ThreeBond

2300/2400 Series

Threelock and Sealock Processes to Prevent Leaks and Loosening of Screw
Pre-Coating of Bolts and Nuts to Prevent Screws from Loosening and Leaking

2300 Series

Threelock and Sealock Processes to Prevent Leaks and Loosening of Screw

This is the process for coating the sealant and locking agent to the thread portion of screws, bolts, pipes, etc. to add sealing and locking functions to screws themselves.
Pre-coated screws maintain stability, and have sealing or locking functions when tightened.
Pre-coating of bolts includes bolts pre-coated by MEC Processing where a microencapsulated reactive adhesive is applied, Threelock Processing where nylon is fused, and Sealock Processing where a sealing function is added.

■ Threelock Processing
Fusion processing of nylon resin with excellent elastic modulus, wear resistance, chemical resistance, lubricity, and weather resistance.
When processed screws are tightened, excellent loosening prevention is achieved by the nylon resin elastic force generated in the screw clearance.
Because of the nylon resin's excellent elastic modulus, wear resistance, and adhesion to the screw, it is possible to use them more than five times with compliance to JIS (JIS B 1056).
They can be used in a wide temperature range from -50°C to 120°C (approx.).

■ Sealock Processing
This is a baked-on processing of special synthetic resin.
When processed screws are tightened, the screw clearance receives deformed filling by the special synthetic resin and sealing is achieved immediately.
The heat-resistant type can achieve sealing with hydraulic pressure at approximately 170°C.

■ Applicable markets

Transportation Equipment | Electrical and Electronics | Industrial Materials and Public Works | Automotive Aftermarket

2358

Sealock Processing / Heat-Resistant Type

This is a sealing process that uses fluoropolymer as the main component.
Because it is a baked-on type, the sealing function can be achieved by simply tightening the screw.
It has excellent heat resistance, and the sealing function works up to approximately 170°C.
It has excellent chemical resistance.

2365B 2365C

Threelock Processing / Standard Type

Prevailing type loosening prevention coating for small screws using nylon as the main component.
Because it is a fusion type, the loosening prevention function and drop-preventing function can be achieved by simply tightening the screw.
Functions are maintained even at 120°C (approx.).
It has excellent repeatability.
The applied screw diameter is M1.6 to M40, allowing it to be used for a wide range of applications.

Property Table

Product name					2358
Characteristics				Unit	
Main component					Fluoropolymer
Features					For sealing
Appearance					White
Applied screw diameter					-
Sealability	Air tight*1	25°C	M10 bolt	MPa	2 or higher
			1/8 PT plug	MPa	2 or higher
			3/4 PT plug	MPa	2 or higher
	Water tight*1	25°C	M10 bolt	MPa	2 or higher
			1/8 PT plug	MPa	2 or higher
			3/4 PT plug	MPa	2 or higher
	Oil tight*2	80°C	M10 bolt	MPa	12 or higher
			1/8 PT plug	MPa	12 or higher
			3/4 PT plug	MPa	12 or higher
		150°C	M10 bolt	MPa	12 or higher
			1/8 PT plug	MPa	12 or higher
			3/4 PT plug	MPa	12 or higher
		170°C	M10 bolt	MPa	12 or higher
			1/8 PT plug	MPa	12 or higher
			3/4 PT plug	MPa	12 or higher
Operating temperature range (Est.)				°C	Seal 170
Remark(s)					Sealock processing

*1: Iron seal block / Tightening torque M10 bolt: 30N·m, 1/8 plug: 4N·m, 3/4 plug: 44N·m, Maximum applied pressure 2MPa
*2: Iron seal block / Tightening torque M10 bolt: 30N·m, 1/8 plug: 4N·m, 3/4 plug: 44N·m, Maximum applied pressure 12MPa

* - : Unmeasured
* The value listed in the property table is an example of a measured value and is not the guarantee level.
* Before using, confirm the adequacy and safety for the relevant application.

Product name				2365B	2365C
Characteristics			Unit		
Main component				Nylon resin	Nylon resin
Features				Repeated usage	Repeated usage
Appearance				Green	Red
Applied screw diameter				M1.6 to 40	M1.6 to 40
Repetitive torque	M1.6×P0.35 (0.05N·m tightening)	Screw torque	N·m	0.017	0.017
		Loosening torque First rotation	N·m	0.012	0.012
		Loosening torque Fifth rotation	N·m	0.007	0.007
	M4×P0.7 (2N·m tightening)	Screw torque	N·m	0.47	0.47
		Loosening torque First rotation	N·m	0.40	0.40
		Loosening torque Fifth rotation	N·m	0.22	0.22
	M10×P1.5 (30N·m tightening)	Screw torque	N·m	8.1	8.1
		Loosening torque First rotation	N·m	6.5	6.5
		Loosening torque Fifth rotation	N·m	4.3	4.3
Torque by temperature	Screw torque		N·m	4.7 to 6.5	4.7 to 6.5
	25°C	Unwinding torque	N·m	24.0	24.0
		Loosening torque	N·m	4.9	4.9
	80°C	Unwinding torque	N·m	21.5	21.5
		Loosening torque	N·m	3.5	3.5
	100°C	Unwinding torque	N·m	23.6	23.6
		Loosening torque	N·m	2.8	2.8
	120°C	Unwinding torque	N·m	20.8	20.8
		Loosening torque	N·m	2.1	2.1
	150°C	Unwinding torque	N·m	20.1	20.1
		Loosening torque	N·m	1.7	1.7
Operating temperature range (Est.)			°C	-50 to 120	-50 to 120
Remark(s)				Threelock Processing	Threelock Processing

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2400 Series

Pre-Coating of Bolts and Nuts to Prevent Screws from Loosening and Leaking

This is the process for coating the sealant and locking agent to the thread portion of screws, bolts, and pipes, etc. to add sealing and locking functions to screws themselves.
Pre-coated screws maintain stability, and have sealing or locking functions when tightened.
Pre-coating of bolts includes bolts pre-coated by MEC Processing where a microencapsulated reactive adhesive is applied, Threelock Processing where nylon is fused, and Sealock Processing where a sealing function is added.

■ Bolts pre-coated by MEC process
A microencapsulated reactive adhesive is used for the coating process.
The microcapsules are broken up when the processed screws are tightened, and the packaged adhesive quickly cures by polymerization.
After 24 to 48 hours, it reaches final strength, and it forms a tough cured material with excellent oil resistance, chemical resistance, heat resistance, and weather resistance.
It has good heat resistance. The lock function works up to approximately 100°C (approximately 150°C for the heat-resistant type), and the sealing function works up to approximately 170°C.

■ Applicable markets

Transportation Equipment | Electrical and Electronics | Industrial Materials and Public Works | Automotive Aftermarket

2418

Bolts pre-coated by MEC process / Acrylic medium-strength heat-resistant type

It is good for bonding and sealing screws that may need to be removed.
It has good heat resistance. The lock function works up to approximately 150°C, and the sealing function works up to approximately 170°C.
The minimum applied screw diameter is M3.
The standard curing conditions are 25°C×24h.

2448
2448B

Bolts pre-coated by MEC process / High-strength epoxy type

This is good for permanent adhesion and sealing of screws that do not need to be removed.
It has good heat resistance. The lock function works for 2448 up to approximately 150°C and for 2448B up to approximately 160°C.
Both products exhibit a sealing function works up to approximately 170°C.
The minimum applied screw diameter is M2.
The standard curing conditions are 25°C×24 h.

2458

Bolts pre-coated by MEC process / Acrylic low-strength type

It is good for bonding and sealing screws that will be removed.
The lock function works up to approximately 100°C, and the sealing function works up to approximately 170°C.
The minimum applied screw diameter is M3.
The standard curing conditions are 25°C×24h.

2458B

Bolts pre-coated by MEC process / Acrylic low-strength less-scum type

It is good for bonding and sealing screws that will be removed.
The lock function works up to approximately 100°C, and the sealing function works up to approximately 170°C.
The minimum applied screw diameter is M3.
The standard curing conditions are 25°C×24h.

2468

Bolts pre-coated by MEC process / Acrylic medium-strength type

It is good for bonding and sealing screws that may need to be removed.
The lock function works up to approximately 100°C, and the sealing function works up to approximately 170°C.
The minimum applied screw diameter is M3.
The standard curing conditions are 25°C×24h.

2478

Bolts pre-coated by MEC process / Acrylic high-strength less-scum type

This is good for permanent adhesion and sealing of screws that do not need to be removed.
It has good heat resistance. The lock function works up to approximately 130°C, and the sealing function works up to approximately 170°C.
The minimum applied screw diameter is M3.
The standard curing conditions are 25°C×24h.

2488

Nuts pre-coated by MEC process / Acrylic type

It is good for bonding nuts that may need to be removed.
It has good heat resistance. The lock function works up to approximately 130°C.
The minimum applied nut diameter is M3.
The standard curing conditions are 25°C×24 h.

2488E

MEC process for pre-coating both bolts and nuts / Epoxy type

It is good for permanent adhesion and sealing of screws that do not need to be removed. Low resin residue when tightening.
The minimum applied screw diameter is M2 and the minimum applied nut diameter is M4.
The standard curing conditions are 25°C×48h.

2400 Series

Bolts and Nuts Pre-Coated by MEC process

Property Table

Product name / Characteristics		Unit	2418	2446	2446B	2448	2448B	2457	2458	2458B		2468	2475	2478	2488*4	2488E*4
Main component			Acrylic resin	Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin	Acrylic resin	Acrylic resin	Acrylic resin		Acrylic resin	Acrylic resin	Acrylic resin	Acrylic resin	Epoxy resin
Strength			Medium strength	High strength	High strength	High strength	High strength	Low strength	Low strength	Low strength		Medium strength	High strength	High strength	Medium strength	High strength
Standard curing conditions			25°C×24h	25°C×48h	25°C×48h	25°C×24h	25°C×24h	25°C×24h	25°C×24h	25°C×24h		25°C×24h	25°C×24h	25°C×24h	25°C×24h	25°C×48h
Appearance			Yellow	Blue	Orange	Blue	Orange	Green	Green	Green		Red	Blue	Blue	Blue	Red
Applied screw diameter			M3 or larger	M2 to 40	M2 to 40	M2 to 40	M2 to 40	M4 to 40	M3 or larger	M3 or larger		M3 or larger	M2 to 40	M3 or larger	M3 or larger	M2 or larger
Fixing strength to each material*1	Iron	N·m	49.8	53.7	53.7	62.6	64.6	40.2	38.2	39.2		45.4	56.1	52.5	43.1	46.3
	Zinc-chromate plating	N·m	49.1	56.1	56.1	67.0	70.7	35.9	37.4	39.3		44.9	46.1	52.3	44.9	57.3
	Chromium plating	N·m	50.3	52.3	52.3	67.8	62.1	37.9	32.9	40.3		43.4	46.1	49.8	42.5	57.1
	Nickel plating	N·m	50.4	54.9	54.9	73.9	65.1	38.8	37.3	40.7		42.2	44.5	52.8	40.8	55.4
	Unichromate plating	N·m	50.2	47.6	47.6	72.0	66.5	37.3	36.3	39.4		45.8	44.9	48.4	41.5	51.6
	Black oxide	N·m	46.1	53.3	53.3	62.4	64.1	39.8	33.5	39.6		43.8	42.1	42.5	40.8	54.3
	SUS 304	N·m	47.8	49.0	49.0	64.6	66.8	35.1	31.9	38.5		42.6	42.1	45.5	41.1	40.8
	Brass	N·m	26.2	-	-	38.3	37.8	29.0	27.0	28.4		28.8	-	29.6	36.5	42.5
	Aluminum	N·m	26.8	26.9	26.9	36.4	40.9	21.4	20.6	20.9		24.8	24.9	22.3	22.4	29.0
Hot strength*2	25°C	N·m	49.1	58.0	58.0	70.3	70.7	35.3	37.4	39.3		44.9	46.1	52.3	44.9	57.3
	60°C	N·m	45.6	39.2	39.2	52.2	54.4	35.1	32.6	38.0		36.4	43.1	44.3	37.5	34.9
	80°C	N·m	42.9	-	-	50.3	52.0	34.1	32.0	31.9		33.5	38.9	38.9	36.4	31.5
	100°C	N·m	40.5	37.2	37.2	46.8	47.6	32.4	30.8	31.5		30.1	41.4	37.5	34.7	21.6
	120°C	N·m	-	33.7	33.7	-	-	29.4	26.0	-		26.9	39.4	34.1	33.4	20.1
	130°C	N·m	38.3	-	-	37.0	42.0	-	-	26.1		-	-	31.0	31.4	-
	150°C	N·m	33.2	29.5	29.5	31.6	38.0	21.2	20.4	25.9		22.9	32.1	30.1	27.4	16.4
	180°C	N·m	26.2	24.7	24.7	21.4	21.0	16.5	19.5	21.3		18.4	25.9	21.1	21.1	14.7
Sealability*3	25°C	MPa	10 or higher	10 or higher	10 or higher	10 or higher	10 or higher	10 or higher	10 or higher	10 or higher		10 or higher	10 or higher	10 or higher	-	10 or higher
	150°C	MPa	10 or higher	10 or higher	10 or higher	10 or higher	10 or higher	10 or higher	10 or higher	10 or higher		10 or higher	10 or higher	10 or higher	-	-
	170°C	MPa	10 or higher	-	-	10 or higher	10 or higher	-	10 or higher	10 or higher		10 or higher	-	10 or higher	-	10 or higher
Operating temperature range (Est.)		°C	Locking 150°C Sealing 170°C	Locking 150°C Sealing 150°C	Locking 150°C Sealing 150°C	Locking 150°C Sealing 170°C	Locking 160°C Sealing 170°C	Locking 120°C Sealing 150°C	Locking 100°C Sealing 170°C	Locking 100°C Sealing 170°C		Locking 100°C Sealing 170°C	Locking 150°C Sealing 150°C	Locking 130°C Sealing 170°C	Locking 130°C	Locking 80°C Sealing 170°C
Remark(s)			Aqueous type	Aqueous type	Aqueous type	Aqueous type	Aqueous type	Aqueous type	Aqueous type	Aqueous type		Aqueous type	Aqueous type	Aqueous type	Aqueous type * For nuts	Aqueous type * For bolts and nuts

*1: M10×P1.5 bolt/nut, Tightening torque 30N·m (15N·m for brass and aluminum)
*2: M10×P.1.5 zinc-chromate plated bolt/nut, Tightening torque 30N·m
*3: Iron seal block/Hydraulic pressure, M10×P.15 bolt, Tightening torque 30N·m, Maximum pressure 10MPa
*4: 2488 and 2488E are grades for nuts, processing is done to nuts for testing, and measurement is done using a protrusion rate of 50% to bolts

* - : Unmeasured
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Creating Our Future From a Single Drop
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