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THE ABOCAST/ABOCURE 7703-21 SYSTEM

TDS 770401

ABOCAST 7703-21 / ABOCURE 7703-21

Clear, Low-Viscosity, Variable-Ratio
EPOXY ADHESIVE AND CASTING COMPOUND
For Electric & Structural Applications

SUGGESTED USES

THE ALL-PURPOSE CLEAR, LOW-VISCOSITY, VARIABLE-RATIO EPOXY "WORK HORSE".

As an ADHESIVE: it bonds permanently to metal, wood, glass, fiberglass, ceramics, rigid plastics, concrete, marble, stones, jewelry. Excellent to laminate fiberglass, metal sheets, paper or canvas or any other material for composite structures.

As a DIELECTRIC: widely used for potting, encapsulating, dipping, insulating circuits, chips and other components.

As a CASTING RESIN: for filling, embedments, reproductions, tooling (as is, or blended with fillers such as metal powders, sawdust etc.).

	COLOR	WEIGHT Lbs/Gal.	VISCOSITY Poises	POT LIFE	TIME REQUIRED TO HARDEN (castings)	(adhesive)
ABOCAST 7703-21:	Light Straw	9.6	100-160			
ABOCURE 7703-21:	Amber	8.0	6-7			
ABOCAST/ABOCURE:				80-120 min.	1-4 hrs.	12-48 hrs.

Effects of ABOCAST/ABOCURE ratios on properties of the cured resin (cure schedule: 12 hrs. @ 25°C + 2 hrs @ 100°C), as measured on a sample batch:

Formula	(A)	(B)	(C)	(D)	(E)
ABOCAST 7703-21, grams	100	100	100	100	100
ABOCURE 7703-21, grams	40	50	60	82	100
Viscosity, cps	4000	3200	2500	1800	1300

PROPERTIES OF CURED PRODUCT

Hardness, Shore D	87	85	82	78	60
Ultimate tensile str., psi	8800	8500	7800	5500	1900
Tensile elongation, %	5.8	6.1	6.5	15.1	55.0
Deflection temp., °C	75°	74°	66°	50°	20°
Izod impact, ft/lb/in notch	0.50	0.56	0.85	1.12	2.12
Weight gain after 24 hrs in:					
Water, %	0.09	0.12	0.19	0.33	0.89
5% Acetic Acid, %	1.0	1.2	1.4	15.1	75.5
Solvent (50/50 Xylol/Ethanol)	1.5	1.8	1.9	12.1	failed
% Weight loss, 24 hrs @ 150°C	0.2	0.3	0.5	0.6	1.1
Dielectric Constant @ 10 ⁶ Hertz	3.57	3.58	3.58	3.61	3.69
Dissipation Factor " " "	0.021	0.021	0.031	0.036	0.040
Vol. Resistivity, Ohm/cm @ 25°C	1.0(10 ¹⁶)	9.0(10 ¹⁶)	10.0(10 ¹⁴)	8.8(10 ¹³)	1.6(10 ¹³)
" " " " 66°C	4.4(10 ¹³)	4.0(10 ¹³)	8.4(10 ¹⁰)	7.8(10 ⁹)	<10 ⁹
" " " " 93°C	2.5(10 ¹¹)	1.5(10 ¹¹)	<10 ⁹	<10 ⁹	<10 ⁹

continued -->

CHARACTERISTICS:

Virtually unaffected by average ambient conditions, soft and salt water, alkalis and diluted acids, several solvents, detergents, oils and greases.

Final properties can be modified by changing the ABOCAST/ABOCURE ratios: the highest rigidity, hardness, chemical and heat resistance are offered by the 100/40 ratio. Higher ABOCURE ratios (up to 100/100 parts ABOCAST/ABOCURE) yield increasing flexibility, shock & thermocycling resistance, adhesion to problem surfaces.

The 7703-21 System develops tenacious adhesion with metals, ceramics, wood, fiberglass, masonry and most materials, to form permanent structural and dielectric bonds.

Radiation resistance recommends the 7703-21 System in X-ray and other radioactive environments.

INSTRUCTIONS FOR USE:

Surfaces Must Be Thoroughly Clean and Dry for good adhesion. Sandblasting, sanding or roughening after washing and degreasing is recommended for problem surfaces.

ABOCAST/ABOCURE Mixing must be thorough, or "soft spots" result. A rod, spatula, paddle, or power mixer are all adequate if properly used.

Viscosity is greatly decreased by heating and increased by cold. Thus, better flow, wetting and adhesion, as well as faster hardening, are obtained on a warm surface, or with a warm resin.

An Induction Period (waiting period in the mixing container, after mixing) of at least 10 minutes may be necessary to avoid "tacky hardening" of thin surface layers exposed to ambient moisture during application.

Pot Life is the time the ABOCAST/ABOCURE blend remains workable, before hardening, in the mixing container.

Hardening, Cure, Temperature. Since the 7703-21 System contains no solvent, it hardens by chemical reaction rather than by drying. Therefore it can be also cast in any thickness and without shrinkage. The hardening reaction generates heat and is accelerated by mass and heat.

Hardening Time: 3-24 hours @ 25°C; faster with heating, which can reduce the process to a few minutes. Thick sections harden faster than thin layers. Low temperatures slow hardening (too slow under 10°C).

Large masses harden much faster (as their bulk retains the reaction heat) than small masses or thin layers. The same quantity that hardens in 2 hours, in a full pint can, at room temperature, may need 10 or more hours if spread in a thin layer.

Heating greatly accelerates the process. For instance, the 10-hour hardening at room-temp. may be reduced to 5-8 minutes @ 80°C.

Cure completes the reaction and continues for 1-3 weeks at room temp., or just hours (or even minutes) with heating.

Full strength is reached after 1-3 weeks at room temperature, or in 1-4 hrs @ 80°-120°C.

Heat cure is not needed, but it can be used to optimize properties in a short time.

Application is simple. Disposable cans, squeeze-bottles, brushes, rollers, sprayguns are all adequate for different purposes.

Metering/mixing/dispensing pumps are commonly used to automate the process in production cycles.

The above information is the result of accurate laboratory and field tests. However, no guarantee is offered, as uses and applications are beyond our control. The user is urged to test the products in his conditions and environment.