troughs; Mobile Clinics; Silos; etc.

OEM APPROVED

ISO 9001:2015 CERTIFIED

EXPERTS SINCE 1983

3 YEAR NATIONAL WARRANTY

112 POLYURETHANE

Technical Data Sheet

Part A – SMI Pumps 112 HARDENER (ISO) - Part No H112
Part B – SMI Pumps 112 RESIN - Part No RB112 or RC112

Description & Product Type

112 POLYURETHANE is a two-part, 100% solids elastomeric polyurethane lining system that cures quickly and generates heat. It contains no VOCs or solvents and is specially formulated for superior chemical and abrasion resistance. (Can be pigmented in different variations.)

General Properties

- Superior weather resistance
- Exceptional corrosion resistance
- Strong chemical resistance
- Ideal for primary and secondary containment
- Suitable for chemical processing equipment, tank linings, and wet wells
- Effective in immersion service
- Compatible with water and wastewater applications
- Lining thickness ranges based on the application, typically starting at 2mm and can be applied in unlimited thicknesses.
- Outstanding abrasion resistance
- Exceptional impact resistance
- Superior casting material
- - Excellent slip resistance
- - Effective noise reduction properties

Typical Uses

- The spray-on application forms a seamless, monolithic lining that adapts to any shape, size, or form.
- Provides exceptional protection against abrasion, impact, and corrosion.
- Elastomeric properties enable application on surfaces subject to vibration, expansion, contraction, movement, flexing, abrasion, and impact.
- Bonds effectively to almost all substrates, including metals, concrete, wood, and fiberglass, regardless of size or shape.
- Helps reduce noise caused by vibration and impact.
- Stable in temperatures ranging from -40°C to 80°C.

- Can withstand light foot traffic and light vehicular movement.
- Suitable as a casting material for material handling equipment like mountings, chutes, hoppers, and rollers.
- Can achieve aggressive slip resistance by incorporating aggregate into the lining.
- Acts as a seamless waterproof membrane.

Processing

Lower ambient temperatures (below 18°C) will increase the viscosity of the components and may reduce compatibility. Both components, especially SMI Pumps 112 RESIN, should be thoroughly mixed before use. Additionally, application equipment holding tanks should be well-agitated prior to processing.

Chemical Resistance:

Offers strong resistance to a variety of common chemicals, including acids, alkalis, oils, and cleaning agents. Test results are based on submerged specimens after 200 hours at room temperature, with submersion tests following the SABS standard.

1 = 0-5% decrease in mechanical properties
2 = 5-15% decrease in mechanical properties
3 = 15%+ decrease in mechanical properties

TEST MEDIA	RESULT	TEST MEDIA	RESULT
Sulphuric Acid (10%)	1	Acetic Acid (2%)	1
Sulphuric Acid (25%)	1	Acetic Acid (5%)	1
Sulphuric Acid (50%)	2	Acetic Acid (10%)	1
Sulphuric Acid (60%)	2	Acetic Acid (50%)	3
Formic Acid (2%)	1	Phosphoric Acid (25%)	1
Formic Acid (5%)	1	Phosphoric Acid (50%)	1
Formic Acid (10%)	2	Lactic Acid (45%)	2
Hydrochloric Acid (45%)	2	Caustic Soda Lye (10%)	1
Linseed Fatty Acid	1	Caustic Soda Lye (40%)	1
Boracic Acid (4%)	2	Caustic Soda Lye (50%)	1
Tannic Acid (20%)	1	Potash Lye (20%)	1
Sugar Solution (30%)	1	Chlorine Lye (3%)	2
Saline Solution (30%)	1	Formaldehyde (37%)	1
Hydrogen Peroxide (10%)	1	Ammonia (5%)	1
Soda Solution (20%)	2	Xyol	2
Citric Acid (10%)	1	Methylene Chloride	3
Petrol (Super)	3	Methanol	2

Substrates

112 POLYURETHANE bonds effectively to a wide range of substrates, including metals, wood, concrete, brick, fiberglass, and geotextiles.

Overcoating

It is recommended that any over-coating be applied within 24 hours of the initial application. If this time frame is exceeded, lightly scuff the cured material with 80-100 grit sandpaper and clean it with MEK or Methylene Chloride. Avoid excessive solvent application, as it can impact the cured product's physical properties (wear elbow gloves and safety goggles when working with solvents). For over-coating, ensure the new layer overlaps the existing coating by at least 300mm.

For applications on old or weathered surfaces, it's advised to apply a suitable primer or bonding agent to the substrate to ensure proper adhesion between the layers. For a list of recommended bonding agents, please contact SMI Pumps.

Volatile Organic Content

None. 100% solids. No solvents

Dry Film Thickness Range - (subject to application)

Varies based on application, typically used at a minimum of 2mm up to unlimited thickness.
Automotive Coating Thickness: Floor/Tailgate/Rail 3 to 5+ mm, Walls 2+ mm.
Waterproof Coating Thickness: 2.5mm to unlimited.

Shelf Life And Container Size

Part A – SMI Pumps 112 HARDENER (ISO)	: six months, unopened	: 25kg / 200kg Drums.
Part B – SMI Pumps 112 RESIN	: six months, unopened	: 25kg / 200kg Drums.

Chemical Properties	Chemical Properties	Chemical Properties
Specific Gravity (grams/cc)	1.08 (±0.02)	1.00 (±0.02) 5
Viscosity, CPS at 25°C (cP)	500 - 1000	50-1650 100%
Solids by Volume/Weight	100%	0
Volatile Organic Compounds,	0	1
Mix Ratio, parts per volume	1	100 (±0.02)
Mix Ratio, parts per weight	112(±0.02)	Off-white / black
Base Colour	Light Amber	6 months
Shelf Life - Unopened Containers	6months	
Gel Time, seconds at 25°C	18-25 seconds	
Tack-free, seconds	40-60 seconds (@25°C)	
Density (gcm3)	1.02 – 1,07	
Theoretical Coverage (dft)	1.05kg / 1m2 at 1mm thick	
UN Code	1A1 423551	

Typical Physical Properties	Chemical Properties	Chemical Properties
Hardness (Shore A Sprayed)	ASTM D-2240	88A(±5)
Tensile Strength (MPa)*	ASTM D-412 / DIN53504	15 – 21
Tear Resistance (N/mm)** Die C	ASTM D-624 / DIN 53515	38 – 53
Elongation at break (%)*	ASTM D-412 / DIN 53504	250 – 350
Impact Resistance. 100ml thickness sample (in-kgs)	GARDNER TESTER	72
Taber Abrasion Resistance (mg of loss/1000 cycles)	ASTM D-4060	10 – 15
CS17 Wheel; 1000 grams weight	ASTM D-149	300
Dielectric Strength (volts/mil)	ASTM D-257	6 x 10 (12)
Volume Resistancy (ohm/inches)	ASTM D-150	5.4
Dielectric Constant (MHz)	ASTM D-150	0.058
Dissipation Factor (MHz)	ASTM G-8	Pass
Cathodic Disbonding		

**Properties were checked of SMI Pumps112 POLYURETHANE 3.5mm thickness*

Colour Options

Aromatic Isocyanate Polyurethanes contain chromophores that interact with light. When un-pigmented or lightly pigmented polyurethane containing aromatic isocyanates is exposed to visible light (UV rays), it may discolor, transitioning from off-white to yellow and eventually to reddish-brown. While visible light may cause yellowing or discoloration, it has little to no impact on the physical properties of the cured product. Reports suggest that black or brown pigmented polyurethane shows the least discoloration or weather fading when exposed to prolonged UV light.

For applications requiring specific polyurethane colors, an aliphatic hybrid topcoat can be applied, though it is not recommended for high-traffic areas. Alternatively, a 100% solids aliphatic system offers excellent UV resistance comparable to most commercial-grade automotive paints.

Safety Precautions - For all Health Considerations, please refer to the SMI Pumps Material Safety Data Sheets

SMI Pumps112 POLYURETHANE contains isocyanates, which may cause allergic reactions on the skin or in the respiratory system. Do not use this product if you have chronic respiratory issues (such as asthma) or have had reactions to isocyanates. Avoid inhaling vapors. All personnel in the application area, and until the vapors have cleared, should wear appropriate respirators. In the event of severe exposure or an adverse reaction, move affected individuals to fresh air immediately and seek medical help.

Important: For further information and regulatory guidelines, consult the SMI Pumps Material Safety Data Sheets.

Read and adhere to the warning labels on all components. For professional use only. While the information and recommendations provided are believed to be accurate, there may be unknown risks. All warranties, whether expressed or implied, including warranties of fitness for a particular purpose or application, are expressly disclaimed.
SMI Pumps 112 POLYURETHANE contains isocyanates, which may cause allergic reactions on the skin or in the respiratory system. Do not use this product if you have chronic respiratory issues (such as asthma) or have had reactions to isocyanates. Avoid inhaling vapors. All personnel in the application area, and until the vapors have cleared, should wear appropriate respirators. In the event of severe exposure or an adverse reaction, move affected individuals to fresh air immediately and seek medical help.

For your protection: Any suggestions regarding the products' uses, applications, storage, and handling are based on the opinions of SMI Pumps. Users should perform their own tests to assess the suitability of these products for their specific purposes and the recommended storage and handling methods. The toxicity and risk characteristics of products from SMI Pumps may vary when used with other materials in manufacturing or application processes. The resulting risk characteristics should be evaluated and communicated to end-users and processors.

Due to the many factors that can influence results, SMI Pumps provides no warranties, expressed or implied, other than that the material meets its current standard specifications. SMI Pumps disclaims all other warranties, including but not limited to those of merchantability or fitness for a particular purpose. No statements made herein should be considered a representation or warranty. SMI Pumps's liability for any claims arising from breach of warranty, negligence, strict liability, or otherwise shall be limited to the purchase price of the material.

This document is drafted in accordance with ISO 9001:2008 standards as well as the Occupational Health and Safety Act (Act 85 of 1993)

112 POLYURETHANE

Polyurethane Fact Sheet and Application Advantages

Part A – POLYWHIZ 112 HARDENER (ISO) - Part No H112
Part B – POLYWHIZ 112 RESIN - Part No RB112 or RC112

Wide Range of Hardness

The classification of hardness for polyurethane relies on the prepolymer's molecular structure can be manufactured from 65 SHORE A to 90 SHORE D

High Load Bearing Capacity

Polyurethane has a high load capacity in both tension and compression. Polyurethane may undergo a change in shape under a heavy load, but will return to its original shape once the load

Flexibility

Polyurethanes perform very well when used in high flex fatigue applications. Flexural properties can be isolated allowing for very good elongation and recovery properties.

Abrasion & Impact Resistance

For applications where severe wear prove challenging, polyurethanes are an ideal solution even at low temperatures.

Tear Resistance

Polyurethanes possess high tear resistance along with high tensile properties.

Resistance to Water, Oil, Grease & various Acid based products

Polyurethane's material properties will remain stable (with minimal swelling) in water / oil / grease / acids. Polyether compounds will last many years in subsea applications.

Electrical Properties

Polyurethanes exhibit good electrical insulating properties. According to internal tests conducted our polyurethane did not show any static build-up.

Electrical Properties

Polyurethanes exhibit good electrical insulating properties. According to internal tests conducted our polyurethane did not show any static build-up.

Wide Resiliency Range

Resilience is generally a function of hardness. For 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 in the 40-65% resilience are used. In general, toughness is enhanced by high resilience.

Polyurethane bonds to a wide range of materials during the manufacturing process. These materials include other concrete, steel, IBR, Aluminium, Fibreglass, and wood. This property makes polyurethane a versatile material for a wide range of application possibilities.

Performance in Harsh Environments

Polyurethane is very resistant to temperature extremes, meaning harsh environmental conditions and many chemicals will not cause material degradation.

Mold, Mildew & Fungus Resistance

Most polyether based polyurethanes do not support fungal / mold / mildew growth and are therefore highly suitable for tropical environments and FDA applications. Special additives can also be added to reduce this in polyester materials as well.

Color Ranges

Varying color pigments can be added to polyurethane in the manufacturing process for applications where Ultraviolet exposure to the surface is minimal.

Short Production Lead Times

Compared to conventional thermoplastic materials polyurethane has a relatively short lead time with significantly more economical tooling an application costs.

Advantages of Polyurethane When Compared to Conventional Materials

...vs. Rubber	...vs. Metal	...vs. Plastic
High abrasion resistance	Lightweight	High impact resistance
High cut & tear resistance	Noise reduction	Elastic memory
Superior load bearing	Abrasion resistance	Abrasion resistance
Thick section molding	Less expensive fabrication	Noise reduction
Colorability	Corrosion resistance	Variable coefficient of friction
Oil resistance	Resilience	Resilience
Ozone resistance	Impact resistance	Thick section molding
Radiation resistance	Flexibility	Lower cost tooling
Broader hardness range	Easily moldable	Low temperature resistance
Castable nature	Non-conductive	Cold flow resistance
Low pressure tooling	Non-sparking	Radiation resistance
	Non-Static	

For your Protection: Suggestions made concerning the products and their uses, applications, storage and handling are only the opinion of SMI Pumps. Users should conduct their own tests to determine the suitability of these products for their own particular purposes, application and of the storage and handling methods herein suggested. The toxicity and risk characteristics of products made by SMI Pumps will necessarily differ from the toxicity and risk characteristics developed when such products are used with other materials during a manufacturing or application process. The resulting risk characteristics should be determined and made known to ultimate end-users and processors.

Because of numerous factors affecting results, SMI Pumps makes no warranty of any kind, express or implied, other then that the material conforms to its applicable current Standard Specifications. SMI Pumps hereby disclaims any and all other warranties, including but not limited to those of merchantability or fitness for a particular purpose. No statements made herein may be construed as a representation or warranty. The liability of SMI Pumps for any claims arising from or sounding in breach of warranty, negligence, strict liability, or otherwise shall be limited to the purchase price of the material.

112 RESIN WITH 112 HARDENER (ISO)

Introduction

112 RESIN is a polyether-based polyol blend that, when combined with 112 HARDENER (ISO) using appropriate two-component, air-assisted spray equipment, produces high-quality, solvent-free elastomeric coatings with a Shore A hardness of 80 to 85. The reaction between the two components occurs quickly, enabling the material to be applied to vertical surfaces without sagging. At the same time, it maintains good initial flow, ensuring coatings have a smooth, consistent thickness and a high-quality surface finish.

Applications

112 RESIN is perfect for lining surfaces that experience regular wear and tear.

Considerations

The product should be used at temperatures up to 80-85°C to preserve its full physical properties. It can withstand brief temperature spikes up to around 120°C without permanently affecting its physical characteristics.

112 Resin Physical Properties

Appearance	:	White to light amber liquid
Viscosity at 25° (cP)	:	200 – 600cps
Specific gravity at 25°	:	1.08 (±0.02)
UN-Code	:	1A1 423551

Elastomers

The following range of physical properties reflects typical results from laboratory testing of 112 HARDENER (ISO) combined with 112 RESIN at a 0.92% stoichiometry and subjected to the appropriate post-curing cycle.

112 RESIN at ~25°C 100 parts by weight or 100 parts by volume
112 HARDENER (ISO) at ~25°C 112 parts by weight or 100 parts by volume

Pot life (seconds) @ 25°C	:	17 - 23	
Hardness (Shore A Sprayed)	:	80 - 85	
Density (gcm-³)	:	1,02 - 1,07	
Tensile Strength (MPa)	:	9 - 15	DIN 53504
Elongation at break (%)	:	25 - 350	DIN 53504
Tear Resistance (Nmm-1)	:	17 - 25	DIN 53515

Processing

The 112 RESIN component is a blend that may separate during storage. Therefore, drums should be thoroughly agitated before use to ensure uniformity.

The system should only be applied using suitable two-component, air-assisted spray equipment. Information on recommended equipment types is available upon request.

Aerosols produced during spraying can be hazardous to health. Operators should wear air-fed full-face masks or use a high-volume, efficient extraction system for protection. The system must be used in a dry environment, as exposure to moisture or spraying in high humidity could lead to foaming.

Before coating, the surface must be properly prepared by roughening the metal with a wire brush or grinding disk, and any loose material should be brushed or blown off with compressed air. Avoid using solvents that may contain contaminants (such as grease or thinners), as this can cause blisters to form under the sprayed surface. If a solvent is used, ensure it has completely evaporated before starting the spray application.

The compressed air should be properly dried before entering the machine or its day tanks, which must be sealed to prevent moisture from entering. Moisture could react with the 112 HARDENER (ISO) and cause it to solidify.

Packaging

Standard packs consist of plastic drums containing 25kg 112 RESIN – WHITE DRUMS, and 25kg 112 HARDENER (ISO) – BLACK DRUMS. Alternative packaging may be supplied on request.

Storage

1. 112 Resin
   The product should be stored in a dry environment, under cover. Partially used

1. 112 Resin
   containers should be resealed immediately after use to prevent contamination from atmospheric moisture.
2. 112 Hardener (Iso)
   112 HARDENER (ISO) is an isocyanate-based material, and standard industrial hygiene practices should be followed during handling. Safety goggles, gloves, and protective overalls should be worn, and the material should be used in a well-ventilated area. Inhalation of vapors and aerosols should be avoided.

First Aid Measures

1. 112 Resin
   If 112 RESIN comes into contact with skin, wash the affected area with soap and water. For eye contact, rinse thoroughly with running water for at least 10 minutes. Seek medical attention immediately.
2. 112 HARDENER (ISO)
   May cause skin irritation and has a low level of toxicity. However, as some individuals may be particularly sensitive to this material, it is recommended that all users wash thoroughly and avoid prolonged or repeated contact. Eye contact can cause severe irritation and pain. Immediate rinsing with water should be started and continued for at least 10 minutes. (Refer to the attached Safety Data Sheet). Seek medical attention.

Fire

If drums are exposed to fire, keep them cool by spraying with water. To extinguish the fire, use dry chemical, foam, sand, or a water spray.

Spillages And Waste Disposal

1. 112 Resin
   Contain as much of the spill as possible, then wash away the residue with large amounts of water.
2. 112 Hardener (Iso)
   Decontamination can be achieved by allowing overnight contact with a solution made of methanol (30 parts), water (70 parts), concentrated ammonia (1 part), and detergent (1 part). Drums should not be resealed until decontamination is fully completed. (For detailed instructions on handling larger spills, refer to the attached Safety Data Sheet.)
3. Waste Disposal
   Customers are advised to review local, provincial, or national regulations regarding the disposal of waste materials.

112 HARDENER (ISO) is an isocyanate-based material and is considered hazardous by inhalation.

The information provided in this data sheet, as well as any additional information supplied to users, is based on our general experience and reliable testing. However, since we have no control over the specific application of this information, we cannot guarantee the results. Additionally, we make no express or implied warranties regarding the product's merchantability or suitability for a particular use.

The information in this data sheet is accurate to the best of our knowledge, but is provided without warranty or liability. All tests are conducted according to standard methods used by SMI Pumps, and further details are available upon request.

All sales of this product are subject to SMI Pumps's Standard Conditions of Sale.

Safety Data Sheet 112 Hardener (Iso)

Identification Of The Substance / Preparation And Company / UNDERTAKING

Product Description

Diisocyanato diphenylmethane (MDI) based composition.

Hazardous	Cas No.	% (w/w)	Symbol	R Phrases
Diphenylmethanediisocyanate, isomers and homologues	009016-87-9	>25	Xn	R20 R36/37/38 R42

Hazards Identification

Harmful if inhaled.
This product is a respiratory irritant and may act as a potential respiratory sensitizer. Prolonged inhalation of vapors or aerosols at levels above the occupational exposure limit may lead to respiratory sensitization. Symptoms may be delayed for several hours after exposure. Sensitized individuals may experience a heightened reaction to even low concentrations of MDI.

It is irritating to both eyes and skin. Repeated or prolonged contact may cause skin sensitization.

The product reacts slowly with water to produce carbon dioxide, which may cause closed containers to rupture. This reaction speeds up at higher temperatures.

Inhalation

Remove the patient from exposure, keep them warm and at rest, and seek medical attention. Treatment should focus on relieving primary irritation or bronchospasm. If breathing is difficult, administer oxygen by trained personnel. If breathing stops or shows signs of failure, provide artificial respiration.

Skin Contact

Remove contaminated clothing and rinse the affected area immediately with water, followed by soap and water. If symptoms develop, seek medical attention. Contaminated clothing should be thoroughly cleaned.

Eye Contact

Immediately rinse the eyes with eyewash solution or clean water, keeping the eyelids open, for at least 10 minutes. Seek medical attention right away.

Ingestion

If the patient is conscious, rinse the mouth with water and give 200-300 ml (half a pint) of water to drink. Do not induce vomiting. Seek immediate medical attention.

Further Medical Treatment

Symptomatic treatment and supportive therapy as indicated. Following severe exposure the patient should be kept under medical review for at least 48 hours.

Fire-Fighting Measures

Not classified as flammable.
If exposed to fire, it may release harmful and toxic fumes.
Containers could burst if overheated.
Due to the reaction with water that produces CO2 gas, sealing contaminated containers could

lead to a dangerous build-up of pressure.
Combustion products may include carbon monoxide, carbon dioxide, nitrogen oxides, hydrocarbons, and hydrogen cyanide (HCN).

Extinguishing Media

Not classified as flammable.
If exposed to fire, it may release harmful and toxic fumes.
Containers could burst if overheated.
Due to the reaction with water that produces CO2 gas, sealing contaminated containers could

Fire Fighting Protective Equipment

Suitable respiratory protection with full face piece and positive air supply. PVC boots, gloves,

Accidental Release Measures

Clean-up should only be performed by trained personnel.
People dealing with major spillages should wear full protective clothing including respiratory protection.
Evacuate the area. Prevent further leakage, spillage or entry into drains.
Absorb spillages onto sand, earth or any suitable absorbent material. Do not absorb onto sawdust or other combustible materials. Shovel into open-top drums fur further decontamination. Wash the spillage's area clean with liquid decontaminant. Test atmosphere for MDI vapour.
Neutralise small spillage's with decontaminant. Remove and dispose of residues.

Handling And Storage

1. Handling
   Do not breathe vapour/spray. Avoid contact with skin and eyes. Atmospheric concentrations should be minimised and kept as low and reasonably practicable below the occupation exposure limit. The efficiency of the ventilation must be monitored regularly because of the possibility of blockage.

   When the product is sprayed or heated, suitable respiratory protection equipment with positive air supply may be required. Keep equipment clean. A basic essential in sampling, handling and storage is the prevention of contact with water.
2. Storage
   Keep containers properly sealed and store indoors in a well ventilated area. Keep away from frost. Keep away from moisture. If a container is contaminated, do not reseal it. Due to reaction with water producing C02-gas, a hazardous build-up of pressure could result if contaminated containers are re-sealed.

Unsuitable containers	:	copper, copper alloy and galvanised surfaces
Suitable containers	:	HDPE Plastic, stainless steel or mild steel.
Storage Temperature	:	15 - 35°C.

Exposure Controls/Personal Protection

Wear suitable protective clothing, gloves and eye/face protection. MDI can only be smelled if the occupational exposure limit has been exceeded considerably.

Atmospheric concentrations should be minimised and kept as low as reasonably practicable below the occupational exposure limit.

Medical supervision of all employees who handle or come in contact with respiratory sensitizers is recommended. Personnel with a history of asthma-type conditions, bronchitis or skin sensitisation conditions should not work with MDI based products.

The Occupational Exposure Limits listed below do not apply to previously sensitised individuals. Sensitised individuals should be removed from any further exposure.

Exposure Controls/Personal Protection

Suitable respiratory equipment with positive air supply should be used in cases of insufficient ventilation or where operational procedures demand it.

Eye Protection

Chemical safety goggles. Full face shield if splashing is possible.

Gloves

The following protective materials are recommended:

- Neoprene.
- Nitrile butadiene rubber.
- Butyl rubber.
- PVC (Heavy duty).

Thin disposable gloves should be avoided for repeated or long term use.

Other

Overalls (preferably heavy cotton) or Tyvek-Pro Tech “C”, Tyvek-Pro “F” disposable overall.

Contaminated clothing should be thoroughly cleaned before re-use.

Occupational Exposure Limits

	LTEL	8hr TWA	STEL	Notes
Hazardous Ingredient(s)	**pp**	**mg/m**	**ppm**	
Isocyanates, all (as -NCO)	-	0.02	- 0.07	MEL Sen
(Diphenylmethane 4,4'diisocyanate)				

Stability And Reactivity

Incompatible materials and conditions: water, alcohols, amines, bases and acids. Avoid high temperatures.

Hazardous Reactions

Stable at room temperature. Reaction with water (moisture) produces C02-gas. Exothermic reaction with materials containing active hydrogen groups. The reaction becomes progressively more vigorous and can be violent at higher temperatures if the miscibility of the reaction partners is good or is supported by stirring or by the presence of solvents.

Hazardous Decomposition Product(s)

Highly unlikely under normal industrial use

TOXICOLOGICAL INFORMATION

This health hazard assessment is based on information available on similar products.

Inhalation

This product is a respiratory irritant and potential respiratory sensitiser; repeated inhalation of vapour or aerosol at levels above the occupational exposure limit could cause respiratory sensitisation. Symptoms may include irritation to the eyes, nose, throat and lungs, possibility combined with dryness of the throat, tightness of chest and difficulty in breathing. The onset of the respiratory symptoms may be delayed for several hours after exposure. A hyper-reactive response to even minimal concentrations of MDI may develop in sensitised persons.
Median Lethal Concentration (4 hrs.) (respirable aerosol) : 490 mg/m3 (rat).

Skin Contact

Moderate irritant.
Repeated and/or prolonged contact may cause skin sensitisation.
Animal studies have shown that respiratory sensitisation can be induced by skin contact

with known respiratory sensitiser including diisocyanates. These results emphasise the need for protective clothing including gloves to be worn at all times when handling these chemicals or in maintenance work.
Dermal Median Lethal Dose: > 5000 mg/kg (rabbit).

Eye Contact

The vapour, aerosol and liquid are irritant.

Ingestion

Low oral toxicity. Ingestion may cause irritation of the gastrointestinal tract.
Oral Median Lethal Dose > 5000 mg/kg (rat).

Long Term Exposure

Rats have been exposed for two years to a reparable aerosol of polymeric MDI which resulted in chronic pulmonary irritation at high concentrations. Only at the top level (6 mg/m3), there was a significant incidence of a benign tumour of the lung (adenoma) and one malignant tumour (adenocarcinoma). There were no lung tumours at 1 mg/m3 and no effects at 0.2 mg/m3. Overall, the tumour incidence, both benign and malignant, and the number of animals with the tumours were not different from controls. The increased incidence of lung tumours is associated with prolonged respiratory irritation and the concurrent accumulation of yellow material in the lung, which occurred throughout the study. In the absence of prolonged exposure to high concentrations leading to chronic irritation and lung damage, it is highly unlikely that tumour formation will occur. Industrial experience in humans has not shown any links between MDI exposure and cancer developments.

There are reports that chronic exposure by inhalation may result in permanent decrease in lung function.

No birth defects were seen in two independent animal (rat) studies. Fetotoxicity was observed at doses that were extremely toxic (including lethal) to the mother. fetotoxicity was not observed at doses that were not maternally toxic. The doses used in these studies were maximal, respirable concentrations, which are well in excess of defined occupational exposure limits.

Ecological Information

Environmental Fate and Distribution

By considering the production and use of the substance, it is unlikely that significant environ-

mental exposure in the air or water will arise.

Persistence and Degradation

Immiscible with water, but will react with water to produce inert and non-biodegradable solids. Conversion to soluble products, including diamino - diphenylmethane (MDA), is very low under the optimal laboratory conditions of good dispersion and low concentration. In air, the predominant degradation process is predicted to be a relatively rapid OH radical attack, by calculation and by analogy with related diisocyanates.

Toxicity

By comparison with an analogous product, the following values are anticipated.

LCO (zebra fish) > 1000 mg/1
EC50 (Daphnia magna) (24 hour) > 1000 mg/1
EC50 (E.Coli) > 100 mg/1

The measured ecotoxicity is that of the hydrolised product, generally under conditions maximising production of soluble species. Even so, the observed ecotoxicity is low/very low. A pond study showed gross contamination caused no significant toxic effects on a wide variety of flora in all trophic levels (including fish). no detectable diaminodiphenylmethane (MDA), and no evidence of bioaccumulation of MDI or MDA.

Disposal Considerations

The generation of waste should be avoided or minimised wherever possible. Disposal should be in accordance with local, state or national legislation. Untreated material is not suitable for disposal. Waste, even small quantities, should never be poured down drains, sewers or water courses.
Small quantities and empty drums - pre-treat to neutralise prior to disposal.
Large quantities - incinerate under approved controlled conditions, using incinerators suitable for the disposal of noxious chemical waste. Empty drums should be decontaminated and either passed to an approved drum reconditioned or destroyed.
See also brochure PU 193-1 (see section 16).

Transport Information

Not classified as dangerous for transport.

Regulatory Information

EC Classification	:	HARMFUL
Hazard Symbol	:	Xn
Risk Phrases	:	R20 - Harmful by inhalation. R36/37/38 - Irritating to eyes, respiratory system and skin R42 - May cause sensitisation by inhalation.
Safety Phrases	:	S22 - Do not breathe dust. S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S28 - After contact with skin, wash immediately with plenty of warm soapy water. S38 - In case of insufficient ventilation, wear suitable respiratory equipment. S45 - In case of accident or if you feel unwell seek medical advice immediately (show the label where possible).

Other Information

This data sheet was prepared in accordance with Directive 93/112/EC. Liquid MDI decontaminants:

Decontaminant 1 :

-	Water		
-	Concentrated ammonia solution	-	90%
-	Liquid detergent	-	8%
		-	2%

Decontaminant 2 :

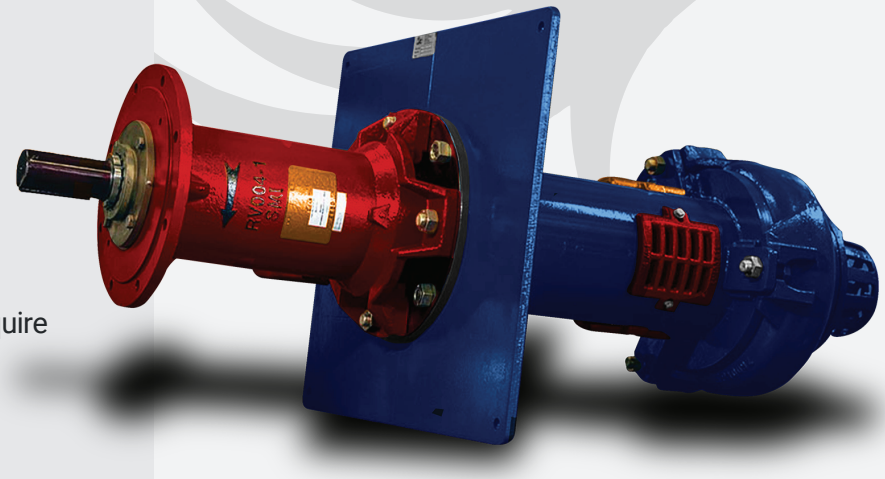
-	Water 90	-	95%
-	Sodium carbonate	-	5 - 10%
-	Liquid detergent	-	0.2 - 0.5%

Decontaminant 1 contains ammonia. Ammonia presents health hazards. (See supplier safety information).

Decontaminant 2 reacts slower with MDI but is more environmentally friendly than decontaminant 1.

THANK
YOU

Please feel free to contact us if you require any additional information.



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