



J-LOK equipment is the most modern and technologically advanced in the resin business, equipped with the most accurate system for ratio control of the resin/limestone mixture ensuring that resin/catalyst proportions are consistent. The entire plant is interconnected to provide coordinated control of the entire process. Operators utilize PLC touch screens to enter product recipes and to make operational adjustments. Quality control testing encompasses everything from raw material testing, in-process testing and final product quality and performance testing.

The labs at J-LOK have custom designed equipment such as the automated gel time tester that takes all the technician variation out of the test providing consistent results every time. Both J-LOK plants as well as the R&D lab in Pittsburgh have modified roof bolting machines to measure parameters such as pull strength and insertion force allowing products to be customized as necessary.

J-LOK personnel work with key suppliers to optimize raw material specifications. J-LOK has created many innovations such as TWIN-LOK[®] 2-speed resin cartridges for torque-tension applications, J-LOK LIF, Low Insertion Force resin where bolter thrust is an issue and J-LOK P[™], pumpable resin for grouting from a distance. Several of these products have been patented.



*J-LOK produces resin products to complement JENNMAR products and provide an optimum system of bolt and resin. J-LOK's R&D capability utilizing product formulation expertise from the resin plants in conjunction with the mining expertise of JENNMAR's engineering affiliate, **JENNMAR Engineering** is unmatched.*

GEL, Spin and Hold Times

Gel Time

Generally, the sum of the Spin Time and Hold Time is the Gel Time. The time from the start of mixing until the resin starts to harden is the Gel Time. Gel Time is influenced by temperature of resin, strata and bolt. Additionally, the amount of heat generated in mixing during the spin time also affects Gel Time. Field trials are recommended.

Spin Time

Cartridge contents should be completely mixed to achieve maximum anchorage. The generally accepted mix standard is a minimum of 30 revolutions of the bolt. Spin Time is the time required, at typical bolter rotation of 400–600 rpm, to achieve the complete mix.

Hold Time

After the cartridge contents are mixed, the resin must harden to achieve strength. The time required after mixing is completed and the bolt has achieved a firm anchorage is referred to as Hold Time.

Gel, Spin and Hold Times

Gel Time, Seconds	Spin Time, Seconds	Hold Time, Seconds	Color Code
10	3 to 5	3 to 8	Pink
20	3 to 6	4 to 8	Orange
30	3 to 7	8 to 15	Blue
45	4 to 9	8 to 20	White
60	5 to 10	18 to 28	Green
75 & 90	5 to 10	20 to 40	Green/White
120	5 to 10	25 to 75	Yellow
120–240 & Higher	5 to 15	45 to 240	Yellow/White
TWIN-LOK, 10	3 to 5	3 to 5	Pink/White
TWIN-LOK, 20	3 to 6	3 to 6	Orange/White

Resin Cartridge Size

The diameter and length of the J-LOK cartridge depends on the dimensions of the specific bolt and borehole. Cartridges are available in lengths from 12" to 60". The diameter and length of cartridges employed in USA coal mines are specified by ASTM F-432-10. The systems developed by J-LOK engineers following ASTM F-432-10 are summarized in the following table:

Technical Data – J-LOK Resin Cartridges

Cartridge Diameter, in. (mm)	Hole Diameter, in. (mm)	Bolt Type	Bolt Diameter, in. (mm)	J-Lok System*	Product Use Class	Strength Index
0.9 (23)	1 (25)	#6 Rebar	3/4 (19)	A	I, II, III	10
0.9 (23)	1 (25)	Point Anchor #6 Tension	3/4 (19)	A-TA	I, II, III	10
0.9 (23)	1 (25)	#5 Rebar	5/8 (16)	B	I, II, III	10
0.9 (23)	1 (25)	Cable	0.5, 0.6, 0.7 (13, 15, 18)	CA, A, B	I, II, III	10
0.9 (23)	1 (25)	INSTaL Resin	5/8 (16)	BI	I, II, III	10
1.25 (32)	1-3/8 (35)	#7 Rebar	7/8 (22)	J, CJ, JI	I, II, III	10
1.25 (32)	1-3/8 (35)	Cable	0.5, 0.6, 0.7 (13, 15, 18)	CJ	I, II, III	10
1.25 (32)	1-3/8 (35)	INSTaL Resin	3/4–7/8 (19–22)	JI	I, II, III	10
1.25 (32)	1-3/8 (35)	Combination	7/8 (22)	CBJ, J	I, II, III	10
0.9 (23)	1 (25)	#6 Rebar	3/4 (19)	TA	I, II, III	10
0.9 (23)	1 (25)	#5 Rebar	5/8 (16)	TB	I, II, III	10

* Designated J-LOK Systems are shown for typical applications and can be used for other bolt types and sizes.