



**Model name : INR21700-30T**

**Revision 09**

Executive Div.	Safety Center	Confidential	
	Name / Title	Signature	Date
Reported by	Seo Jong Min		2017 3.31
Approved by	Lee Keun Sang		2017 3.31.

**Test report; UN Manual of Tests and Criteria,**  
**Part III, Subsection 38.3**

2015, Rev.6

**Document No : SDI-UN-170331-01**

**SAMSUNG SDI**  
**Energy Business Division**



## ***Product Information***

- 1. Model name: INR21700-30T**
- 2. Product classification: Li-ion cylindrical cell**
- 3. Nominal voltage: 3.60V**
- 4. Rated capacity: 3,000mAh**
- 5. Wh Capacity: 10.8Wh**
- 6. Weight of product: Max 70g**
- 7. Test Date: 2016.02.24 ~ 2016.04.20**
- 8. Test Location: SAMSUNG SDI Safety Center, 467, Beonyeong-ro, Seobuk-gu,  
Cheonan-si, Chungcheongnam-do, Korea**

## Test summary

Test No.	Test item	Relating Std.	Test begins on (YYYY/MM/DD)	Test Completed on (YYYY/MM/DD)	Judgment (Pass/Fail)
T1	Altitude simulation	UN Manual of Tests and Criteria, Part III, Subsection 38.3.4.1	2016/02/24	2016/02/25	Pass
T2	Thermal test	UN Manual of Tests and Criteria, Part III, Subsection 38.3.4.2	2016/02/26	2016/03/03	Pass
T3	Vibration	UN Manual of Tests and Criteria, Part III, Subsection 38.3.4.3	2016/03/16	2016/03/16	Pass
T4	Shock	UN Manual of Tests and Criteria, Part III, Subsection 38.3.4.4	2016/03/17	2016/03/17	Pass
T5	External short circuit	UN Manual of Tests and Criteria, Part III, Subsection 38.3.4.5	2016/03/18	2016/03/18	Pass
T6	Impact / Crush	UN Manual of Tests and Criteria, Part III, Subsection 38.3.4.6	2016/03/14	2016/03/14	Pass
T7	Overcharge	UN Manual of Tests and Criteria, Part III, Subsection 38.3.4.7	N/A	N/A	N/A
T8	Forced discharge	UN Manual of Tests and Criteria, Part III, Subsection 38.3.4.8	2016/04/13	2016/04/20	Pass
Total Judgment(Pass/Fail)					Pass

- Tests T-1 through T-5 shall be conducted in sequence with the same cell/pack/single cell battery.
- For test 6, test should be conducted for Li-ion cells or component cell contained in a battery.
- T7 shall be performed only for Li-ion rechargeable battery or rechargeable single cell battery not cell.
- T8 should be conducted for Li-ion cells or component cell contained in a battery.

# T-1~T-5) Transportation Test (Test Result: Pass)

T1~T5

Fresh cell 100% SOC												
Initial							T1					
No.	Weight(g)	OCV(V)					Weight(g)	OCV(V)	Mass Loss(%)	Residual OCV(%)	Appearance	Result
1	67.645	4.15					67.641	4.15	0.01	100.00	○	Pass
2	67.591	4.15					67.589	4.15	0.00	100.00	○	Pass
3	67.589	4.15					67.586	4.15	0.00	100.00	○	Pass
4	67.724	4.15					67.721	4.15	0.00	100.00	○	Pass
5	67.663	4.15					67.666	4.15	0.00	100.00	○	Pass
6	67.707	4.15					67.705	4.15	0.00	100.00	○	Pass
7	67.604	4.15					67.599	4.15	0.01	100.00	○	Pass
8	67.569	4.15					67.559	4.15	0.01	100.00	○	Pass
9	67.702	4.15					67.707	4.15	0.00	100.00	○	Pass
10	67.619	4.15					67.618	4.15	0.00	100.00	○	Pass
T2							T3					
No.	Weight(g)	OCV(V)	Mass Loss(%)	Residual OCV(%)	Appearance	Result	Weight(g)	OCV(V)	Mass Loss(%)	Residual OCV(%)	Appearance	Result
1	67.638	4.08	0.00	98.31	○	Pass	67.638	4.08	0.00	100.00	○	Pass
2	67.592	4.08	0.00	98.31	○	Pass	67.592	4.08	0.00	100.00	○	Pass
3	67.586	4.08	0.00	98.31	○	Pass	67.586	4.08	0.00	100.00	○	Pass
4	67.721	4.08	0.00	98.31	○	Pass	67.721	4.08	0.00	100.00	○	Pass
5	67.665	4.08	0.00	98.31	○	Pass	67.665	4.08	0.00	100.00	○	Pass
6	67.709	4.08	0.00	98.31	○	Pass	67.709	4.08	0.00	100.00	○	Pass
7	67.606	4.08	0.00	98.31	○	Pass	67.606	4.08	0.00	100.00	○	Pass
8	67.562	4.08	0.00	98.31	○	Pass	67.562	4.08	0.00	100.00	○	Pass
9	67.706	4.08	0.00	98.31	○	Pass	67.706	4.08	0.00	100.00	○	Pass
10	67.631	4.08	0.00	98.31	○	Pass	67.631	4.08	0.00	100.00	○	Pass
T4							T5					
No.	Weight(g)	OCV(V)	Mass Loss(%)	Residual OCV(%)	Appearance	Result	Max T(°C)	Appearance			Result	
1	67.635	4.08	0.00	100.00	○	Pass	72	○			Pass	
2	67.592	4.08	0.00	100.00	○	Pass	89	○			Pass	
3	67.585	4.08	0.00	100.00	○	Pass	81	○			Pass	
4	67.721	4.08	0.00	100.00	○	Pass	84	○			Pass	
5	67.666	4.08	0.00	100.00	○	Pass	102	○			Pass	
6	67.709	4.08	0.00	100.00	○	Pass	93	○			Pass	
7	67.606	4.08	0.00	100.00	○	Pass	82	○			Pass	
8	67.562	4.08	0.00	100.00	○	Pass	87	○			Pass	
9	67.706	4.08	0.00	100.00	○	Pass	91	○			Pass	
10	67.632	4.08	0.00	100.00	○	Pass	88	○			Pass	

[Appearance] O-No Leakage, No Venting, No Disassembly, No Rupture, No Fire / L-Leakage / V-Venting / D-Disassembly / R-Rupture / F-Fire  
[Criteria] T1~T4: No Leakage / No Venting / No Disassembly / No Rupture / No Fire / Residual OCV not less than 90%  
T5: External temperature does not exceed 170°C, no disassembly, no rupture, and no fire within 6 hours of this test

## T-6) Impact/Crush Test (Test Result: Pass)

### ■ Cell type

Cylindrical cells not less than 18.0 mm in diameter

Prismatic, Pouch, Cylindrical cells less than 18.0 mm in diameter

### ■ Test procedure

Impact

Crush

T6

Fresh Cell 50% SOC				
	Initial	T6		
No.	OCV(V)	Max Temp(°C)	Appearance	Result
1	3.73	27	0	Pass
2	3.73	26	0	Pass
3	3.73	26	0	Pass
4	3.73	27	0	Pass
5	3.73	25	0	Pass
[Appearance] O-No Disassembly, No Fire / D-Disassembly / F-Fire				
[Criteria] External temperature does not exceed 170°C, no disassembly, and no fire within 6 hours of this test.				

## T-7) Over charge Test (Test Result: N/A)

■ Test condition: N/A

## T-8) Forced discharge Test (Test Result: Pass)

■ Test condition:

- Initial test current: 35A
- Time interval: 6min

T8

Fresh cell 0% SOC				50 cycled cell 0% SOC		
No.	Max. tempe(°C)	Appearance	Result	Max. temp(°C)	Appearance	Result
1	82	0	Pass	82	0	Pass
2	88	0	Pass	84	0	Pass
3	74	0	Pass	84	0	Pass
4	84	0	Pass	80	0	Pass
5	79	0	Pass	75	0	Pass
6	85	0	Pass	83	0	Pass
7	82	0	Pass	91	0	Pass
8	80	0	Pass	66	0	Pass
9	85	0	Pass	78	0	Pass
10	77	0	Pass	81	0	Pass

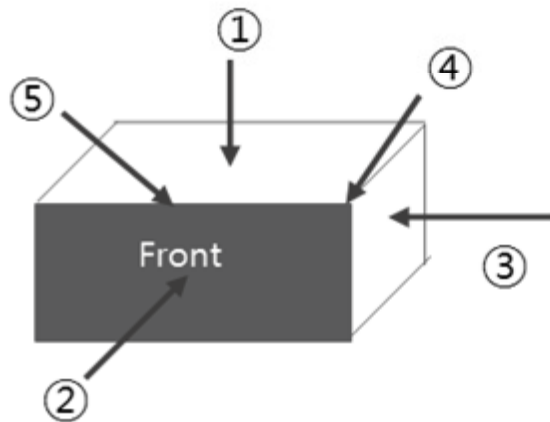
[Appearance] O-No Disassembly, No Fire / D-Disassembly / F-Fire  
[Criteria] No disassembly and no fire within 7 days of the test

# Annex 1 - 1.2m Packaging Drop Test

## ■ Test Summary

Test No.	Test item	Relating Std.	Test begins on (YYYY/MM/DD)	Test Completed on (YYYY/MM/DD)	Judgment (Pass/Fail)
P1	Packaging Drop	IATA Dangerous Goods Regulations	2017.03.20	2017.03.20	Pass
Total Judgment(Pass/Fail)					Pass


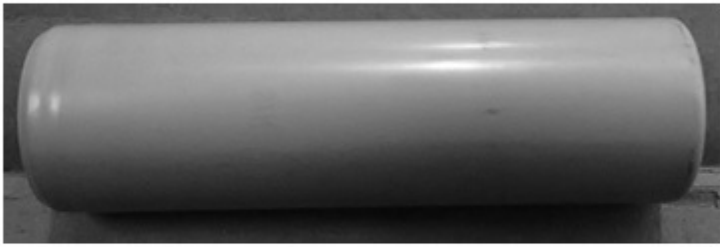
## ■ Test Method





## P-1 1.2m Packaging Drop Test (Test Result: Pass)

### ■ Sample Information

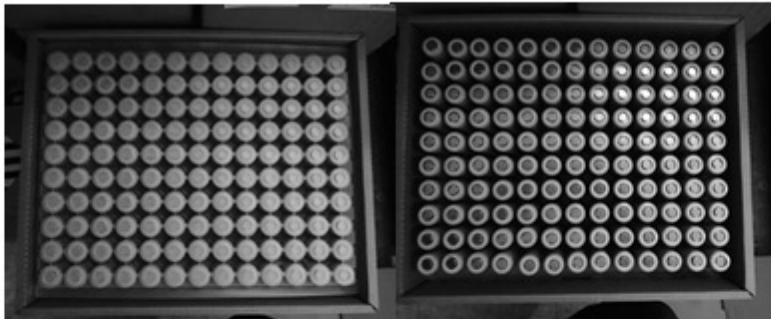
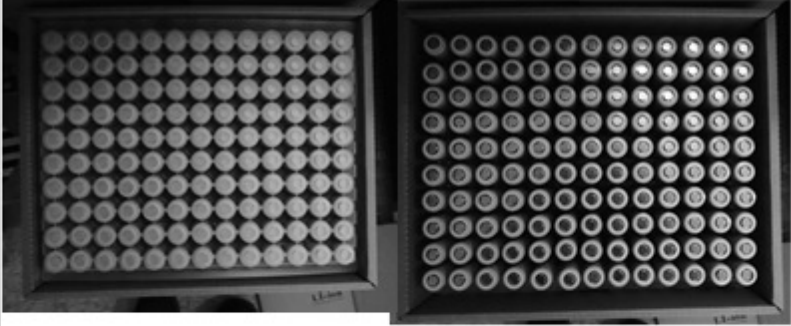
	Front	Back
Picture		

Cell Qty per box	Cell weight (kg)	Net weight per box (kg)
130	0.068	8.84



## P-1 1.2m Packaging Drop Test (Test Result: Pass)

### ■ Test result

	Before Test	After Test
<b>Weight (Kg)</b>	9.34	9.34
<b>Test Result</b>		
<b>Remark</b>	Outer packaging is damaged but samples inside the package remain intact and no damage, no shifting, no release of contents for samples inside the package.	
<b>Criteria</b>	<ul style="list-style-type: none"> <li>- Without damage to cells or batteries contained therein.</li> <li>- Without shifting of the contents so as to allow battery to battery(or Cell to cell) contact.</li> <li>- Without release of contents.</li> </ul>	