



SYNPOL PRODUCTS PRIVATE LTD.

Regd Office & Factory: 77, G.V.M.S. AUDYOGIC VASAHA LTD.,
ODHAV, AHMEDABAD – 382 415, INDIA

PRODUCT CODE : MISC. / 10.06

Synpol 230 & Hardener 111

TYPE : Cold curing epoxy casting system for electric and electronic applications.

DESCRIPTION : Liquid epoxy resin modified by the addition of plastisizer and very low viscosity Aliphatic polyamine hardener.

SPECIFICATIONS :	Synpol 230	Hardener 111
1) Appearance	Clear pale yellow liquid	Pale yellow to greenish thin liquid
2) Specific gravity @ 25 ⁰ C.	1.12 - 1.13	0.97 - 0.99
3) Viscosity @ 25 ⁰ C. by Brookfield (spindle # 2, 100 rpm), cps.	1500 - 2500	35 - 45
4) Mixing ratio, by weight	100	9 - 10

PROCESSING :

Unfilled System : The chemical reaction initiated by mixing epoxy resin and hardener results in the generation of exothermic heat. The peak temperatures attained are determined by the starting temperature and by the size and shape of the casting being produced. Unfilled resin system suitable only for manufacturing castings about 500 gms. Castings above 500 gms. should be made with addition of fillers to dissipate heat and control the exothermic reaction.

Filled Systems : The addition of powdered inorganic fillers such as silica flour, micro talc, chalk flour, Al₂O₃ (Alluminium trioxide) has been found to offer considerable advantages like improvement in mechanical and electrical properties, reduces shrinkage and exothermic temperature, imparts a lower co-efficient of thermal expansion, improves thermal conductivity, modulus of elasticity while reducing elongation at break, and reduces cost. Silica flour imparts the best mechanical properties, but makes the casting difficult to machine..

Incorporation of fillers : The filler increases the viscosity of the mix. To ensure thorough wetting the resin should be heated to 60 - 80⁰ C. before the filler is added. To meet stringent dielectric requirements the resin / filler mix should be either degassed or the filler added to the resin under vacuum. The hardener can be added when the resin / filler mix has cooled to room temperature or at least to under 40⁰ C.

TYPICAL FORMULATIONS :

System	Unfilled	Filled
Synpol 230	100	100
Hardener 111	9 - 10	9 - 10
Silica flour	---	120 - 150
Curing temperature ⁰ C.	20 - 60	20 - 60
Curing time, hrs. @ 25 ⁰ C.	24	24
@ 40 ⁰ C.	5 - 7	5 - 7

continued.....

DISCLAIMER: Above Specifications are subject to change without prior notice and company reserves the right to modify the same at any time

PROPERTIES OF CURED CASTINGS (AVERAGE VALUES) :

Property	Unit	Unfilled	Filled
Density	kg/dm ³	1.15 - 1.20	1.60 - 1.70
Tensile strength	kg/mm ²	5.5 - 8.0	3.5 - 5.0
Compressive strength	kg/mm ²	9.0 - 10.0	11 - 15
Flexural strength	kg/mm ²	9.0 - 11.0	4 - 8
Martens heat distortion temperature	⁰ C	50 - 60	55 - 60
Relative dielectric constant @ 25 ⁰ C.		4.0	4.4 - 4.7
@ 60 ⁰ C.		5.4	5.5 - 5.9
Dielectric loss factor tan @ 25 ⁰ C.		0.016	0.038 - 0.045
@ 60 ⁰ C.		0.074	0.075 - 0.09
Minimum dielectric strength 50 c/s, 25 ⁰ C	kv/cm	210 - 230	210 - 230

APPLICATIONS : Low voltage and electronic engineering

- Miniature transformers
- Coils, magnets
- HF and NF chokes
- Terminal noise filters, interference suppressers
- Capacitors
- Recorder heads
- Electronic sub-assemblies
- Circuit and connector elements
- Sockets, bases and fittings
- Mains circuit connectors

FEATURES :

- Low initial viscosity
- Accepts high filler loading
- Processing and cure at room or slightly elevated temperature

END PROPERTIES :

- Good heat resistance
- Depending on the resin system used and the type of application, service temperatures up to about 110⁰ C are feasible.
- Good resistance to atmospheric and chemical degradation

STORAGE :

Synpol 230 and Hardener 111 should be stored in cool place under shade. The properties are so adjusted to have storage stability of minimum 6 months.

PACKING :

25 kgs. M.S. drums and 200 kgs. M.S. barrels.

DISCLAIMER :

Information in this literature is to the best of our knowledge true and accurate. However, since conditions under which our products may be used are beyond our control, recommendations are made without warranty or guarantee.

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