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5 VARIABLE-RATIO EPOXY ADHESIVES

TDS 850320

5 VARIABLE-RATIO EPOXY ADHESIVES FOR STRUCTURAL AND ELECTRIC APPLICATIONS

2-component systems offering high strength and versatility

<u>ABOWELD/ABOCURE 48-8:</u>	High-viscosity, most versatile, fast-hardening.
<u>ABOCAST/ABOCURE 45-10:</u>	Lower-viscosity, very versatile, faster than 48-8
<u>ABOCAST/ABOCURE 37-10:</u>	Low-viscosity, easy to cast, slow, low exotherm
<u>ABOCAST/ABOCURE 53-15:</u>	Variable-viscosity, easy to cast, fast-hardening
<u>ABOWELD/ABOCURE 48-14:</u>	Thixotropic, for spreading and dipping, very slow.

SUGGESTED USES:

Bonding structural assemblies, like honey-comb sandwich doors and panels, aluminum or fiberglass panels on ships, trains, trucks and other carriers.

Bonding, **potting, encapsulating, dipping** electric components like fuses, insulators, junction boxes, terminals, transformers, capacitors, diodes, switches, chips. Brushes, filters, laminates, furniture, **mounts, repairs, patches.**

COMPARATIVE PARAMETERS:						
COMPOUND	COLOR	RATIOS Parts by Weight	VISCOSITY Poises @ 25-27 °C	POT LIFE 100 gm	HARDENING of adhesive layer at various temperatures °C	MAIN APPLICATION
ABOWELD 48-8:	White	100	-	30-40 min	25°: 3-5 hrs	Assemblies Panels Repairs Mounts
ABOCURE 48-8:	Black	40-100	200		80°: 4-6 min	
Blend:	Gray				120°: 2 min 150°: 0.4-1 min	
AIOCAST 45-10:	White	100	170	25-35 min	25°: 2-3 hrs	Composites Repair kits Insulators Capacitors
ABOCURE 45-10:	Black	40-80			80°: 4-5 min	
Blend:	Gray				120°: 2 min 150°: 0.3-1 min	
ABOCAST 37-10:	White	100	-	2.5 hrs	25°: 10-18 hrs	Loudspeakers Magnets Potting Encapsulation
ABOCURE 37-10:	Black	40-100	100		80°: 9-12 min	
Blend:	Gray				120°: 5 min 150°: 1-2 min	
ABOCAST 53-15:	White	100	120-20	25-35 min	25°: 2-3 hrs	Brushes Potting Impregnation Injection
ABOCURE 53-15:	Black	30-60			80°: 4-5 min	
Blend:	Gray				120°: 2 min 150°: 0.3-1 min	
ABOWELD 48-14:	White	100	Thixotropic (light-vaseline consistency)	8-11 hrs	25°: 2-4 days	Fuses Terminals Dipping Laminates
kBOCURE 48-14:	Black	100-150			80°: 30-40 min	
Blend:	Gray				120°: 20-25 min 150°: 15-20 min,	

<continued>

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The **VARIABLE-RATIO** feature is important for designers and researchers. In this series, ABOCURE hardeners act as plasticizers when used in excess of the stoichiometric ratio. E.g., the stoichiometric ratio for the 48-8 system, 100pbw ABOWELD/40pbw ABOCURE, offers the highest rigidity, heat and chemical resistance. The **more ABOCURE is used, the more flexibility and shock resistance, and the less chemical and heat resistance** is obtained in the cured product, as usual with plasticizers. This may be essential where adhesion of 'impossible-to-bond' surfaces is a problem. The ratio ranges shown above offer tensile values from about 8000 (lowest ABOCURE ratio) to 500 psi (higher ABOCURE ratio). But still higher ABOCURE ratios can be used, until a 'mushy' cured product is obtained, often useful in adhesive projects with difficult materials like polyolefines, ABS, vinyls. **In the 53-15 system, changes of ABOCURE ratio affect the viscosity** rather than other properties. This is useful in cases like brush manufacturing, where viscosity variations are needed for different bristles.

COLOR: The white/black gray blend **allows visual inspection of mixing and ratios:** streaks indicate insufficient mixing; the shade of gray shows the ratios used.

Typical averaged tests, cured 2/1 ratio: Tensile strength: 7400 psi; Ult. Elongation: 3%; Flexural: 12000; Compressive: 16,600. Weight Change after 24 hrs. in: Water: 0.2; 50% NaOH: 0.09; 30% Sulfuric Acid: 1.3; 5% Acetic Acid: 1.5; 1/1 Xylene/Alcohol: 2.3; JP 4 Fuel: 0.1. Weight loss after 24 hours @ 150°C: 0.55. Virtually unaffected by atmospheric conditions, soft and salt water, alkalis and diluted acids. Averaged Shore Hardness of various ratios: 100/40pbw: 80D; 100/80: 68D; 100/100: 66D, 60D after 10 sec.

All five offer **tenacious adhesion** to metal, glass, ceramics, wood, masonry and most rigid materials, to form permanent structural and dielectric bonds.

INSTRUCTIONS FOR USE:

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

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

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

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

An **Induction Period** (waiting period in the mixing container, after mixing) of at least 10 minutes may be necessary to avoid "tacky hardening".

Hardening, Cure, Temperature. The hardening reaction generates heat and is accelerated by mass and heat. **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. Cure** completes the reaction and continues for 1-3 weeks at room temp., or just hours (or even minutes) with heating.

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

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. Specifications are subject to state-of-the-art changes.