



## TECHNICAL INFORMATION

## Provisional

### KALEX® 19454 M1 Filter Adhesive

#### PRODUCT DESCRIPTION

KALEX 19454 M1 is a two-component polyurethane adhesive/sealant designed for HEPA filter production. It meets the requirements of the most critical cleanroom environments.

KALEX 19454 M1 adhesive contains no detectable levels of any of the following chemicals:

- Organo Phosphate
- Organo Sulfur
- Siloxanes
- Amides
- Acrylic Acid
- Surfactants
- Amines
- Organo-bromo flame retardants
- Organo-phosphate flame retardants
- Mold release agents, waxes.
- Structural adhesive monomers
- Phthalate Esters (e.g. DOP)

KALEX 19454 M1 adhesive may contain trace amounts of the following metal ions:

Antimony	< 100 ppm
Iron	< 3 ppm
Sodium	< 500 ppm
Zinc	< 1 ppm
Tin (non volatile)	< 10 ppm

The uncured components are low viscosity liquids that mix easily at room temperature. The system offers several processing options. The uncured components are easily mixed either by hand or by machine at room temperature. The mixed system cures at room temperature in a few days. The cure can be accelerated with mild heating.

#### APPLICATION

KALEX 19454 M1 is designed for the production of HEPA filters for cleanrooms in the electronics industry. It is suitable for filters that require UL 94 V2 fire retardancy.

#### MIXING AND CURING SCHEDULE

The production of the desired polyurethane requires accurate measurement of the two components and adequate mixing. In general, hand-mixing small production runs is easily accomplished by weighing the two components. Machine mixing utilizes the volumetric ratio. Most machines are calibrated by weighing the components and adjusting the volume ratio. Larger volume hand mixing is easily controlled

by filling pre-measured buckets to the indicated heights. The mix ratios are shown below.

<u>Ratio</u>	<u>Part A</u>	<u>Part B</u>
By weight	33	100
By volume	37	100

The gel time and work-life vary with the mass and the ambient temperature. Larger masses and higher temperatures reduce the work-life. Lower temperatures extend the work-life.

The typical work-life is ten-to-fifteen (10-to-15) minutes. This is the measured speed in the laboratory of a 100 gram mass at 25°C.

The cure schedule is dependent upon the temperature. The recommended cure schedule will vary with the desired properties. The recommended schedules to achieve the typical properties shown below:

Cure 7 days @ room temperature

OR

Cure 18 hrs. @ room temperature **plus** 2 hrs. @ 100°C.

The polyurethane will have some of the desired physical properties within the first day, but polyurethanes often require several more days to achieve the final properties. Heating accelerates the post cure.

#### TYPICAL UNCURED PROPERTIES

The uncured components are easy to handle, mix, and use at room temperature. The difference in color between the two components acts as an indicator for complete mixing.

The system contains some filler on the B-side to ensure the desired physical properties. It is more economical than more highly filled systems, because it produces more filters per pound than more heavily filled systems.

<u>Property</u>	<u>Part A</u>	<u>Part B</u>	<u>Mixed</u>
Appearance	Brown	White	White
Viscosity, cps. @25°C	300	5,000	1,600
Specific Gravity	1.17	1.33	1.28
Density, lb./gal.	9.8	11.1	10.7

#### TYPICAL CURED PROPERTIES

The cured KALEX 19454 M1 is a soft, flexible polyurethane with good physical properties. The cured polyurethane passes the Underwriters' Laboratory flame-retardant test UL 94 V2 at ¼ inch thick. It also passes DIN 53-438 in the K1 & F1 classification.

The principal properties of the cured polyurethane are shown below:

Property	Typical value
Hardness,	70-to-75 Shore A
Tensile strength, psi.	950
Elongation, %	130
Tear strength, psi.	105
Outgassing, overnight @ 125°C in vacuum, wt. %	< 0.5%

### **STORAGE AND HANDLING**

These materials should be stored in a dry environment within a moderate temperature range. Extended exposure to temperatures above 35°C begins to degrade the Part A. Avoid exposing either component to moisture.

Moisture reacts with the A-side to create minor levels of by products. Low levels will not degrade the final polyurethane. Moisture contamination of the B-side will cause some gas bubbles in the cured product. Purge the container with dry air before closing to maintain the storage life.

When using meter-mixed dispense equipment (MMD), blanket the reservoir with nitrogen or dry air to avoid moisture and other contamination.

Avoid contamination with oxidized metals (such as copper, brass, or mild steel), and rust or other metal oxides. The stability of the product is greatly reduced by materials such as strong acids or bases, sulfur compounds, amines, or reducing agents of any type.

### **SAFETY**

These materials are intended for industrial use only and the practices of good housekeeping, safety and cleanliness should be followed before, during and after use.

Adequate ventilation of the work place is essential.

The A-side may cause dermatitis in susceptible individuals. Keep off skin and out of eyes. In case of accidental skin contact, wash thoroughly with soap and water. In case of eye contact, flush eyes thoroughly with water and consult a physician immediately.

Refer to Materials Safety Data Sheet for additional information.

### **ADDITIONAL INFORMATION**

Visit our web site at:

[www.royaladhesives.com](http://www.royaladhesives.com)

Contact us at:

Royal Adhesives and Sealants, LLC  
600 Cortlandt Street  
Belleville, NJ 07109-3384  
(888) 442-7362 Toll-free  
(973) 751-3000 Phone  
(973) 751-8407 Fax

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