

SPUR+TM

PREPOLYMER
TECHNOLOGY



MOMENTIVE[®]



A LEGACY OF INNOVATION

For more than 30 years, Momentive has served as a pioneer in the silylated polyurethane industry.

Our expert team of scientists are among the most experienced in the industry. They work closely with our partners to develop customized and differentiated products around the world.

Our SPUR+ prepolymer technology continues to deliver innovative solutions to the building and construction, transportation and roofing industries.

Our Global Resources Provide:

- Formulation and Regulatory Support
- Technology and Application Labs in Europe, Brazil, China, Japan, India and the United States
- Global manufacturing footprint

OVERVIEW OF CHEMISTRY

Momentive's SPUR+ Prepolymers are the results of the synergy between moisture curable silane chemistry and polyurethane technology. The versatility of the SPUR+ chemistry enables the design of a large toolbox of prepolymers, varied by the backbone structures and functionalities, and targeted a wide variety of end-use applications. The well-controlled manufacturing process allows high product quality and consistent in-formulation performance. Compared with silicone based products, SPUR+ based sealants, adhesives and coatings show better paintability, higher tear strength, and less dirt pick up, while maintaining excellent water resistance. Compared with conventional polyurethanes, SPUR+ prepolymers offer numerous benefits including no free isocyanate, no bubbling issues, less yellowing/ discoloration, good cure strength and superior adhesion to many substrates. Formulators will also find SPUR+ Prepolymers are very easy to formulate and to process as they are compatible with fillers and other ingredients in most formulations.

In addition to these Pre-polymers, Momentive offers high performance Silquest (TM) silanes that can further enhance a product's properties such as color stability, adhesion and elastic recovery.



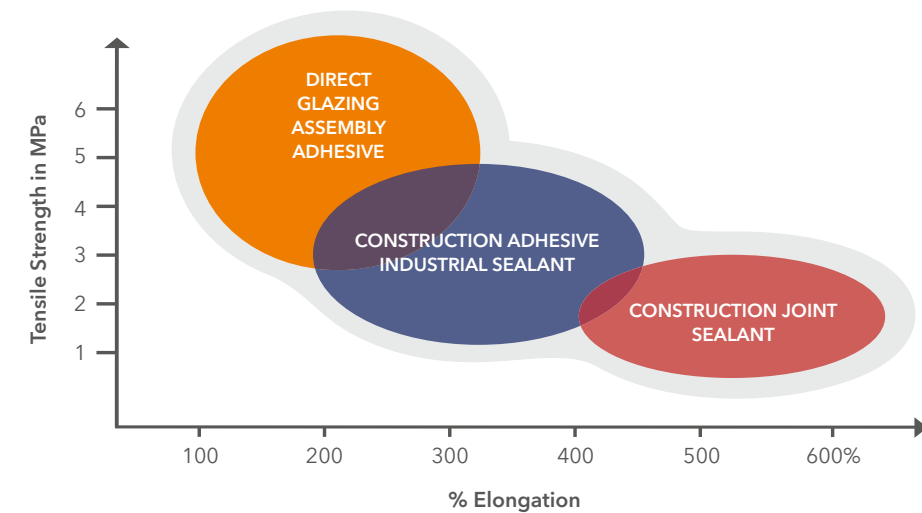
UV STABILITY AND
WEATHERABILITY
WITH LOW DIRT
PICK UP



CHOOSING THE RIGHT PREPOLYMER FOR THE JOB

Formulations developed using SPUR+ prepolymers offer a broader formulation latitude compared with conventional polyurethane technologies. SPUR+ Prepolymers have been successfully formulated into low, medium and high modulus sealants that offer a consistent balance of mechanical properties, along with application-oriented benefits such as immediate paintability, advanced UV stability and weatherability, and outstanding adhesion performance.

Typical Properties of Adhesives & Sealants containing SPUR+



Typical properties are average data and are not to be used as or to develop specifications.

INDUSTRY APPLICATIONS IN THE
FOLLOWING SPACES OFFER A
VARIETY OF PRODUCT APPLICATIONS

Building & Construction
Transportation
Wood Flooring
Roof Coating



OUTSTANDING ADHESION PERFORMANCE WITH EXCELLENT ELONGATION

SPUR+ PREPOLYMER TYPICAL PROPERTIES

Product	Viscosity, cP @25C	Tensile Strength, psi	Elongation, %	Shore A Hardness	Modulus @100% Elongation, psi
SPUR+ 1015	50,000	75	280	16	46
SPUR+1020	50,000	75	220	21	50
SPUR+1050	35,000	95	150	29	77
SPUR+ 1070	15,000	100	50	43	80
SPUR+ 3030	2,500	600	200	42	220
SPUR+ 3040	7,000	762	113	47	643

Mechanical Properties were measured on the blend of a SPUR+ prepolymer and 1.0% of Dibutyltin dilaurate catalyst after being cured at 23 C and 50% RH for 7 days.

SPUR+ PREPOLYMER TYPICAL CHARACTERISTICS AND APPLICATIONS

Product	Typical Characteristics	Construction	Transportation	Wood Flooring	Roof Coating
SPUR+ 1015	<ul style="list-style-type: none">Low modulus	●			
SPUR+ 1020	<ul style="list-style-type: none">Low modulusLow yellowingColor stability	●			
SPUR+1050	<ul style="list-style-type: none">Medium modulus	●		●	
SPUR+ 1070	<ul style="list-style-type: none">Medium modulus & low viscosityLow yellowing and color stabilityEasy to formulate	●	●	●	
SPUR+ 3030	<ul style="list-style-type: none">Low viscosityHigh hydrophobicity		●		●
SPUR+ 3040	<ul style="list-style-type: none">Low viscosityHigh strengthEasy to formulate		●		

Key Features and Typical Benefits

- Free of un-reacted isocyanate
- Moisture cure at room temperature
- Primerless adhesion to many substrates
- Excellent chemical resistance and weatherability
- Excellent elongation and elastic recovery
- Broad formulation latitude
- Minimal shrinkage
- Formulation flexibility with 1K and 2K systems
- Easy application characteristics



HIGH PERFORMANCE SILANES FOR SPUR+ PREPOLYMER BASED SYSTEMS

Product Name	Product Description	Curing Rate	Tensile Strength	Elongation	Low Yellowing	Adhesion	Use Level
Silquest A-1110™ Silane	Primary aminosilane adhesion promoter	+++	++	+	++	+++	+
Silquest A-1120J Silane	High purity diaminosilane adhesion promoter	+++	++	+	+	+++	+
Silquest A-Link™ 600 Silane	Low-yellowing adhesion promoter	+	+++	+++	+++	++	+
Silquest A-Link 235 Silane	Aminosilane oligosiloxane adhesion promoter	++	++	+++	++	+++	+
Wetlink™-78 Silane	Dimethoxy epoxy silane adhesion promoter	++	+++	+++	+++	+++	+

Key Features and Typical Benefits

- Low yellowing
- Improved elongation
- Excellent adhesion

SPUR+ PREPOLYMERS GENERAL GUIDELINES FOR HANDLING, STORAGE & USE¹

This document contains storage, handling, spill containment and sampling guidelines to help ensure the safe and environmentally responsible use of SPUR+ prepolymers resins by customers of Momentive Performance Materials, service providers (logistics), and any other related personnel.



GENERAL GUIDELINES

- Keep away from sources of moisture and water, as any such exposure may result in the premature curing of the resin to a rubbery material.
- Always use clean and dry equipment for handling and storing SPUR+ prepolymers
- Avoid contact with skin and eyes, and use appropriate personal protective equipment, e.g. gloves, safety glasses, etc. (see SDS for details)
- Keep away from any source of ignition

STORAGE

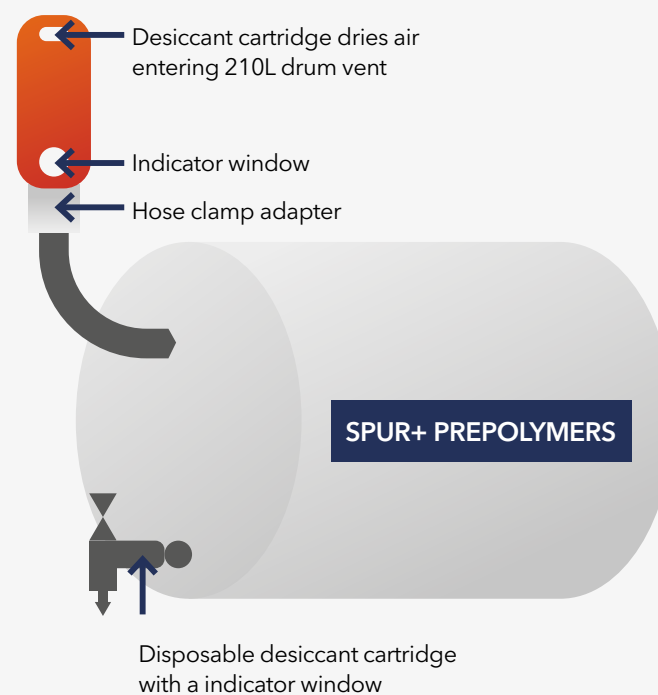
- Packaged resin must be stored in dry and cool storage area. Always store SPUR+ prepolymers in a covered warehouse with good drainage system (rain water free), at temperature not beyond the recommended level.
- Containers should be kept closed when not in use. Whenever possible, inert gas blanketing should be utilized to prevent exposure to moisture.
- Storage of partially expended containers of SPUR+ prepolymers is not recommended. If, however, such storage is anticipated, a dry gas atmosphere (e.g. nitrogen) should be applied to the headspace of the full container during discharge of the resin. A good seal should be applied to the partial container to maintain the dry headspace during storage.
- Proper storage is critical to the maintenance of the shelf life indicated on product packaging.

HANDLING

- Check drum(s) for sharp dents (may indicate break in liner) or leaking seams. The drums that store resins are typically baked epoxy-lined steel containers.
- Stainless steel, glass or TEFLON is recommended for any transferring equipment (like piping, valves, pump etc.) or any parts that come in direct contact with the SPUR+ prepolymers.
- Sampling equipment should be cleaned with ethanol or isopropanol and left to dry completely before use.
- Take every precaution to eliminate the possibility of sparks caused by static electricity, such as the use of explosion-proof equipment, an air pump, or appropriate grounding on the equipment and drum.
- Thread sealant, gasket material, pump lining, etc. should be made of non-reactive materials.
- Use of standard-type flexible hoses for the unloading of chemicals, e.g. those made from cross-linked polyethylene (XLPE), is acceptable.
- Do not over pressurize drums. Gravity pouring is appropriate for pails or small containers. For drums, IBCs and bulk containers, a discharge pump is recommended.
- Always minimize the possibility of moisture intrusion or contact. A desiccant vent or inert blanketing should be deployed whenever applicable.

¹ Customers should review the latest Safety Data Sheet (SDS) and label for product safety information, safe handling instructions, personal protective equipment if necessary, emergency service contact information, and any special storage conditions required for safety. Momentive Performance Materials (MPM) maintains an around-the-clock emergency service for its products. SDS are available at www.momentive.com or, upon request, from any MPM representative. For product storage and handling procedures to maintain the product quality within our stated specifications, please review Certificates of Analysis, which are available in the Order Center. Use of other materials in conjunction with MPM products (for example, primers) may require additional precautions. Please review and follow the safety information provided by the manufacturer of such other materials.

DESICCANT VENT UNITS



CLEANING

- Equipment used to handle SPUR+ prepolymers should be cleaned before being exposed to atmospheric moisture in order to prevent curing of residual resin in the equipment.
- Compatible solvents for cleaning equipment containing residual SPUR+ prepolymers include methanol, ethanol, isopropanol, acetone, ethyl acetate and toluene.

PRODUCT SAFETY

Consult product SDS for guidance on all safety topics, including:

- Personal protective equipment
- Ventilation
- Special handling and/or health effects.
- Inert and dry blanketing gas should be used in pails, drums or IBC's. The use of dry air is also acceptable
- Special cylinder manifolds and pressure reducing and regulating stations may be needed.
- Gas pressure may need to be reduced using a regulator(s).
- A conservation vent or breather valve should be placed in vent line.
- Emergency relief valves are recommended.

DO NOT OVERPRESSURIZE STORAGE CONTAINERS

HANDLING SPILLS

- Unrelated personnel must be evacuated from the spill site.
- All work involving open flame must be stopped immediately.
- All personnel involved in the spill containment must wear personal protective equipment (see SDS) before commencing procedure.
- Utilize a drip tray to contain any existing leakage (from drum or from equipment).
- Place approved absorbents onto the spill, mixing them into the spill if necessary. When absorbed, scrape solids into a disposal bin or tray and remove it to a well-ventilated and preferably remote area in order to avoid inhalation of volatiles by uninvolved personnel. The scraped drip tray can then be cleaned up with acetone or isopropyl alcohol.
- Leave absorbed residue exposed to atmosphere so that the moisture content in the air will continue to react in a slow and controlled way with the resin. Spread the residue out evenly to maximize exposure to the air. Leave exposed for at least 3 days.
- Have residue incinerated at a site approved to undertake such work.

PROCEDURES AND PRECAUTIONS FOR SAMPLING SPUR+ PREPOLYMERS

- Stainless steel, glass or all suitable plastics (e.g. HDPE) is recommended for any sampling equipment (like piping, valves, pump etc.) and any parts that come in direct contact with the resin.
- Sampling equipment should be cleaned and dried before use.
- Take every precaution to eliminate the possibility of sparks caused by static electricity, such as the use of explosion-proof equipment, an air pump, or appropriate grounding on the equipment and drum.
- Samples obtained should be contained in clean, dry bottles with reliable seals.
- A dry gas blanket should be used to protect the sample.
- Always attach the product SDS when transporting the samples.
- Always ensure that the samples are transported and kept at a cool temperature and away from sun or moisture.

NOTE: In some instances, nitrogen blanketing to minimize moisture exposure may not be practical or justified. In such cases, a desiccant chamber can be installed on the storage tank vent line to minimize moisture. Desiccant chambers can typically utilize solid desiccants, such as calcium sulfate, silica gel, activated alumina, or molecular sieves. Vent dryers are available from several sources.

CUSTOMER SERVICE CENTERS

Worldwide

Email: commercial.services@momentive.com

Americas

+1 800 295 2392 Toll free⁽¹⁾
+ 704 805 6946

Latin America

Brazil

+55 11 4534 9650

Mexico

+52 55 2169 7670

EMEA - Europe, Middle East, Africa & India

Europe

+ 390510924300

India, Middle East & Africa

+ 91 44 71212207⁽²⁾

Asia Pacific

China

800 820 0202 Toll free
+86 21 3860 4892

Japan

+81 3 5544 3111

Korea

+82 2 6201 4600

South East Asia, Australia & New Zealand

+60 3 9206 1543⁽³⁾

(1) All American countries

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