



## TECHNICAL INFORMATION

### KALEX® 16668 Urethane Adhesive System

#### PRODUCT DESCRIPTION

KALEX 16668 is a semi-rigid, two-component, extra-fast setting polyurethane structural adhesive. It displays an excellent combination of shear strength and peel strength, with good impact and fatigue resistance. It is highly recommended for bonding engineering thermoplastics, SMC, laminated surfaces, repair of reaction injection molded parts and other quick repairs of sporting goods, such as skis, snowboards and golf clubs.

KALEX 16668 is available in the unique DOUBLE/BUBBLE® job sized package as reorder no. 04022.

#### HOW TO USE

The individual components containing fillers should be stirred or agitated without introducing excessive air before use to ensure that all fillers are properly dispersed. To obtain the best cured properties, accurate proportioning and thorough mixing are essential.

Polyurethane systems in general and those such as KALEX 16668, which contain non-mercurial catalysts, are very moisture sensitive. Moisture will cause foaming in the cured part. Therefore, carefully observe all procedures to avoid moisture contamination which should include blanketing of materials with nitrogen gas both during use and while in storage.

#### CLEAN UP

A wide variety of cleaning solutions are available for cured and uncured epoxies and polyurethanes. For more information on proper recommendations and procedures, contact the Technical Department.

#### 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	100	100
By volume	100	78

The cure schedule is dependent upon the temperature. The

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

24 hours at 25 °C (77 °F).

#### TYPICAL UNCURED PROPERTIES

	<u>Part A</u>	<u>Part B</u>	<u>Mixed</u>
Color	Brown	White	Beige
Viscosity @ 25 °C,cps	13,000	7,000	10,000
Weight per Gallon, lbs.	9.3	12.3	10.6
Specific Gravity @ 25 °C	1.11	1.47	1.27
Gel time, minutes			
4 gm mass @ 25 °C	---	---	5
Filler Type	None	Non- Abrasive	Non- Abrasive
Shelf Life (in separate sealed containers), months	12	12	---

#### TYPICAL CURED PROPERTIES

(Tested at 25 °C unless otherwise indicated)

<u>Test</u>	<u>Result</u>
Hardness, Shore D	65

#### Lap Shear Strength

(Al/Al, 2024-T3 acid etched)

Cure Schedule @ 25 °C	7 days
Shear Strength, psi	3560

#### Lap Shear Strength

(Al/Al, 2024-T3 acid etched; cure schedule 24 hrs. @ 25 °C)

Test Temperature, °C	-40	25	82	149
Shear Strength, psi	4,580	2,900	470	380

#### T-Peel Strength

(Al/Al, 2024-T3 acid etched; cure schedule 24 hours @ 25 °C)

Test Temperature, °C	-40	25	82
Peel Strength, pli	4.0	62.0	2.5

## **Tensile Lap Shear Strength**

Various substrates; cured 7 days at 25 °C

<b><u>Substrate Units</u></b>	<b><u>Shear Strength, psi</u></b>
<b>ALUMINUM</b>	
Etched	3870 (A)
Sandblasted	2050 (A)
Degreased	1670 (A)
<b>COLD ROLLED STEEL</b>	
Sandblasted	2430 (A)
Degreased	1830 (A)
Oily	1410 (A)
Sanded Rockwell 9466	780 (S)
Sanded Rockwell 9486	850 (S)
Unsanded Rockwell 9486	830 (S)
Sanded Epoxy Laminate	3050 (A)
Unsanded Epoxy Laminate	2980 (A)
Sanded Graphite Epoxy Laminate	3040 (A)
Unsanded Graphite Epoxy Laminate	2670 (C)
Sanded Nylon	560 (A)
Unsanded Nylon	290 (A)
Sanded PET-G	730 (S)
Unsanded PET-G	640 (S)
Sanded ABS	710 (A)
Unsanded ABS	310 (A)
Sanded ABS/PVC	580 (S)
Unsanded ABS/PVC	530 (S)
Sanded Clear PVC	800 (S)
Unsanded Clear PVC	800 (S)
Sanded Filled PVC	600 (S)
Unsanded Filled PVC	540 (S)
Sanded Polycarbonate	970 (A)
Unsanded Polycarbonate	860 (S)
Sanded Eagle Picher 218-8V	880 (S)
Unsanded Eagle Picher 218-8V	910 (A)
Sanded Phenolic Laminate	1060 (S)
Unsanded Phenolic Laminate	1040 (S)

Lap Shear Strength (Type of failure)  
A=Adhesive, C=Cohesive, S=Substrate

## **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 mixed adhesive. Purge the container with dry air before closing to maintain the storage life.

When using meter-mixed dispense equipment (MMD) machines, reservoir should be blanketed 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.

Although the system contains low volatility materials, nevertheless, care should be taken in handling. Adequate ventilation of work place and ovens is essential.

These materials 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 Material Safety Data Sheet for additional information.

## **ADDITIONAL INFORMATION**

Visit our web site at:

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

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## **NOTE**

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