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Long Time Tech. Co., Ltd.

# Anode Materials for Li-ion Battery

**Product : Artificial Graphite**

**Product Name : LT-A128HY**

**Version : ID**

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# LT-A128HY Artificial Graphite

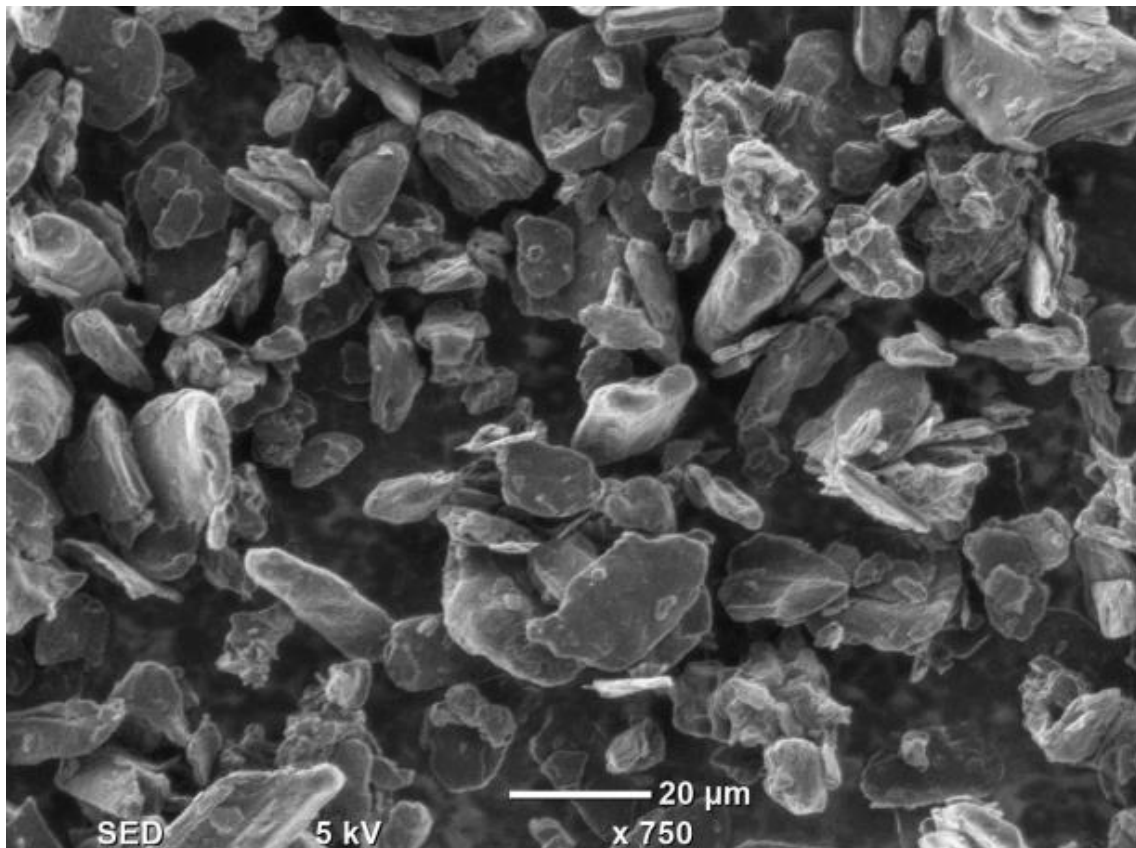
## Specification

Item		Unit	Specification	Method
Particle Size	D <sub>10</sub>	μm	6 - 9	<b>GB/T 24533-2009</b> App. A (0.2 ml 10% NP-40 solution was used to improve dispersion of graphite in water.)
	D <sub>50</sub>		14 - 19	
	D <sub>90</sub>		30 - 36	
Tap density		g/cm <sup>3</sup>	≥ 0.90	<b>GB/T 24533-2009</b> App. M
Specific surface area		m <sup>2</sup> /g	≤ 4.5	<b>GB/T 24533-2009</b> App. D
Moisture content		%	≤ 0.20	<b>GB/T 3521-2008</b>
Ash content		%	≤ 0.10	<b>GB/T 3521-2008</b>
Fixed carbon content		%	≥ 99.95	<b>GB/T 3521-2008</b>
True density		g/cm <sup>3</sup>	≥ 2.20	<b>GB/T 24533-2009</b> App. E
1 <sup>st</sup> Discharge cap.		mAh/g	≥ 350	Half cell test (CR2032) in the range of <b>0.001 – 2 V at 0.1 C</b>
1 <sup>st</sup> Coulombic eff.		%	≥ 90	

# LT-A128HY Artificial Graphite

## Features

- Stable & uniform material structure
- Stable cyclic performance
- Good battery safety
- Applied in:  
Square, cylindrical and pouch battery

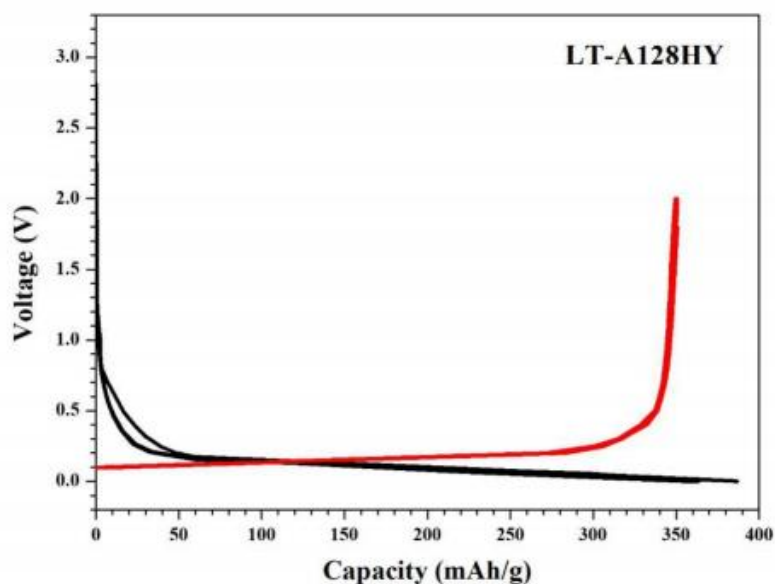


LT-A128HY Artificial Graphite (SEM)

# LT-A128HY Artificial Graphite

## Half cell test (CR2032)

Item							Remark
Components	1	Work electrode	Powder	Name	Chemicals	Ratio	—
				Active material	<b>LT-A128HY</b>	89%	—
				Conductive agent	Super P	9%	<b>Timcal</b> Super P
				Binder	PVdF	2%	<b>ARKEMA</b> Kynar 960
	Solvent		NMP		—		
2	Counter electrode	Metallic lithium				—	
3	Electrolyte	1 M LiPF <sub>6</sub> in EC: DMC: EMC(1:1:1 vol.%) with 1wt.% VC.				—	
Testing	The specific capacities measured in the voltage range of 0.001 - 2 V vs. Li/Li <sup>+</sup> at 0.1 C.					—	



Charge-Discharge Curves

# LT-A128HY Artificial Graphite

## Suggest preparation method of electrode for full cell

Item		Dose or Range	Unit	Remark				
0	Plan	Total weight of powder	1,000.0	g	—			
		Solid content of slurry (S/C)	47.1	%	—			
1	Materials	Powder	Name	Chemicals	Ratio	—	—	—
			Active material	LT-A128HY	95.6%	956.0	g	—
			Conductive agent	Super P	1.2%	12.0	g	Timcal Super P
			Binder	CMC	1.0%	10.0	g	WEDAFR H631K (1% Vis:1000-1200 mPas)
		SBR		2.2%	45.8	g	NIPPON A&L INC. SN-307R (S/C=48%)	
		Solvent		H <sub>2</sub> O	1075.0	g	—	
		NMP	25.0					
2	Slurry viscosity		2,500 – 4,000	mPas	—			
3	Coated surface density		Single layer	90	g/m <sup>2</sup>	—		
			Double layer	180	g/m <sup>2</sup>			
4	Maximum electrode compacted density		1.60	g/cm <sup>3</sup>	Twice rolling			

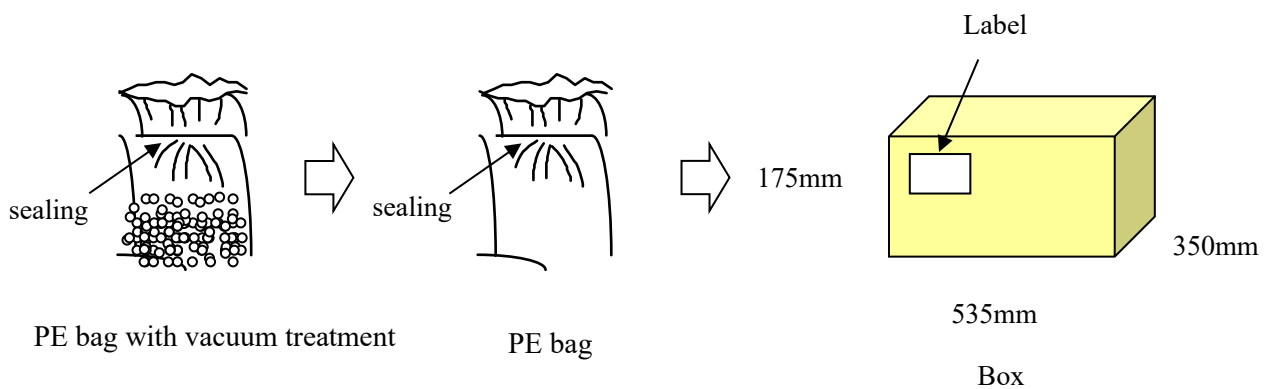
## Method

Order	Materials	Weight	Rotate	Revolution	Time	Slurry Temperature	Vacuum Treatment	Solid Content
		g	rpm	rpm	min	°C		%
1	Solvent – H <sub>2</sub> O	225	-	-	-	20 -30	Off	0.0
2	Binder – CMC	10	-	-	-	20 -30	Off	4.3
3	Solvent – H <sub>2</sub> O	450	40	2,600	10	20 -30	Off	1.5
		-	60	3,600	120	20 -30	On	
4	Conductive agent – Super P	12	40	2,600	10	20 -30	Off	3.2
		-	60	3,600	60	20 -30	On	
5	Active material – LT-A128HY	956	-	-	-	20 -30	Off	50.1
6	Solvent – H <sub>2</sub> O	300	40	260	10	20 -30	Off	
		-	60	3,600	180	20 -30	On	
7	Binder – SBR	45.8	-	-	-	20 -30	Off	47.1
8	Solvent – NMP	25	-	-	-	20 -30	Off	
9	Solvent – H <sub>2</sub> O	100	40	2000	60	20 -30	On	

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## Packing

1. **Specifying:** 25 Kg/Box
2. **1<sup>st</sup> packing:** PE bag with vacuum treatment
3. **2<sup>nd</sup> packing:** PE bag
4. **3<sup>rd</sup> packing:** Paper box packing with label (including: Name, Lot No., MFD)



## Storage Condition

- 1 Suggest storage temperature and humidity controlled below 40°C and 60%RH respectively, for brand new; After opening, please use it up as soon as possible.
- 2 After opening for 1 hour, it is a natural phenomenon for moisture regain, implying that moisture content of powder could be increased to 3000 ppm. Suggest drying it again before use.