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COLORLESS EPOXIES

TDS 850213

“COLORLESS”, EPOXY CASTING COMPOUNDS

2-Component Transparent Structural and Dielectric Liquid Systems

ABOCAST 8503-3/ABOCURE 8503-3: General purpose. Low viscosity. Medium speed.

ABOCAST 8503-4/ABOCURE 8503-4: General purpose. Low viscosity. Moderate speed.

ABOCAST 8503-5/ABOCURE 8503-5: Small castings. Decoupage. Faster hardening.

ABOCAST 8503-6/ABOCURE 8503-6: Larger castings. Low viscosity. Slow hardening.

ABOCAST 8503-7/ABOCURE 8503-7: General purpose. Low viscosity. Slow hardening.

SUGGESTED USES:

TRANSPARENT CASTING, EMBEDDING, ENCAPSULATION, POTTING & BONDING. Casting display or experimental models without the high shrinkage of acrylic or other resins. Precise reproduction of anatomical or scientific models. Embedding organic, geologic or metallurgic specimens. Encapsulation of electric, radioactive or delicate components. Preservation or repair of artistic and historical objects. High-performance trans-parent table tops.

CHARACTERISTICS of the 6 blends (pbw = parts by weight) are:

	8503-3	8503-4	8503-5	8503-6	8503-7
ABOCAST, pbw	100	100	100	100	100
ABOCURE, pbw	60	42	80	40	60

TYPICAL TESTS (not specifications):

VISCOSITY poises @ 25°C:	8	5	11	2	7
POT LIFE 500 gms @ 25°C:	45 min.	1.5 hrs.	30 min.	3.5 hrs	1.5 hrs.
HARDENING, hours @ 25°C	1-10	2-12	1-8	4-18	2-12
HARDNESS, Shore D:	84	89	81	85	81
DEFLECTION	51°C	65°C	50°C	47°C	45
FLEXURAL STRENGTH, psi:	10,300	14,200	11,300	9,100	10,100
TENSILE STRENGTH, psi:	7,900	9,200	8,200	9,100	7,500
ELONGATION:	16%	14%	15%	14%	17%

The designation “COLORLESS” is relative, because a very light yellow tinge is always present in epoxies, due to their chemical nature. However, this is hardly noticeable in thin castings and with most backgrounds. The colorlessness is best obtained in small and thin castings. The faster the resin hardens (shorter pot life), the thinner or smaller the casting must be, to prevent yellowing from excessive heat of reaction typical of thick or large castings. Some colorless large castings may have to be poured in successive layers, each as thin as necessary for minimum discoloration.

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CHARACTERISTICS <continued>

A casting only 1/4 or 1/2 inch thick will show virtually no color. Trial castings at those thicknesses and thicker will show at which thickness the yellowing occurs. Multilayer casting, wherever needed, will be necessary only for colorlessness. As high-temperature cure or post-cure (1-4 hours @ 80-120 °C) increases hardness, thermal, chemical and other properties, yellowing is no sign of deterioration.

The following comments are only tentative. All 5 products are so versatile and similar, that the choice depends primarily on personal preference of viscosity, reaction rate, size of castings and particular working conditions.

ABOCAST/ABOCURE 8503-3 has a good balance of properties with a fairly fast hardening. **ABOCAST/ABOCURE 8503-4** offers a convenient 2/1 ratio by volume and lends itself to casting of thicker layers than 8503-3, because of its slower reactivity.

ABOCAST/ABOCURE 8503-5 is a good choice for small castings, especially for analytical purposes and for small embedments, due to its faster reactivity.

ABOCAST/ABOCURE 8503-6 allows the largest castings in this series and offers the lowest viscosity for bubble-free casting, because of its low viscosity and slow reactivity. Its low exotherm also allows embedding of heat-sensitive specimens.

ABOCAST/ABOCURE 8503-7 is similar to the 8503-4 system, but more flexible.

INSTRUCTIONS FOR USE:

ABOCAST/ABOCURE **mixing must be thorough**, or "soft spots" may result. Rods, spatulas, tongue depressors, power mixers are all adequate if properly used.

Pot life is the time the mix remains workable (before hardening) in the mixing container. The reaction is exothermic (heat generating) and is accelerated by heat.

Hardening, temperature, color. The hardening reaction starts when ABOCAST & ABOCURE are mixed. **Thick masses harden much faster** than thin layers. **Excessive heat or exotherm causes yellowing.** Therefore, longer cures at lower temperature and smaller castings are the first choice, especially with 8503-5. As above mentioned, casting large surfaces in thin layers and/or on heat-conductive surfaces (like metal molds) generates little exotherm or yellowing. The proper choice is determined by simple test-casting in each case.

Bubble-free castings are easily obtained with a little practice. Vacuuming the blend or slightly warming the resin and hardener (separately) prior to mixing gives excellent results, but they are not always necessary.

Heating greatly accelerates the reaction. E.g.: a casting of 8503-6 that would harden in 3-4 hours @ 25°C would harden in 20-30 minutes @ 60°C or 10-20 min. @ 80°C.

Curing completes the reaction beyond hardening. It occurs spontaneously and may need 1-3 weeks at room temp., or just hours (or even minutes) with heating. As above described, heat cure or post-cure is used to optimize the rigidity, chemical and heat resistance.

Further instructions will be sent upon request.

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.