

Product Description

SWANCOR CHEMPULSE 901 is a Bisphenol A type epoxy vinyl ester resin. It is a premium resin with improved reactivity and purity. 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 as glass fiber, carbon fiber or kevlar fiber etc. **SWANCOR CHEMPULSE 901** is designed to provide superior toughness with excellent fatigue resistance due to high heat distortion temperature

Advantages

- Lower viscosity, i.e. better fiber wet-put.
- Less or no DMA is needed, i.e. easier formulation and cost saving.
- Lower casting color, i.e. better see-through for bubble checking.
- Lower exotherm, i.e. less cracking, less cycles and quality improvement.
- Longer shelf life, i.e. better inventory control

Applications

- Chemical storage tanks, pipes, flue gas desulfurization 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.

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 177.2420 if the resin is properly formulated and cured

Typical properties of liquid resin

Property	CHEMPULSE 901	CHEMPULSE 901-P
Appearance	Clear yellowish liquid	Violet-red liquid
Solid Content (%)	55 ± 1	55 ± 1
Viscosity (cps) ^{*1}	350 ± 100	350 ± 100
Specific Gravity	1.04 ± 0.01	1.04 ± 0.01
Gel Time (min)	15 ~ 25 ^{*2}	20 ~ 35 ^{*3}
Shelf Life (months)	9 (25°C)	4 (25°C)

^{*1} LVT-#3-60rpm

^{*2} MEKP: 1.2%, 6%CoOct: 0.3%, Temperature: 25°C

^{*3} MEKP: 1.0%

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CHEMPULSE 901 Series

Epoxy Vinyl Ester Resins



Typical clear casting properties of cured resin

Property	CHEMPULSE 901	CHEMPULSE 901-P	CHEMPULSE 901	CHEMPULSE 901-P	Test Method
	SI* ⁴		US Standard		
Tensile Strength	80~95MPa		11,000~14,000psi		ASTM D638
Tensile Modulus	3.3~3.6GPa		4.8~5.2 X 10 ⁵ psi		ASTM D638
Tensile Elongation	5.0~6.0%		5.0~6.0%		ASTM D638
Flexural Strength	132~159MPa		19,000~23,000psi		ASTM D790
Flexural Modulus	3.1~3.6GPa		4.5~5.2 X 10 ⁵ psi		ASTM D790
Volume Shrinkage	7.5~8.0%		7.5~8.0%		ASTM D2566
Heat Distortion Temperature * ⁵	100~105 °C		212~221 °F		ASTM D648
Barcol Hardness	35 +/- 3		35 +/- 3		ASTM D2583

*⁴ SI values based on conversion.

*⁵ Cure condition for HDT: 24 hours at room temperature then 2 hours at 105°C.

Typical gel time of SWANCOR CHEMPULSE 901

Gel time Temperature	Materials	10~20 min	20~30 min	45~75 min
Cured by MEKP/CoOct/DMA or 2,4-P ⁶				
15°C/ 59°F	MEKP	1.50%	1.50%	1.50%
	CoOct	0.3%	0.2%	0.05%
	DMA	0.06%	0.06%	---
20°C/ 68°F	MEKP	1.5%	1.0%	1.0%
	CoOct	0.3%	0.1%	0.3%
	2,4-P	---	---	0.02%
25°C/ 77°F	MEKP	1.0%	1.0%	1.0%
	CoOct	0.2%	0.05%	0.05%
	2,4-P	---	---	0.015%
30°C/ 86°F	MEKP	1.0%	1.0%	1.0%
	CoOct	0.05%	0.05%	0.05%
	2,4-P	---	0.015%	0.035%
35°C/ 95°F	MEKP	1.0%	1.0%	1.0%
	CoOct	0.05%	0.05%	0.05%
	2,4-P	0.01%	0.03%	0.06%

*⁶ Concentration: CoOct: 6%, DMA: 100%, 2,4-P: 100%

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CHEMPULSE 901 Series

Epoxy Vinyl Ester Resins



Gel time Temperature	Materials	10~20 min	20~30 min	45~75 min
Cured by BPO/DMA *7				
20°C/ 68°F	BPO	1.40%	1.40%	1.40%
	DMA	0.15%	0.10%	0.06%
25 °C/77 °F	BPO	1.00%	1.00%	1.00%
	DMA	0.10%	0.08%	0.04%
30°C/ 86°F	BPO	0.80%	0.80%	0.80%
	DMA	0.13%	0.08%	0.05%
35°C/ 95°F	BPO	0.70%	0.70%	0.70%
	DMA	0.10%	0.06%	0.04%

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

Typical gel time of SWANCOR CHEMPULSE 901-P

Temperature	0.8% MEKP	1.0% MEKP	1.2% MEKP	1.5% MEKP
15°C/59°F	46min	39min	37min	34min
20°C/68°F	30min	26min	25min	24min
25C/77°F	20min	18min	16min	15min
30°C/86°F	13min	11min	10min	9min
35°C/95°F	10min	8min	8min	7min

NOTICE IN USE

1. If **SWANCOR CHEMPULSE 901** is blended with cobalt-salt promoters, shelf life will be shortened. Promoted **SWANCOR CHEMPULSE 901** must be used within three months.
2. The gel time of **SWANCOR CHEMPULSE 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 CHEMPULSE 901** contains organic solvent (styrene). Keep away from heat, sparks and flames.
4. **SWANCOR CHEMPULSE 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.

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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.

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