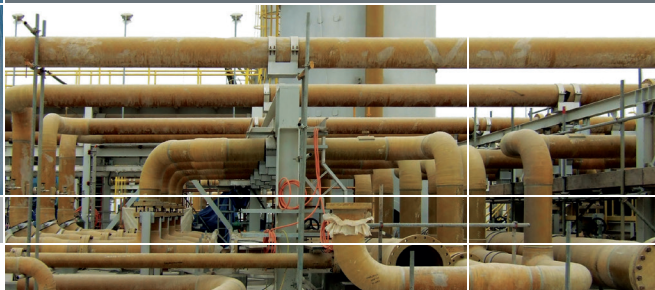
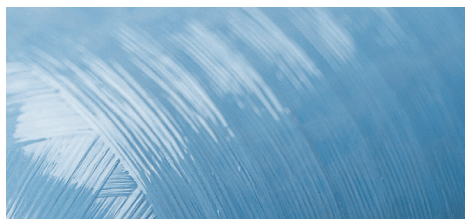


## Filament Winding

### EPIKOTE™ / EPONOL™ Resin Systems and EPIKURE™ Curing Agents and Catalysts



Hexion Inc. (Hexion) offers a wide range of epoxy resin systems and phenolic resins for use in filament winding applications such as pipes, tubing, pressure vessels and tanks. These include both anhydride and amine-cured systems, which have service temperatures from -40 °C to 200 °C. Amine-cured systems are less sensitive to moisture during processing than anhydrides but exhibit shorter pot life.

All Hexion resin systems feature low viscosity, ensuring optimal filament impregnation. Some special systems have been developed to reduce surface tension and air entrapment in the resin bath. Unique defoamers are also available to allow processing at high winding speeds.

Whichever system you choose, Hexion backs it with ongoing R&D, an experienced technical support team and the global production infrastructure of one of the world's leading specialty chemical companies, assuring consistent supply.

### An Overview of Filament Winding

The filament winding process is used to manufacture hollow structures of fiber reinforced composite materials. The filaments (glass, carbon or aramid) are impregnated in a bath containing a thermosetting resin system and applied to a rotating hub at a controlled speed in a specified pattern. Tubings and pipes are frequently produced using metal mandrels which are removed after the curing operation. Removable, multipart mandrels and mandrels of removable materials also exist. Metal or plastic liners (lost mandrels) that protect the laminate and act as a diffusion barrier are used as well in the production of pressurized gas tanks and cylinders. After stripping, the filament wound component can be post cured in order to achieve optimal mechanical strength and the highest chemical resistance.

EPIKOTE™ Epoxy Resin Systems / EPIKURE™ Curing Agents and Catalysts / EPONOL™ Phenolic Resin Systems											
	Curing conditions		Pot life [h/°C]	Service temp. [°C]	Notes	EINECS (Europe)	TSCA (USA)	DSL / NDSL	ECL (Korea)	ENCS (Japan)	IECSC (China)
	Time [h]	Temp. [°C]									
<b>Epoxy Resin Systems</b>											
EPIKOTE Resin MGS RIMR 1035 EPIKURE Curing Agent MGS RIMH 1038	4	80	6 / 30	80	Excellent adhesion to liners.	• •	+ +	+ +	+ +	+ +	+ +
EPIKOTE RESIN 05127 EPIKURE Curing Agent MGS RIMH 1038	2	100	4 / 30	90	Low viscosity, low temperature cure with high ductility.	• •	+ +	+ +	+ +	+ +	+ +
EPIKOTE RESIN 05127 EPIKURE CURING AGENT 05524	2 + 2	60 + 140	1 / 25	140	Medium Tg system with good overall properties	• •	+ +	+ +	+ +	+ +	+ +
EPIKOTE RESIN 491 EPIKURE CURING AGENT 05524 OR EPIKURE CURING AGENT 03402	2 + 2	100 + 180	2 / 40	180	High Tg system with low water pick up. Excellent mechanical properties.	• • •	+ + +	+ + +	+ + +	+ + +	+ + +
EPIKOTE Resin 828 EPIKURE Curing Agent 05476 EPIKURE Catalyst 04976	1 + 2	80 + 130	4 / 40	130	LPG tanks, pressurized air tanks. High Tg, long pot life.	• •	+ +	+ +	+ +	+ -	+ +
EPIKOTE Resin L 1100 EPIKURE Curing Agent 161	2 + 2	60 + 120	2 / 23	120	Pressure vessels, metal inliner, CNG tank.	• •	+ -	+ -	+ -	+ -	+ -
EPIKOTE Resin 827 EPIKURE Curing Agent 3350	3 + 3	130 + 160	4 / 23	140	Springs / suspensions parts, tubing, pipes, manifolds, crack resistant.	• •	+ +	+ +	+ +	+ -	+ +
EPIKOTE Resin 828 LEVEL EPIKURE Curing Agent 3402	2 + 6	120 + 200	> 8 / 25	180	Tubing, pipes, high Tg system.	• •	+ +	+ +	+ +	+ -	+ +
EPIKOTE Resin 827 EPIKURE Curing Agent 05476	2 + 3	90 + 160	3 / 23	150	MDA free system. Pipes, tubing in oil field application, mit Tg range	•	+ +	+ +	+ +	+ +	+ +
EPIKOTE Resin 827 EPIKURE Curing Agent 9551	1 + 2	60 + 120	3 / 25	120	Low viscosity, toughened system with high elongation.	• •	+ +	+ +	+ +	+ -	+ +
EPIKOTE Resin 6002 EPIKURE Curing Agent 3601 EPIKURE Curing Agent 3253	2 + 3	80 + 130	> 5 / 25	130	Modified anhydride system, very low viscosity system.	• • •	+ + +	+ + +	+ + +	+ + +	+ + +
<b>Phenolic Resin System</b>											
EPONOL Resin 2509 EPONOL Resin 2501/A2 EPONOL Resin 2501/B	2	60	2 / 23	80	Low curing temperature, excellent surface. Ideal for flame resistant application as overwrap on Epoxy substrates. Limited shelf life requires specific Supply chain solution in Asia.	• • •	+ + +	+ + +	+ + +	+ + +	+ + +
Cellobond J2027L Phencat 382	3	80	4 / 23	90	Phenolic system with excellent flame retardant properties.	• •	+ +	+ +	+ +	+ +	+ +

• listed, non-excluding polymers, + listed, - not listed



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