



ASP-16 **Patch/Liner System**

ASP-16 is a 2-part polyaspartic/polyurea lining and patch system developed to repair gaps and worn down areas of polyurea liners as well as to line/coat various other substrates with abrasion-resistant elastomeric lining. ASP-16 is designed to withstand abrasion and cut/tear forces in rock/sand handling and other industrial applications. After it completes the cure cycle, it provides very strong coating to protect surfaces of industrial equipment.

ASP-16 cures at a wide range of temperature conditions. You can repair small worn-out areas to prolong usable life of the liner. ASP-16 can provide superior protections to steel, foam, plastics, and other substrates with easy hand-mixing operation. It can be considered as an alternative to polyurea spray coating when only small area coverage is required.

ASP-16 is a 2-part system. After the surface is prepared, the user mixes the part-A and part-B liquid components at the correct ratio, 10:8 by volume. (The "Quart-Kit" comes with pre-weighed components, so that the user can pour the entire content of part-B component to part-A container to yield the right ratio.) The liquid becomes pasty consistency in about 1 minute after the beginning of agitation. Then he can pick it up with a putty knife to apply to the substrate. This thixotropic state of ASP-16 allows easy application to vertical surfaces and easy thickness build up.

ASP-16 is 100% solid material, which means it does not contain solvent to dry. It also does not require moisture or air to cure. The patch surface dries in about 1 hour; it cures in 24 hours at room temperature for light duty applications. We recommend 2 to 3 day cure time for heavy duty applications.

ASP-16 is for industrial use only. Please follow the safety procedures recommended in this document and the Material Safety Data Sheets.

Physical Property of Cured Patch/Liner

Hardness:	55 D Durometer
Tensile Strength:	1510 psi
Ultimate Elongation:	8%
Die-C Tear Strength:	360 pli
Taber Abrasion:	52 mg loss
Color:	White

The above data is based on our lab test on ASP-16 cured at room temperature for 7 days before testing. The data values are typical values, and are reference only.

Processing Information

Mixing Ratio: **10: 8 = part-A: part-B by volume** (100: 79 by weight)

Curing Pattern:

Liquid Time: 1 minute
Paste (thixotropic) Time: 4 – 5 minutes
Surface Dry: 1 – 2 hours
Cure Cycle: 24 – 48 hours at room temp
(3- 4 day cure-time recommended for heavy duty applications)

Application Temperature: 60 – 85 F

Part-A material has not been tested for cold temperature storage stability. Please store the material within the 60 - 90 °F range. Also, part-B material has a chance for some constituents settling down at the bottom of the container. Please stir the container before dispensing part-B material.

Application Recommendations

INDUSTRIAL USE ONLY

This is an industrial class chemical product. When using this product, please wear rubber globes, long sleeves, and protective eyewear to prevent skin/eye contact of the liquid components. This product should be used in a wide area with good air circulation. If it is used in a confined area or hot surface, please use a strong fan to ventilate the work area. Please read the Material Safety Data Sheet for details on the safety and handling information.

To prepare the substrate, roughen it by sanding or grinding the substrate or the existing polyurea liner. This material will not adhere to the virgin surface of polyurea liner or other plastic liners, and the surface must be worn off for a good adhesion, or other wise the surface area must be sanded or ground down.

Wash the roughened surface with solvent (or soap and water) to eliminate all particles and oil contamination. Wipe the surface with clean/dry towels, and then dry solvent/ water completely with a fan. Apply primer on the surface. To avoid contamination, the primer should be applied soon after the cleaned surface is dried.

For Urea Liner Repair: Based on to our lab test, we recommend Lord (Chemlok) 459X primer. Small packages of Lord 459X is readily available from the following:

<http://www.mcmaster.com/> Part Number: 66595A4 (8 oz. can).

Apply a very thin layer of 459X primer using a clean/dry paint brush. Dry at 70 – 85 °F temperature range for 30 – 60 minutes.

If you are applying on a smooth metal surface, the surface must be sandblasted, cleaned, and primed with primer. Lord 459X is not an optimum primer for metal surfaces. If metal surface is coated with this product, please use a primer product designed for metal surface such as epoxy based primers. You may refer to <http://www.lord.com/> for proper primer selection.

Measure the component materials at the correct ratio. The ratio for the components of ASP-16 is 5 parts of part-A to 4 parts of part-B by volume. For example 5 cups of part-A and 4 cups of part-B make the right ratio. (The “Quart-Kit” comes with pre-weighed components, so that the user can pour the entire content of part-B component to part-A container to yield the right ratio.)

You can also measure the mixing ratio by weight. The weight ratio for the components of ASP-16 is 100: 79. For example 100 grams of part-A and 79 grams of part-B make the right ratio.

Pour the measured component materials into a mixing container. (For the Quart-Kit, pour the entire content of part-B into part-A container.) Start a clock (or a stop watch) as you begin agitating the mixture of part-A and part-B components.

Using a putty knife or steel spatula, agitate the component materials vigorously as you scrape the side and bottom of the mixing container for 30 to 60 seconds to make sure the components are thoroughly and homogeneously mixed.

The material starts to thicken as it starts to warm up. By about the 1 minute point, it turns into “paste like” consistency. You can pour it out to a baking tray or other flat container before it turns to the paste-like consistency; this may help handling the material.

Using a putty knife, pick up the material and apply to the substrate.

Note: This material adheres well on cured polyurea lining after primer is applied. However, the adhesion of this to a metal surface may not be very strong unless the substrate is effectively prepared. Patch a larger area including the surrounding area on the existing polyurea liner to improve adhesion. If this is used in rock/sand handling or high volume of bulk material is passing through this material, be sure to avoid the flow of the bulk material is getting underneath the patch.

The material gradually thickens up, and at about the 5-to-10 minute point, it becomes difficult to move with a putty knife. For patching vertical surface, you may want to wait until the material is thick enough so it does not sag.

Note: Unlike one-part sealant, patch, or coating systems, this material does not need air/oxygen or much of moisture to cure. You can build up the thickness as much as you feel necessary, and it will still cure.

The user may add MEK or other solvents to reduce the component viscosity and prolong the pot-life. For your reference, addition of MEK at the ratio of "4:1 = resin total: MEK" by weight, the pot life is extended by 10 to 15 minutes. Diluting more will provide longer pot-life. However, the solvent must be dried before the completion. MEK and other solvents are hazardous/flammable materials. When MEK or other solvents are used, a strong fan or other ways of dynamic ventilation must be utilized to ensure the concentration level of solvent vapor is very low in the working area. Please consult your supplier for MEK and solvents for detail information on the safety and handling when you use solvent with this material.

For cold temperature applications, where the liner is used below 40 °F constant, the liner may be too brittle. In such application, addition of softener (plasticizer) can alleviate the patch material chipping away. Please consult Northstar Polymers for recommendation.

Component Properties

Part-A: MPB-040 (Prepolymer)

Part-B: ASA-032 (Curative)

Typical Properties (based on our lab tests)

MPB-040

General Descriptions: Isocyanate Prepolymer (also Part-A, Prepolymer)
NCO: 10.5%
Equivalent Weight: 400
Specific Gravity: 1.095
Viscosity: 4000 cps at 72 °F

This material is highly moisture-sensitive. Once the container is opened, the top space must be purged with dry nitrogen or argon gas and kept in an air-tight container. Store it indoor at room temperature (60 – 90 °F).
Shelf-life: 6 months when the containers are unopened and stored under the correct storage conditions.

ASA-032

General Descriptions: Blend of polyaspartic esters and additives (also Part-B, Curative)
Equivalent Weight: 322
Specific Gravity: 1.083
Viscosity: 800 – 2000 cps at 72 °F

Some constituent may be settled at the bottom of the container during the storage, and the content must be stirred before it is dispensed out. Store it indoor in an air-tight container at room temperature (60 – 90 °F). Shelf-life: 6 months when the containers are unopened and stored under the correct storage conditions.

Storage/Handling Information for the Component Materials

Storage:

Part-A (Isocyanate Prepolymer) Component

Part-A component (prepolymer) contains isocyanate component, which is highly sensitive to moisture. If it is left in air, part-A will react with atmospheric moisture and will be ruined. This reaction is non-reversible. Soon after opening the container to dispense the content, dry nitrogen gas or argon gas needs to be injected to the container to purge and blanket the top space. Please consult Northstar Polymers for nitrogen gas set-up information.

For gravity feeding system from a 55-gallon, silica gel or calcium chloride desiccant filter(s) should be installed to the vent-hole of the drum. A valve to inject dry nitrogen gas can be installed instead.

Store the containers a dry indoor storage within the temperature range between 60 and 90 °F. Avoid direct sunlight.

Note: If large amount of water mixes with a large amount of any isocyanate base materials, the exothermic heat can raise the temperature so high that it can start a fire. Keep the storage area free of water. The decomposition of isocyanate based material by extremely high temperature or fire can produce toxic gasses and smokes. Please read the MSDS for the detailed information.

This isocyanate prepolymer may freeze during the transportation and storage in the cold seasons. Frozen state of isocyanate prepolymer is indicated by solid, gel, or high viscosity liquid state as well as cloudy color. The frozen material needs to be thawed before use. Please consult Northstar Polymers for handling frozen isocyanate prepolymer materials.

Part-B (Curative) Component

Part-B component is hygroscopic. If the material is exposed to ambient air, it absorbs moisture. Part-B component contaminated by moisture can become a source excessive bubbles in the product after mixed with part-A. Avoid exposure of the material to moisture in air.

Purging the empty space in the container with dry nitrogen gas, argon gas, or negative-40-degree-dew-point dry air is also recommended to prevent moisture contamination of part-B as well. (However, simply keeping the material in an airtight container may also be sufficient depending on the moisture level of the work place.)

Store it in a dry indoor storage at a room temperature between 60 and 90 °F. Avoid direct sunlight.

Part-B material contains chemical constituents that can separate during the storage. Agitation of the part-B content before dispensing may be required for the system. Separation can be seen in a higher degree when the material is stored in cold temperature. You may need to heat to re-blend the separated material in some cases. Please consult Northstar Polymers when separation is suspected.

Safety:

The component materials are industrial-grade chemicals. Please keep them in a secure place and allow access to only the personnel with good knowledge on safety. The personnel who handle these materials need to read the Material Safety Data Sheet (MSDS) for detail information on safety and handling of the material. The MSDS for each component is sent with the shipment of the material.

When using this material, be sure to operate in a wide-open area with good air movement, or in a well-ventilated area. When used in a confined area, use industrial strength fan(s) to provide good flow of fresh air. Wear rubber gloves, long sleeves, and protective eyeglasses to prevent skin/eye contact of the material.

When your operation involves heating or spraying of the material, and if you expect the isocyanate content level in the work place atmosphere may become above the threshold regulated by OSHA or by other appropriate working place safety standard, we recommend in addition to the above, installation of a proper hooded dynamic ventilation system and/or using an appropriate type of respirator (such as a full-face respirator equipped with OSHA approved HEPA filters for particulate and organic vapor or Self Contained Breathing Apparatus/SCBA) to prevent inhalation of the fume.

Direct contact of these component raw materials to skin/eye, as well as ingestion may lead to health problems. No eating or smoking should be permitted at the working area. The operator should wash hands well with soap and water after handling the materials and follow the other procedures of the Standard Industrial Hygiene Practices. Please refer to the MSDS for each component for the detailed health information.

For any questions, please contact Northstar Polymers.

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