

Plastic Additive

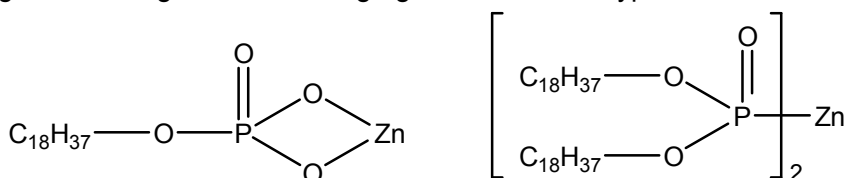
LBT-1830

LBT-1830 is a zinc salt of an acid phosphate ester or of a partial ester compound of alcohol with phosphate.

As shown in the following general formula, these have a surfactant-like structure with both a non-polar part that has a higher alcohol as a base and a polar part that binds with an ester or metals as a base, showing favorable dispersibility.

Unlike other types of wax, this begins to soften at around 75 °C and melt at around 210 °C, which enables it to demonstrate and maintain lubricity / mold lubricity over a wide spectrum of temperature.

Chemical reactivity at the ester or metal binding site enables its salts to be used as stabilizing, neutralizing and weathering agents for various types of resin.



1. Properties

1-1 Basic Properties

	LBT-1830	LBT-1830 NZ
Appearance, Form	White Powder	
Melting Point [Clear] (°C)	186 ± 10	230 ± 10
Heating Loss [%]	< 3.0	< 2.5
Zinc Content [%]	9.8 ± 0.5	10.2 ± 0.5
Phosphor Content [%]	6.2 ± 0.5	
Bulk Density [g/mL]	0.14 ± 0.05	0.35 ± 0.05
Particle Size (75 μm Pass %)	> 99	> 95

1-2 Heat Behavior

This product begins to soften at around 80 °C and then melt at around 210 °C. Degradation starts at around 230 °C where heating loss increases.

1-3 Safety

As shown in the following table, LD50 is as high as 15,000 mg/kg and no mutagenicity was observed.

Also, this product is approved as additive for polyvinyl chloride food packages in Japan, demonstrating its high safety status.

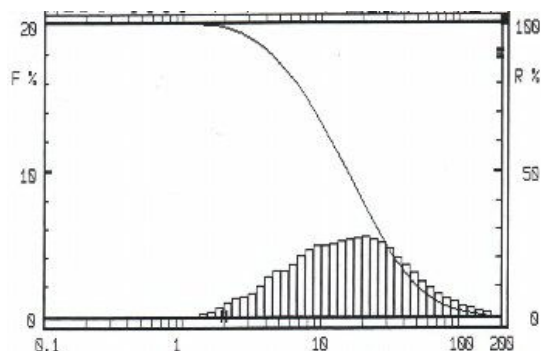
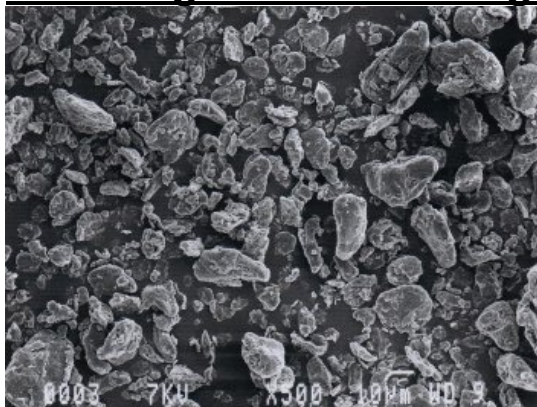
Items	Target		Result
Oral acute toxicity	Mice		> 15,000mg/kg
Mutagenicity	Salmonella-typhimurium	TA1535	Negative
		TA1537	
		TA1538	
		TA98	
		TA100	
	E. coli	WP2uvrA	Negative

< Registration >

Preexisting Chemicals(Japan) : 2-1879
 CAS No. : 4615-31-0, 16700-97-3
 TSCA : Registered
 EINECS : 2407529, 2250235
 JHP Standard : M-7699

JHP standard : Voluntary standards for polyvinyl chloride food packages by the Japan Hygienic PVC Association

Scanning Electron Micrograph (LBT-1830 NZ)



Median Particle Size : 15.7 µm

2. Functional Properties

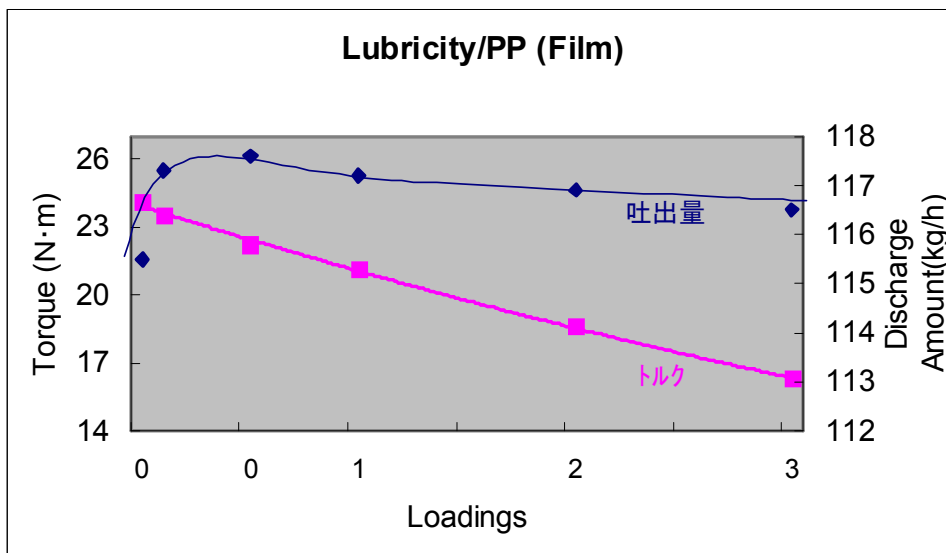
2-1 Lubricity and Mold Lubricity

The wide range of temperatures between softening and melting of this product means that it has high lubricity and mold lubricity.

During extrusion molding, lowered torque improves the discharge amount while during injection molding, higher fluidity and mold lubricity improve moldability.

In addition, during the rolling process, long-lasting lubricity facilitates stabilization of the operation.

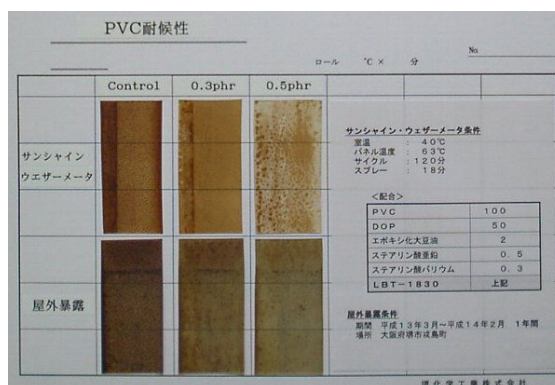
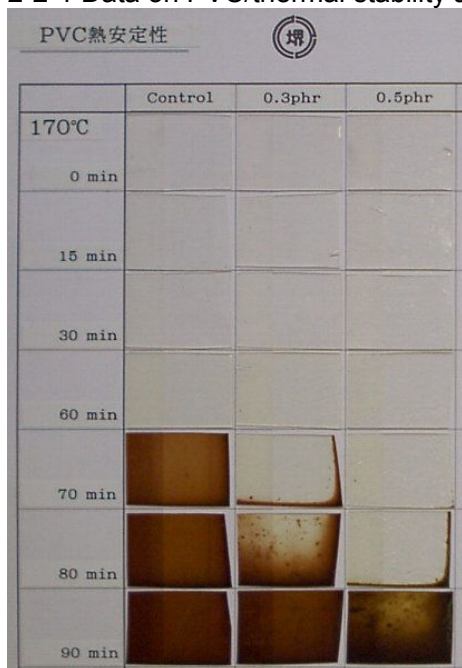
Data on PP/T die molding



2-2 Chemical Reactivity

The ester or metal binding site shows chemical reactivity, especially in PVC. Complementation of dehydrochlorination and the substitution of chlorine at the allyl position provide thermal stability and weatherability.

2-2-1 Data on PVC/thermal stability and weatherability



Composition		Study procedure	
PVC	100	Molding	Rolling mixing, 170°C x 5 min.
DOP	50	weatherability	SW
Epoxidated soybean oil	2		BP temperature 63°C, 120 min.
Zinc stearate	0.5		(spraying for 18 min.)
Barium stearate	0.3		outdoor exposure
LBT-1830	0-0.5		1 year (March 2001 – February 2002)

2-2-2 Data on PP/radiation resistance



PP (MI = 8)	100
Calcium Stearate	0.10
Phenol Antioxidant	0.12
Additive (above)	0.12

Exposure to electron beam	Accelerating Voltage: 4.8eV, 20 mA Exposure Dose 3 Mrad, twice
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