



ABATRON, INC.

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ONE-COMPONENT EPOXY SYSTEMS

TDS 850411

ONE - COMPONENT EPOXY SYSTEMS

Solventless Casting, Adhesive and Coating Compounds for Structural and Electric Uses.

- ABOCAST 8504-1:** All-purpose - Clear - Good balance of properties.
- ABOCAST 8504-5:** Plasticized - Clear - Very high strength and impact.
- ABOCAST 8103-13:** Low-viscosity - Clear - Easy casting; deep impregnation.
- ABOCAST 8103-14:** Lowest-viscosity - Clear - Maximum wetting and penetration.
- ABOCAST 8501-6:** High-temperature - Clear - Very high temperature uses.
- ABOWELD 8504-8:** 8504-1 in putty form - Black - Adhesive paste; heat transfer.
- ABOWELD 8504-9:** 8501-6 in putty form - Black - Very high temp.; heat transfer
- ABOWELD 8007-6:** Flexible paste - Gray-tan - High thermocycling requirements.

SUGGESTED USES:

Casting, Potting, Encapsulating, Embedding Applications where 2-component systems can not be used. Electronic and structural components, patterns, medical equipment.
 Coating, Impregnation, Resurfacing, Insulation.
 Bonding metal, ceramics, glass, most rigid materials. Assembly, Patching, Filling.

COMPARATIVE PARAMETERS:

ABOCAST:	8504-1	8504-5	8103-13	8103-14	8501-6
Viscosity (approx.):	12,000 cps	1,500 cps	600 cps	200 cps	17,000 cps
Pot life @ 100°C:	200 minutes	220 min.	180 min.	205 min.	160 min.
Cure cycle:	...1-2 hours @ 150-160°C + optional 1-4 hrs @ 160-180°C....				
Hardness, Rockwell M:	115	95	98	88	121
Deflection temperature:	168°C	72°C	104°C	79°C	255°C
Flexural strength, psi.:	12,000	14,500	13,400	12,100	14,500
Compressive " " :	31,200	40,500	13,100	10,900	35,400
Tensile " " :	4,200	8,900	6,400	8,400	3,800
Elongation:	1.1%	7.6%	3.3%	5.1%	0.7%
Flexural modulus (x10 ⁵):	4.0	4.4	3.9	3.3	5.0
Thermal conductivity:4-4.8 x 10 ⁻⁴ cal/cm s °C.....				
Vol. resistivity, "A":	9.63x10 ¹⁵	3.77x10 ¹⁵	2.58x10 ¹⁵	3.8x10 ¹⁵	1.22x10 ¹⁶
" " , C 96/23/96:	1.22x10 ¹⁶	1.51x10 ¹⁵	3.62x10 ¹²	3.04x10 ¹⁴	1.10x'0 ¹⁶
Surf. " , Cond. A:	>7.85x10 ¹⁵	1.57x10 ¹⁵	2.36x10 ¹⁵	3.93x10 ¹⁵	>7.85x10 ¹⁵
" " , C 96/23/96:	>7.85x10 ¹⁵	1.02x10 ¹⁵	7.38x10 ¹¹	1.13x10 ¹⁴	>7.85x10 ¹⁵
Diel. Const. A, cps 60:	3.36	3.54	3.27	3.26	3.57
" " A, cps 1000000:	3.15	3.20	3.10	3.12	3.33
% Weight change after 30 days in:					
Distilled Water:	1.04	1.12	1.11	1.33	1.17
30% Sulfuric Acid:	0.73	0.71	0.71	0.82	0.78
50% Sodium Hydroxide:	-0.05	0.03	-0.06	-0.05	0.01
JP 4 Fuel:	0.06	0.05	0.03	0.06	0.05
Acetone:	1.19	Failed	9.61	24.60	0.12
95% Ethyl Alcohol:	0.43				

<continued>

ABOCAST 8504-1 is a versatile one-component epoxy system, with an optimum balance of properties for most casting, adhesive, impregnation and coating applications.

ABOWELD 8504-8 is a black putty version of 8504-1. It is designed to raise the latter's thermal conductivity from 4 to 14-18 x 10⁻⁴ cal/cm s °C, and to reduce the already low shrinkage to almost unmeasurable levels. Both advantages, as well as its high thermal shock resistance, are frequently needed in adhesives and patching materials for electric and structural applications. Ideal for bonding, patching and for building protective layers. Also available in other colors.

ABOCAST 8504-5 provides exceptional physical properties and thermal shock resistance from sub-zero to moderately high temperatures.

ABOCAST 8103-13 is the low-viscosity one-component clear epoxy that offers high performance at relatively high temperatures. Best for thin-wall casting.

ABOCAST 8103-14 is the lowest-viscosity one-component epoxy system with heavy-duty structural and dielectric properties.

ABOCAST 8501-6 offers the highest heat resistance of the clear resins.

ABOWELD 8504-9 is a black putty version of 8501-6. Its exceptional deflection temperature of 260°C, thermal conductivity (same as ABOWELD 8504-8) and low shrinkage render this adhesive paste outstanding. Also available in other colors.

ABOWELD 8007-6 is a tan-gray flexible paste offering the highest thermoshock resistance in this series. Its dielectric and structural properties meet most requirements from subzero to moderately high temperatures. Available in colors.

Shelf life: 5-8 months. One-component epoxy compounds are blends of resins with catalysts that react so slowly as to remain liquid for very long time at room temperature. However, they will harden in a few hours upon heating. The above-described products have a shelf life (or "pot life" at room temperature) of 5-8 months. Longer if cold or refrigerated, shorter at higher temperatures.

The most obvious of the advantages of one-component epoxies is the elimination of mixing resin and hardener from two different containers. The drawbacks are the limited shelf life and the necessity of heat-cure.

For good adhesion, the surfaces involved must be clean and dry. Sandblasting, surface roughening or etching can be very helpful.

Curing cycles. Thin layers and small castings can use the above described cycles or shorter variations at higher temperatures. The 160-180°C postcure optimizes the chemical, heat resistance and rigidity. Medium and larger castings require cautious heating, because the hardening reaction generates heat and is accelerated by heat. If heated too fast, large masses may generate more heat than the product can withstand, because the reaction heat is retained by the bulk. In these cases, 1-5 hours @ 80-110°C (until hard) + 1-6 hrs. @ 120-180°C (full postcure for optimum properties) may be a proper cycle. As a rule, the thicker the casting, the more caution must be used in choosing the proper heating level. This is easily determined with simple tests. With these precautions, surprisingly large castings can be made from one-component ABOCAST compounds.

The ABOWELD one-component putties offer great versatility as adhesives, protective and patching materials with high heat conductivity, structural and dielectric properties. Their curing cycles are less critical than with the clear compounds, because their reaction generates lower heat levels.

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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.