



ABATRON, INC.

5501 - 95th Ave., Kenosha, WI 53144 U.S.A.
(262)653-2000 Fax: (262)653-2019
http://www.abatron.com e-mail: info@abatron.com

ONE-COMPONENT STRUCTURAL / EPOXY SYSTEMS

TDS 871212

ONE-COMPONENT STRUCTURAL/DIELECTRIC EPOXY SYSTEMS

Highly filled, class H (180°C) structural adhesives, casting and potting compounds.

ABOWELD 8708-5:	Heat-conductive adhesive paste for SLOW high-temperature curing.
ABOWELD 8708-7:	Heat-conductive adhesive paste for FASTER high-temperature curing.
ABOWELD 8708-8:	Heat-conductive adhesive paste for FAST high-temperature curing.
ABOCAST 8708-6:	Castable adhesive compound for SLOW high-temperature curing.
ABOCAST 8708-9:	Castable adhesive compound for FASTER high-temperature curing.
ABOCAST 8708-10:	Castable adhesive compound for FAST high-temperature curing.

SUGGESTED USES:

Structural bonding, Casting, Potting, Encapsulating, Embedding applications where 2-component systems are not practical. Appliances, radiators, electronic components, medical equipment. Excellent bond to metals, ceramics, glass. Assembly, Patching, Filling, Resurfacing, Insulation.

COMPARATIVE PARAMETERS:

	8708-5	8708-7	8708-8	8708-6	8708-9	8708-10
ABOWELD						
ABOCAST						
Standard Color:	black	black	black	black	black	black
Other colors available:	yes	yes	yes	yes	yes	yes
Lbs per Gallon:	15	15	15	12	12	12
Kgs per liter:	1.8	1.8	1.8	1.4	1.4	1.4
Viscosity, cps @ 25°C:	180000	180000	180000	20000	20000	20000
" " " " 100°C:	1500	1500	1500	120	120	120
Maximum shelf life @ 20°C:	1 year	9 months	5 months	1 year	9 months	5 months
Time to harden @ 121°C:	---	1.5 hrs.	1 hour	---	1.5 hrs.	1 hour
" " " " 150°C:	3.5 hrs.	16 min.	12 min.	3.3 hrs.	11 min.	6 min.
" " " " 180°C:	40 min.	7 min.	4 min.	20 min.	5 min.	3 min.
Cure time @ 121°C (250°F):	---	3-4 hrs.	2-3 hrs.	---	3-4 hrs.	2-3 hrs.
Cure time @ 150°C (302°F):	5-6 hrs.	1 hour	40 min.	5-6 hrs.	1 hour	40 min.
Cure time @ 180°C (356°F):	1-2 hrs.	40 min.	20 min.	1-2 hrs.	40 min.	20 min.
Shore D hardness, @ 25°C:	----- 90 -----					
Shore D hardness, @ 120°C:	----- >= 70 -----					
Dielectric strength:	----- >= 400 volts/mil -----					
Thermal expansion coeff.: (*)	----- 33 ----- 39 -----					
Thermal conductivity: (**)	----- 0.74 (0.44) ----- 0.60 (0.36) -----					

(*): -50° to +50°C (in/in/°C x 10⁻⁶) [typical value for unfilled epoxy: 50].

(**): X/m°C (Btu ft/h-ft²F) [typical value for unfilled epoxy: 0.22 (0.13)].

Cure, thermal and other parameters are influenced by environment, application and use conditions.

E. g., longer cures at lower temperatures offer lower exotherms and dimensional stresses.

TDS 871212

Shelf life: 5-12 months. The most obvious advantage 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. In fact, the compounds that can be cured faster also show a shorter shelf life. Moreover, the predicted shelf life cannot be relied upon if environmental conditions are not strictly controlled from shipment through storage and application. For instance, a 1-year shelf life @ 25°C (77°F) becomes just a few months @ 40°C (104°F), or a few hours @ 120°C (248°F).

Product integrity. As resin and fillers may separate after long storage, thereby altering the relative ratios at different levels in the container, the cans should be stored upside down and the product thoroughly stirred to uniformity before using.

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

To prevent adhesion in molds and other surfaces, Abatron's ABHESIVE-15B release agent is brushed or sprayed on the area involved.

Curing cycles. Thin layers and small castings can use the above described cycles or shorter times at higher temperatures. An optional 2-3 hrs 150-180°C postcure can be used to optimize 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 or too high, large masses may generate more heat than the product can withstand, because the reaction heat is retained by the bulk. In these cases, many hours @ 80-110°C (with frequent controls, 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 with one-component ABOCAST and ABOWELD compounds.

ABOWELD one-component putties offer great versatility as adhesives, protective and patching materials with good heat conductivity, structural and dielectric properties. In spite of their paste consistency at room temperature, they are excellent casting materials at high temperatures, as their low viscosity at 100°C indicates. Their higher filler content reduces exotherm and permits larger castings, minimizes shrinkage and provides better heat conductivity.

=====

ALTERNATE 1-COMPONENT DIELECTRIC EPOXIES (described in other technical data sheet):

ABOCAST 8504-1: clear versatile casting, adhesive, impregnation & coating resin.
ABOCAST 8504-5: clear casting & adhesive resin with high strength and thermocycling properties.
ABOCAST 8103-13: clear low-viscosity casting & adhesive resin.
ABOCAST 8103-14: clear very-low viscosity casting & adhesive resin.
ABOCAST 8501-6: clear casting & adhesive resin with 255°C (491°F) deflection temperature.
ABOWELD 8504-9: black putty with 260°C (500°F) deflection temperature & high heat conductivity.
ABOWELD 8007-6: tan-gray flexible thixotropic paste.

=====

The above information is only a general guide resulting from laboratory and field tests that may not apply to the user's conditions. No guarantee is offered, as applications are beyond our control. The user is urged to test and adapt the above data in his own conditions and environment previous to product adoption. Specifications may be subject to state-of-the-art changes.