

CKAA21700L

Self-discharge voltage test at normal temperature at different voltages

Date		2020-10-28	10-29	10-30	11-7	11-21	12-2	2021-2-24
Voltage	No.	V	V	V	V	V	V	V
3.0V	1	3.004	3.005	3.007	3.013	3.018	3.019	3.023
	2	3.002	3.004	3.005	3.011	3.017	3.018	3.023
	3	3.004	3.005	3.006	3.011	3.016	3.017	3.019
	4	3.005	3.006	3.007	3.012	3.017	3.018	3.021
	5	3.006	3.007	3.008	3.014	3.019	3.020	3.025
3.4V	1	3.375	3.373	3.372	3.366	3.362	3.360	3.352
	2	3.377	3.375	3.373	3.367	3.362	3.361	3.352
	3	3.374	3.373	3.371	3.366	3.361	3.360	3.351
	4	3.375	3.372	3.371	3.365	3.360	3.359	3.35
	5	3.375	3.372	3.370	3.364	3.359	3.357	3.348
3.6V	1	3.574	3.571	3.568	3.560	3.555	3.554	3.548
	2	3.573	3.569	3.567	3.558	3.553	3.552	3.545
	3	3.573	3.569	3.567	3.558	3.553	3.551	3.545
	4	3.574	3.570	3.568	3.560	3.554	3.553	3.547
	5	3.572	3.568	3.566	3.558	3.552	3.551	3.545
3.8V	1	3.774	3.771	3.766	3.759	3.752	3.751	3.742
	2	3.770	3.767	3.763	3.756	3.750	3.748	3.74
	3	3.772	3.768	3.767	3.759	3.753	3.751	3.744
	4	3.773	3.770	3.765	3.758	3.752	3.750	3.742
	5	3.778	3.775	3.768	3.763	3.755	3.753	3.743
4.0V	1	3.969	3.966	3.963	3.951	3.939	3.935	3.908
	2	3.970	3.966	3.962	3.949	3.936	3.932	3.904
	3	3.970	3.966	3.963	3.952	3.940	3.937	3.913
	4	3.968	3.964	3.961	3.950	3.938	3.935	3.913
	5	3.969	3.965	3.961	3.948	3.935	3.931	3.905
4.1V	1	4.068	4.061	4.056	4.034	4.005	3.997	3.941
	2	4.070	4.064	4.060	4.037	4.009	4.000	3.943
	3	4.067	4.061	4.056	4.033	4.004	3.995	3.941
	4	4.070	4.064	4.059	4.026	3.984	3.970	3.882
	5	4.067	4.061	4.056	4.033	4.005	3.996	3.94
4.2V	1	4.168	4.160	4.154	4.113	4.048	4.028	3.935
	2	4.158	4.147	4.137	4.088	4.024	4.007	3.91
	3	4.169	4.162	4.156	4.117	4.047	4.027	3.934
	4	4.169	4.162	4.155	4.113	4.048	4.028	3.938
	5	4.162	4.153	4.144	4.095	4.026	4.008	3.92

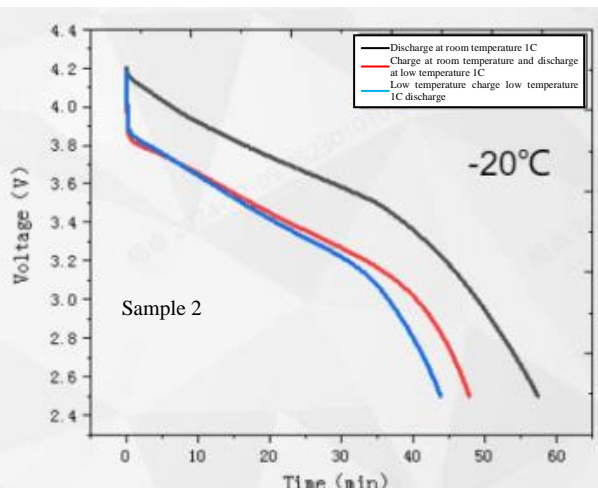
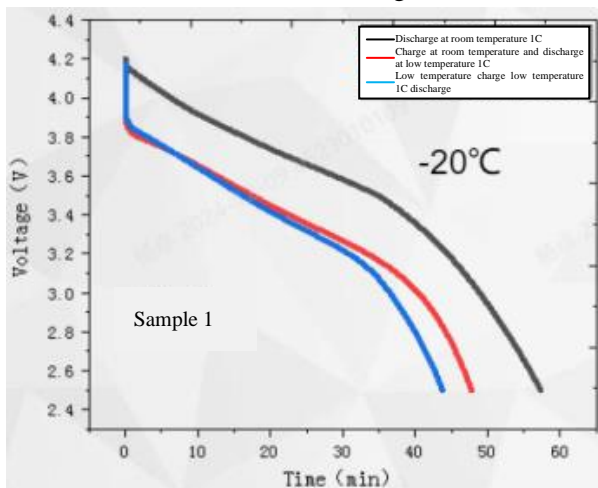
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Discharge at -20°C

Charging and discharging conditions at room temperature: at room temperature, charge the battery to 4.2V with a current of 1C, and discharge it at a current of 1C until 0.1C/CV, with a cut-off of 2.5V;

Normal temperature charging and low temperature discharge test conditions: After the normal temperature 1C charging is completed, the battery will be charged to 4.2V with 1C current, as of 0.1C/CV: the monomer will be placed in a low temperature environment at -20 °C for 2 hours and then discharged at 1C current, 2.5V cut-off.

Low temperature charge and discharge test conditions: at low temperature -20 °C, the battery is charged to 4.2V at 1C current, until 0.1C/CV: then discharged at 1C current, and 2.5V is cut-off. **1C-2500mAh**



-20°C	Capacity (mAh)	Resistance (mΩ)	Capacity retention	Charge/Discharge Efficiency %
Charge and discharge at room temperature	2390	9.1		109.64
Charge at room temperature and discharge at low temperature	2002	28.3	83.8%	83.73
Low temperature charging and discharging	1835	25.9	76.8%	98.54

-20°C	Capacity (mAh)	Resistance (mΩ)	Capacity retention	Charge/Discharge Efficiency %
Charge and discharge at room temperature	2489	9.9		108.83
Charge at room temperature and discharge at low temperature	2087	26.7	83.8%	83.90
Low temperature charging and discharging	1922	25.3	77.2%	95.53

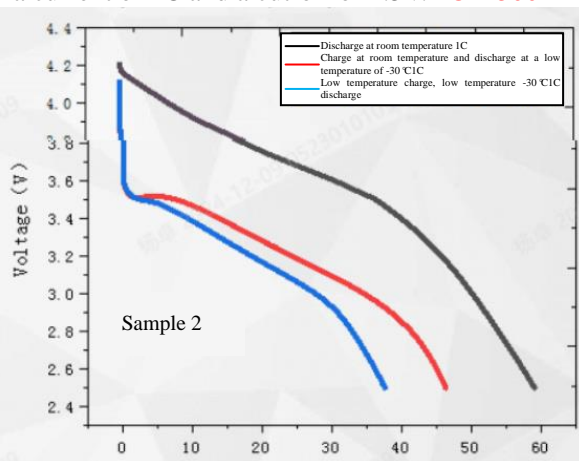
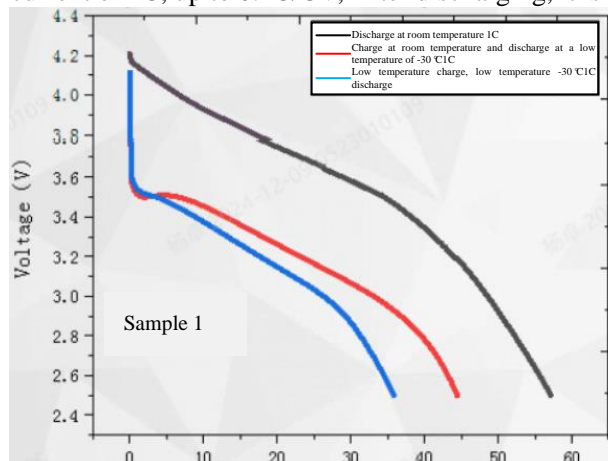
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Discharge at -30°C

Charging and discharging conditions at room temperature: at room temperature, charge the battery to 4.2V with a current of 1C, up to 0.1C/CV; After discharge, it is discharged with a current of 1C and a cut-off of 2.5V;

Normal temperature charge and low temperature discharge test conditions: after the normal temperature 1C charging is completed, the 1C current will charge the battery to 4.2V, up to 0.1C/CV; The monomer is placed in a low temperature environment at -30 °C for 2 hours, and then discharged at a current of 1C and cut off at 2.5V.

Low temperature charge and discharge test conditions: at low temperature -30°C, the battery is charged to 4.2V with a current of 1C, up to 0.1C/CV; After discharging, it is discharged with a current of 1C and a cut-off of 2.5V. **1C=2500mAh**



-30°C	Capacity (mAh)	Resistance (mΩ)	Capacity retention	Charge/Discharge Efficiency %
Charge and discharge at room temperature	2387	9.2		120.06
Charge at room temperature and discharge at low temperature	1859	35.2	77.9%	77.94
Low temperature charging and discharging	1496	32.7	62.7%	97.20

-30°C	Capacity (mAh)	Resistance (mΩ)	Capacity retention	Charge/Discharge Efficiency %
Charge and discharge at room temperature	2470	9.7		119.37
Charge at room temperature and discharge at low temperature	1938	33.7	78.5%	78.51
Low temperature charging and discharging	1571	31.9	63.6%	96.96

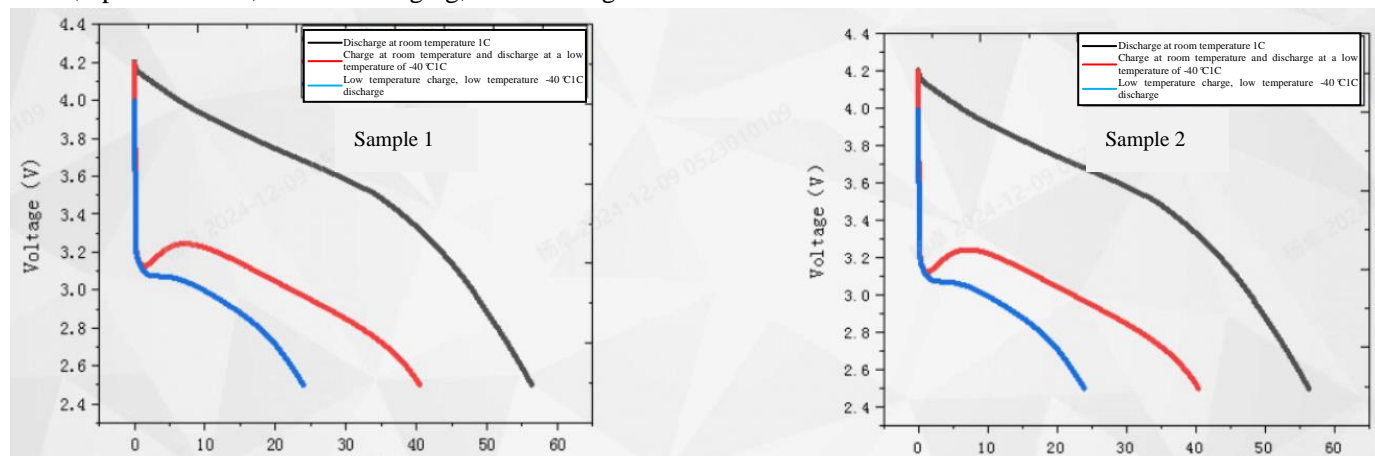
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Discharge at -40°C

Charging and discharging conditions at room temperature: at room temperature, charge the battery to 4.2V with a current of 1C, up to 0.1C/CV; After discharge, it is discharged with a current of 1C and a cut-off of 2.5V;

Normal temperature charge and low temperature discharge test conditions: after the normal temperature 1C charging is completed, the 1C current will charge the battery to 4.2V, up to 0.1C/CV; The monomer was placed in a low-temperature environment at -40 °C for 2 hours, and then discharged at a current of 1C and 2.5V was cut-off.

Low temperature charge and discharge test conditions: at low temperature -40 °C, charge the battery to 4.2V with a current of 1C, up to 0.1C/CV; After discharging, it is discharged with a current of 1C and a cut-off of 2.5V. **1C=2500mAh**



-40°C	Capacity (mAh)	Resistance (mΩ)	Capacity retention	Charge/Discharge Efficiency %
Charge and discharge at room temperature	2352	9.9		129.35
Charge at room temperature and discharge at low temperature	1687	47.5	71.7%	71.89
Low temperature charging and discharging	998	39.8	42.4%	94.72

-40°C	Capacity (mAh)	Resistance (mΩ)	Capacity retention	Charge/Discharge Efficiency %
Charge and discharge at room temperature	2430	10.2		128.19
Charge at room temperature and discharge at low temperature	2755	47.1	72.2%	72.37
Low temperature charging and discharging	1043	43	42.9%	94.30