

SWANCOR 901

EPOXY VINYL ESTER RESIN



Product Description

SWANCOR 901 is a Bisphenol A type epoxy vinyl ester resin. It provides excellent corrosion resistance to a broad range of organic and inorganic acids, alkalis, oxidizing chemicals and salt solutions etc. It also provides very good mechanical strength such as tensile and flexural while incorporated with reinforcement such glass fiber, carbon fiber or kevlar fiber etc. **SWANCOR 901** is designed to provide superior toughness with excellent fatigue resistance due to high heat distortion temperature.

Applications

- Chemical storage tanks, pipes, fume gas desulfurizing systems (FGD), scrubbers, ducts.
- Corrosion resistant flooring while incorporated with aggregates.
- Waste water treatment systems.
- Food storage tanks and pure water system.
- Marine use for yachts and boats, approved by DNV and Lloyd's Register.

Fabrication Methods

- Can be easily applied by hand lay-up laminating, spray-up, pultrusion, resin transfer molding (RTM) and filament winding.
- Can be used in polymer concrete casting.
- Can comply with US FDA regulation 21 CFR 177.2440 if the resin is properly formulated and cured.

Typical properties of liquid resin

| Property ^{*1} | Value |
|-------------------------------|--------------------|
| Appearance | Clear amber liquid |
| Solid Content (%) | 55 +/- 1 |
| Viscosity (cps) ^{*2} | 450 +/- 100 |
| Specific Gravity | 1.04 +/- 0.01 |
| Gel Time (min) ^{*3} | 15~25 |
| Shelf Life (months) | 9 |

^{*1} Measurement were obtained under 25°C.

^{*2} LVT-#3-60rpm@25°C.

^{*3} 6% Cobalt: 0.4phr, 100% DMA: 0.05phr, Andonox LCR: 1.2phr @25°C.

Typical clear casting properties of cured resin

| Property | Measurement | Test Method |
|---|--------------------|-------------|
| Tensile Strength (psi) | 11,000~13,000 | ASTM D638 |
| Tensile Modulus (X10 ⁵ psi) | 4.7~5.1 | ASTM D638 |
| Tensile Elongation (%) | 5.0~6.0 | ASTM D638 |
| Flexural Strength (psi) | 18,000~22,000 | ASTM D790 |
| Flexural Modulus (X10 ⁵ psi) | 4.8~5.4 | ASTM D790 |
| Volume Shrinkage (%) | 7.5~8.0 | ASTM D2566 |
| Heat Distortion Temperature (°C/°F) ^{*4} | 108~112 252~259 | ASTM D648 |
| Barcol Hardness | 35 +/- 3 | ASTM D2583 |

^{*4} Cure condition for HDT: 24 hours at room temperature then 2 hours at 105°C.

Heat resistance of SWANCOR 901 laminates^{*5,6}

| Property | NBS 15-69 Spec. | Testing Temperature (°C) | SWANCOR 901 Laminate Measurement |
|---|-----------------|--------------------------|----------------------------------|
| Tensile Strength (psi) | 12,000 | 25°C | 22,000 |
| | | 65°C | 19,500 |
| | | 95°C | 18,500 |
| | | 120°C | 12,000 |
| | | 150°C | 7,500 |
| Tensile Modulus (X10 ⁵ psi) | --- | 25°C | 17.4 |
| | | 65°C | 17.8 |
| | | 95°C | 14.9 |
| | | 120°C | 11.2 |
| | | 150°C | 7.7 |
| Flexural Strength (psi) | 19,000 | 25°C | 29,000 |
| | | 65°C | 28,000 |
| | | 95°C | 27,000 |
| | | 120°C | 5,000 |
| | | 150°C | 3,200 |
| Flexural Modulus (X10 ⁵ psi) | 8.0 | 25°C | 10.5 |
| | | 65°C | 10.1 |
| | | 95°C | 8.5 |
| | | 120°C | 2.3 |
| | | 150°C | 2.2 |

^{*5} Construction according to NBS PS 15-69.

^{*6} Laminate construction is as follows: V/M/M/Wr/M/Wr/M, fiber content: 39~40%, thickness: 6 mm.

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Typical gel time of SWANCOR 901

| Temperature | Chemicals | 10~20 min | 20~40 min | 40~60 min |
|---------------------------|-----------|-----------|-----------|-----------|
| Cured by MEKP/CoOct/DMA*7 | | | | |
| 18°C | MEKP | 1.80% | 1.50% | 1.20% |
| | CoOct | 0.40% | 0.40% | 0.40% |
| | DMA | 0.10% | 0.05% | 0.05% |
| 25°C | MEKP | 1.50% | 1.20% | 1.20% |
| | CoOct | 0.40% | 0.40% | 0.30% |
| | DMA | 0.08% | 0.03% | 0.02% |
| 30°C | MEKP | 1.20% | 1.00% | 1.00% |
| | CoOct | 0.40% | 0.30% | 0.30% |
| | DMA | 0.05% | 0.03% | 0.00% |
| Cured by BPO/DMA*8 | | | | |
| 18°C | BPO | 1.50% | 1.50% | 1.20% |
| | DMA | 0.20% | 0.10% | 0.06% |
| 25°C | BPO | 1.50% | 1.25% | 1.00% |
| | DMA | 0.15% | 0.10% | 0.06% |
| 30°C | BPO | 1.50% | 1.05% | 1.00% |
| | DMA | 0.12% | 0.06% | 0.04% |

*7 Concentration: Andonox LCR, CoOct: 6%, DMA: 100%

*8 Concentration: BPO: 98%, DMA: 100%

NOTICE IN USE

1. If **SWANCOR 901** is blended with cobalt-salt promoters, shelf life will be shortened. Promoted **SWANCOR 901** must be used within three months.
2. The gel time of **SWANCOR 901** is affected primarily by catalyst concentration and temperature. The variations of cure characteristics may be caused by the variations of catalyst, humidity, pigment, fillers and other additives. It is recommended that the fabricators check the cure characteristics with a small quantity resin before proceeding for bulk production.
3. **SWANCOR 901** contains organic solvent (styrene). Keep away from heat, sparks and flames.
4. **SWANCOR 901** is a potentially reactive chemical. Please store it in dark and keep away from heat and direct sunshine.
5. Containers, not completely emptied must be closed immediately after use.

MATERIAL SAFETY AND HANDLING INFORMATION

SKIN CONTACT:

Thoroughly wash exposed area with soap and water immediately. Remove contaminated clothing. Launder contaminated clothing before re-use.

EYE CONTACT:

Flush with large amount of water immediately and continuously for 20 minutes, lifting upper and lower lids occasionally. Get medical attention.

INGESTION:

Do not induce vomiting. Keep person warm, quiet and get medical attention. Aspiration of material into the lungs can cause chemical pneumonitis which can be fatal.

INHALATION:

If affected, remove individual to fresh air. If breathing is difficult, administer oxygen. If breathing has stopped, give artificial respiration. Keep person warm, quiet, and get medical attention.

PERSONAL PROTECTION:

Do not breathe vapors. High concentration of vapor can be hazardous. Keep out of sewers. Eliminate all sources of ignition in vicinity of spill or released vapor to avoid fire or explosion. For large spills, warn public of downwind explosion hazard. Check area with explosion meter before re-entering area. Ground and bond all containers and handling equipment.

RESIN STORAGE

Keep away from ignition sources; flames, pilot lights, electrical sparks, and sparking tools. NO SMOKING. Do not store in direct sunlight. Store separate from oxidizing materials, peroxides, and metal salts. Keep container closed when not in use. To ensure maximum stability and maintain optimum resin properties, resins should be stored in closed containers at temperatures below 25°C(77°F). Copper or copper containing alloys should be avoided as containers.

SPILLS

Eliminate all ignition sources (flares, flames, including pilot lights electrical sparks). Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed. Stop spill at source, dike area of spill to prevent spreading, pump liquid to salvage tank. Remaining liquid may be taken up on sand, clay, earth, floor absorbent or other absorbent material and shoveled into containers.

WASTE DISPOSAL

Destroy by liquid incineration in accordance with applicable regulation. Contaminated absorbent should be disposed in accordance to government regulations.

PACKAGE

Standard packing is 200 kg steel drum.