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ISO 9001:2000

TECHNICAL INFORMATION

KALEX® 16552
Urethane Encapsulation System

PRODUCT DESCRIPTION

KALEX 16552 is a two–component, filled, room temperature cure polyurethane system. It exhibits excellent electrical properties and hydrolytic stability. It has excellent thermal shock resistance and offers very low stress for sensitive parts. It is recommended for medium and low voltage applications such as time delay relays, connectors and other electrical or electronic devices. It is a UL recognized flame retardant system. This system is TDI (Toluene Diisocyanate) and MOCA [4,4' methylene bis (2–chloroanaline)] free.

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.

Ratio	Part A	Part B
By weight	8	100
By volume	9.4	100

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:

7 days at 25 °C (77 °F)

OR

18 to 24 hours at 25 °C **plus** 2 hours at 80 °C (176 °F)

TYPICAL UNCURED PROPERTIES

	Part A	Part B	Mixed
Color	Dk. Brown	Blue	Blue
Viscosity @ 25 °C, cps	70	13,000	6,500
Weight per Gallon, lbs.	10.3	12.13	11.97
Specific Gravity @ 25 °C	1.23	1.45	1.42
Gel time, minutes 100 gm mass @ 25 °C	– – –	– – –	45
Filler Type	None	Non–Abrasive	Non–Abrasive
Shelf Life (in separate sealed containers), months	6	6	– – –

TYPICAL CURED PROPERTIES

(Tested at 25 °C unless otherwise indicated)

Test	Result
Hardness, Shore A	78
Tensile Strength, psi	740
Elongation, %	95
Linear Shrinkage, in./in.	0.0004
Water Absorption, % Weight Gain After:	
24 hours immersion	0.06
7 days immersion	0.25

TYPICAL THERMAL PROPERTIES

Test	Result
Heat Distortion Temperature, °C	< 25
Coefficient of Linear Thermal Expansion, in./in./ °C (+30 to 90 °C)	74×10^{-6}
Thermal Conductivity, cal. x cm. sec. x cm² x °C	11.8×10^{-4}
Dry Heat Aging @ 125 °C, % Weight Loss After:	
24 hours	0.37
7 days	0.76
500 hours	3.19
UL Flame Retardancy Test UL–94–VO @ 0.250"	Passes
Naval Avionics Test, 28 days @ 100 °C and 95% R.H.	Passes
Recommended Service Temperature, °C	90

TYPICAL ELECTRICAL PROPERTIES

Dielectric Constant

Test Temperature, °C	100 Hz	100 kHz
25	4.11	3.7
100	4.48	3.9

Dissipation Factor

Test Temperature, °C	100 Hz	100 kHz
25	0.016	0.015
100	0.042	0.019

Volume Resistivity, ohm–cm

Test Temperature, °C	
25	2.32×10^{14}
105	8.95×10^{11}

Dielectric Strength, Volts/mil 414

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.

Although the system contains low volatility materials, care should be taken in handling. Use adequate ventilation in the work area.

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

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