

Explanatory sheet about safety of product for transportation (Safety Data Sheet for transportation)

1. Basic item

Product name	Lithium ion battery ("Lithium ion battery" includes lithium polymer battery in this document)
UN number	3480
Product code	Refer to Table 1.
Product model name	Refer to Table 1.
Manufacturer	SANYO Electric Co., Ltd., Panasonic group
Address	222-1 Kaminaizen, Sumoto, Hyogo, Japan
Department in charge	Technology Planning Department Rechargeable Battery Business Division
Phone number	+81-799-23-3931
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2. Product information

Basic composition of the product

This product is a battery which consists of such main component as core battery pack assembled with some Lithium ion cells. And it consists of any combination of plastic casing, tube casing, protection circuit boards, safety devices and interface terminals.

3. Safety Information

- SANYO certifies the battery has passed and satisfied the UN Manual of Tests and Criteria Part III, sub-section 38.3 testing in SANYO shipping.
- SANYO manufactured the battery under the quality management program required in UN Model regulations 2.9.4(e).

3-1) Component cell

The Watt-hour rating of the component Lithium ion cells is not more than 20Wh.
Refer to Appendix "SDS (SDS-IBH-00484)".

3-2) Battery pack

1. The Watt-hour rating of the battery is not more than 100Wh.
2. Packages of the battery satisfy the following conditions when SANYO ships.
 - (1) The package has passed the drop test from the height of 1.2m.
 - (2) The package net weight is not more than 10kg.
 - (3) The package is marked and labeled according to requirement of the Packing Instruction 965 Section IB stated in ICAO's and IATA's dangerous goods regulations.
3. The battery is not defective for safety reasons, not damaged. It is not collected battery for recycling or disposal.
4. The battery is not subject to the fully regulated requirements for Dangerous Goods in ocean and ground transportation.
5. The battery should be transported by Cargo aircraft as UN3480, Class 9 Dangerous Goods, and state of charge not exceeding 30%, according to requirement of the Packing Instruction 965 Section IB stated in ICAOs' and IATA's dangerous goods regulations.



H. Kuroda General Manager
Technology Planning Department
Rechargeable Battery Business Division
SANYO Electric Co., Ltd.
Panasonic group

Table.1 Model list of application

Battery Part Numbers			Battery Information						
Lenovo ASM Lenovo PN Part Number	Lenovo FRU Part Number	Lenovo model name	MSDS Type #	UN DOT 38.3 Test Certificate	Cell Voltage (V)	Battery Voltage (V)	Watt hour Rating (Wh)	Weight (grams)	Equivalent Lithium Content (grams)
42T4531	42T4644 42T4530		SDS-IBH-00484	42T4531_UN38.3	3.6	10.8	85	516	7.02
42T4555	42T4654 42T4554		SDS-IBH-00484	42T4555_UN38.3	3.6	14.4	38	230	3.12
42T4557	42T4655 42T4556		SDS-IBH-00484	42T4557_UN38.3	3.6	10.8	85	498	7.02
42T4588	42T4587		SDS-IBH-00484	42T4588_UN38.3	3.7	11.1	28	184	2.34
42T4590	42T4589		SDS-IBH-00484	42T4590_UN38.3	3.7	11.1	52	337	4.32
42T4695	42T4694		SDS-IBH-00484	42T4695-U_UN38.3	3.7	11.1	94	507	7.56
42T4695	45N1170		SDS-IBH-00484	42T4695-N_UN38.3	3.6	10.8	94	85	7.83
42T4711	42T4710		SDS-IBH-00484	42T4711_UN38.3	3.7	11.1	94	505	7.56
42T4732	42T4731		SDS-IBH-00484	42T4732_UN38.3	3.6	10.8	57	330	4.68
42T4752	42T4751		SDS-IBH-00484	42T4752_UN38.3	3.6	10.8	48	306	3.96
42T4764	42T4763		SDS-IBH-00484	42T4764_UN38.3	3.6	14.4	32	222	2.64
42T4780	42T4781		SDS-IBH-00484	42T4780_UN38.3	3.6	10.8	24	167	1.98
42T4784	42T4785		SDS-IBH-00484	42T4784_UN38.3	3.6	10.8	57	335	4.68
42T4790	42T4791		SDS-IBH-00484	42T4790_UN38.3	3.6	10.8	57	330	4.68
42T4798	42T4799		SDS-IBH-00484	42T4798_UN38.3	3.7	11.1	94	505	7.56
42T4812	42T4813		SDS-IBH-00484	42T4812_UN38.3	3.7	11.1	63	355	5.04
42T4834	42T4835		SDS-IBH-00484	42T4834-U_UN38.3	3.7	11.1	63	340	5.04
42T4834	45N1171		SDS-IBH-00484	42T4834-N_UN38.3	3.6	10.8	63	320	5.22
42T4840	42T4841		SDS-IBH-00484	42T4840_UN38.3	3.7	11.1	32	181	2.52
42T4868	42T4940		SDS-IBH-00484	42T4868_UN38.3	3.7	11.1	94	504	7.56
42T4884	42T4883		SDS-IBH-00484	42T4884_UN38.3	3.6	14.4	32	222	2.64
42T4894	42T4893		SDS-IBH-00484	42T4894_UN38.3	3.6	10.8	57	335	4.68
42T4920	42T4921		SDS-IBH-00484	42T4920_UN38.3	3.6	10.8	48	306	3.96
42T4954	42T4953		SDS-IBH-00484	42T4954_UN38.3	3.7	11.1	32	190	2.52
42T4958	42T4957		SDS-IBH-00484	42T4958_UN38.3	3.7	11.1	63	331	5.04
42T5213	42T4663		SDS-IBH-00484	42T5213_UN38.3	3.6	10.8	52	330	4.32
42T5232	42T4670		SDS-IBH-00484	42T5232_UN38.3	3.6	10.8	52	330	4.32
42T5263	42T4677		SDS-IBH-00484	42T5263_UN38.3	3.6	10.8	57	335	4.68
45N1000	45N1001		SDS-IBH-00484	45N1000_UN38.3	3.6	10.8	57	330	4.68
45N1006	45N1007		SDS-IBH-00484	45N1006-U_UN38.3	3.7	11.1	94	505	7.56
45N1006	45N1173		SDS-IBH-00484	45N1006-N_UN38.3	3.6	10.8	94	483	7.83
45N1006	45N1007		SDS-IBH-00484	45N1006_UN38.3	3.7	11.1	94	505	7.56

Battery Part Numbers			Battery Information						
Lenovo ASM Lenovo PN Part Number	Lenovo FRU Part Number	Lenovo model name	MSDS Type #	UN DOT 38.3 Test Certificate	Cell Voltage (V)	Battery Voltage (V)	Watt hour Rating (Wh)	Weight (grams)	Equivalent Lithium Content (grams)
121500080			SDS-IBH-00484	121500080_UN38.3	3.7	11.1	94	505	7.56
45N1012	45N1013		SDS-IBH-00484	45N1012_UN38.3	3.7	11.1	58	336	5.04
45N1014	45N1708		SDS-IBH-00484	45N1014_UN38.3	3.6	10.8	57	335	4.68
45N1016	45N1017		SDS-IBH-00484	45N1016_UN38.3	3.7	11.1	94	626	7.56
45N1022	45N1023		SDS-IBH-00484	45N1022-U_UN38.3	3.7	11.1	63	334	5.04
45N1022	45N1172		SDS-IBH-00484	45N1022-N_UN38.3	3.6	10.8	63	314	5.22
45N1026	45N1027		SDS-IBH-00484	45N1026-U_UN38.3	3.7	11.1	94	504	7.56
45N1026	45N1027 45N1175		SDS-IBH-00484	45N1026-N_UN38.3	3.6	10.8	94	482	7.83
45N1030	45N1031		SDS-IBH-00484	45N1030_UN38.3	3.6	10.8	57	334	4.68
45N1032	45N1710		SDS-IBH-00484	45N1032_UN38.3	3.6	10.8	57	315	4.68
45N1042	45N1043		SDS-IBH-00484	45N1042_UN38.3	3.6	10.8	48	310	3.96
45N1056	45N1057		SDS-IBH-00484	45N1056-U_UN38.3	3.7	11.1	63	331	5.04
45N1056	45N1174		SDS-IBH-00484	45N1056-N_UN38.3	3.6	10.8	63	311	5.22
45N1060	45N1061		SDS-IBH-00484	45N1060-U_UN38.3	3.7	11.1	63	311	5.04
45N1060	45N1176		SDS-IBH-00484	45N1060-N_UN38.3	3.6	10.8	63	311	5.22
45N1076	45N1077		SDS-IBH-00484	45N1076-U_UN38.3	3.7	11.1	63	362	5.04
45N1076	45N1177		SDS-IBH-00484	45N1076-N_UN38.3	3.6	10.8	63	362	5.22
45N1104	45N1105		SDS-IBH-00484	45N1104_UN38.3	3.6	10.8	48	306	3.96
121500139			SDS-IBH-00484	121500139_UN38.3	3.6	10.8	48	306	3.96
45N1128	45N1129 45N1734 45N1767		SDS-IBH-00484	45N1128_UN38.3	3.6	10.8	48	310	3.96
45N1134	45N1135 45N1737 45N1777		SDS-IBH-00484	45N1134_UN38.3	3.6	10.8	72	333	6.03
45N1144	45N1145 45N1769		SDS-IBH-00484	45N1144_UN38.3	3.6	10.8	57	317	4.68
45N1150	45N1151 45N1779		SDS-IBH-00484	45N1150_UN38.3	3.6	10.8	100	469	8.29
121500221			SDS-IBH-00484	121500221_UN38.3	3.6	10.8	100	469	8.29
45N1158	45N1159 45N1771		SDS-IBH-00484	45N1158_UN38.3	3.6	10.8	48	298	3.96

Battery Part Numbers			Battery Information						
Lenovo ASM Lenovo PN Part Number	Lenovo FRU Part Number	Lenovo model name	MSDS Type #	UN DOT 38.3 Test Certificate	Cell Voltage (V)	Battery Voltage (V)	Watt hour Rating (Wh)	Weight (grams)	Equivalent Lithium Content (grams)
121500215			SDS-IBH-00484	121500215_UN38.3	3.6	10.8	48	298	3.96
45N1758	45N1759		SDS-IBH-00484	45N1758_UN38.3	3.6	10.8	48	316	3.96
92P1086	42T4611		SDS-IBH-00484	92P1086_UN38.3	3.6	10.8	52	330	4.32
92P1132	42T4619		SDS-IBH-00484	92P1132_UN38.3	3.6	10.8	85	319	7.02
92P1138	42T4621		SDS-IBH-00484	92P1138_UN38.3	3.6	10.8	57	335	4.68
92P1168	42T4630		SDS-IBH-00484	92P1168_UN38.3	3.6	14.4	38	230	3.12
92P1172	42T4632		SDS-IBH-00484	92P1172_UN38.3	3.6	14.4	75	450	6.24
92P1183	42T4635		SDS-IBH-00484	92P1183_UN38.3	3.6	10.8	48	310	3.96
121000683		L08S6C02	SDS-IBH-00484	121000683_UN38.3	3.7	11.1	53	315	4.32
121000742		L08S6C21	SDS-IBH-00484	121000742_UN38.3	3.7	11.1	52	337	4.32
121000682		L08S6D02	SDS-IBH-00484	121000682_UN38.3	3.7	11.1	57	341.5	4.68
121000739		L08S6D13	SDS-IBH-00484	121000739_UN38.3	3.7	11.1	56	315	4.68
121000791		L08S6Y02	SDS-IBH-00484	121000791_UN38.3	3.7	11.1	48	380	3.96
121500084		L08S6Y02	SDS-IBH-00484	121500084_UN38.3	3.7	11.1	48	380	3.96
121000848		L08S6Y21	SDS-IBH-00484	121000848_UN38.3	3.7	11.1	48	380	3.96
121000837		L09S3B11	SDS-IBH-00484	121000837_UN38.3	3.7	11.1	28	175	2.34
121000838		L09S3B11	SDS-IBH-00484	121000838_UN38.3	3.7	11.1	28	175	2.34
121000932		L09S3Z14	SDS-IBH-00484	121000932_UN38.3	3.6	10.8	24	167	1.98
121001119		L09S3Z14	SDS-IBH-00484	121001119_UN38.3	3.6	10.8	24	167	1.98
121000918		L09S6D16	SDS-IBH-00484	121000918_UN38.3	3.7	11.1	57	341.5	4.68
121000938		L09S6Y02	SDS-IBH-00484	121000938_UN38.3	3.6	10.8	48	310	3.96
121001091		L09S6Y02	SDS-IBH-00484	121001091_UN38.3	3.6	10.8	48	310	3.96
121500087		L09S6Y02	SDS-IBH-00484	121500087_UN38.3	3.6	10.8	48	310	3.96
121500090		L09S6Y02	SDS-IBH-00484	121500090_UN38.3	3.6	10.8	48	310	3.96
121500107		L09S6Y02	SDS-IBH-00484	121500107_UN38.3	3.6	10.8	48	310	3.96
121000820		L09S6Y11	SDS-IBH-00484	121000820_UN38.3	3.7	11.1	47	294	3.85
121000835		L09S6Y11	SDS-IBH-00484	121000835_UN38.3	3.7	11.1	47	294	3.85
121000929		L09S6Y14	SDS-IBH-00484	121000929_UN38.3	3.7	11.1	48	380	3.96
121000930		L09S6Y14	SDS-IBH-00484	121000930_UN38.3	3.7	11.1	48	380	3.96
121001023		L09S6Y14	SDS-IBH-00484	121001023_UN38.3	3.7	11.1	48	380	3.96
121500095		L09S6Y14	SDS-IBH-00484	121500095_UN38.3	3.7	10.8	48	310	3.96
121000866		L09S6Y21	SDS-IBH-00484	121000866_UN38.3	3.7	11.1	48	380	3.96
121001154		L10P6F01	SDS-IBH-00484	121001154_UN38.3	3.6	10.8	62	311	5.22
121001073		L10S6F01	SDS-IBH-00484	121001073_UN38.3	3.7	11.1	62	330	5.04
121500088		L10S6F01	SDS-IBH-00484	121500088_UN38.3	3.7	11.1	62	330	5.04
121001034		L10S6Y01	SDS-IBH-00484	121001034_UN38.3	3.6	10.8	48	310	3.96
121500089		L10S6Y02	SDS-IBH-00484	121500089_UN38.3	3.6	10.8	48	310	3.96

Battery Part Numbers			Battery Information						
Lenovo ASM Lenovo PN Part Number	Lenovo FRU Part Number	Lenovo model name	MSDS Type #	UN DOT 38.3 Test Certificate	Cell Voltage (V)	Battery Voltage (V)	Watt hour Rating (Wh)	Weight (grams)	Equivalent Lithium Content (grams)
121500037		L11P6R01	SDS-IBH-00484	121500037_UN38.3	3.6	10.8	72	334	6.03
121500051		L11S6F01	SDS-IBH-00484	121500051_UN38.3	3.7	11.1	62	330	5.04
121500062		L11S6F01	SDS-IBH-00484	121500062_UN38.3	3.7	11.1	62	330	5.04
121500070		L11S6R01	SDS-IBH-00484	121500070_UN38.3	3.6	10.8	72	334	6.03
121500040		L11S6Y01	SDS-IBH-00484	121500040_UN38.3	3.6	10.8	48	310	3.96
121500047		L11S6Y01	SDS-IBH-00484	121500047_UN38.3	3.6	10.8	48	310	3.96
121500185		L12S3F01	SDS-IBH-00484	121500185_UN38.3	3.6	10.8	36	184	3.02
121500189		L12S3F01	SDS-IBH-00484	121500189_UN38.3	3.6	10.8	36	184	3.02
121500166		L12S4A01	SDS-IBH-00484	121500166_UN38.3	3.6	14.4	32	222	2.64
121500174		L12S4A02	SDS-IBH-00484	121500174_UN38.3	3.6	14.4	32	222	2.64
5B10K10211		L12S4A02	SDS-IBH-00484	5B10K10211_UN38.3	3.6	14.4	32	222	2.64
121500171		L12S4E01	SDS-IBH-00484	121500171_UN38.3	3.6	14.4	41	270	3.48
121500256		L12S4E01	SDS-IBH-00484	121500256_UN38.3	3.6	14.4	41	270	3.48
5B10K10238		L12S4E01	SDS-IBH-00484	5B10K10238_UN38.3	3.6	14.4	41	270	3.48
121500121		L12S4E21	SDS-IBH-00484	121500121_UN38.3	3.6	14.4	41.6	270	3.48
121500190		L12S4E55	SDS-IBH-00484	121500190_UN38.3	3.6	14.4	41	270	3.48
121500239		L12S4E55	SDS-IBH-00484	121500239_UN38.3	3.6	14.4	41	270	3.48
5B10K10194		L12S4E55	SDS-IBH-00484	5B10K10194_UN38.3	3.6	14.4	41	270	3.48
121500165		L12S4F01	SDS-IBH-00484	121500165_UN38.3	3.6	14.4	48	229	4.02
121500113		L12S4K01	SDS-IBH-00484	121500113_UN38.3	3.6	14.4	48	229	4.02
121500237		L12S4K01	SDS-IBH-00484	121500237_UN38.3	3.6	14.4	48	229	4.02
121500104		L12S4Z01	SDS-IBH-00484	121500104_UN38.3	3.7	14.8	32	270	2.64
121500115		L12S4Z01	SDS-IBH-00484	121500115_UN38.3	3.7	14.8	32	270	2.64
121500116		L12S4Z01	SDS-IBH-00484	121500116_UN38.3	3.7	14.8	32	270	2.64
121500117		L12S4Z01	SDS-IBH-00484	121500117_UN38.3	3.7	14.8	32	270	2.64
121500119		L12S4Z01	SDS-IBH-00484	121500119_UN38.3	3.7	14.8	32	270	2.64
121500195		L12S4Z01	SDS-IBH-00484	121500195_UN38.3	3.7	14.8	32	270	2.64
121500129		L12S4Z51	SDS-IBH-00484	121500129_UN38.3	3.7	14.8	32	270	2.64
5B10K10193		L12S4Z51	SDS-IBH-00484	5B10K10193_UN38.3	3.7	14.8	32	270	2.64
121500149		L12S6A01	SDS-IBH-00484	121500149_UN38.3	3.6	10.8	48	310	3.96
121500127		L12S6E01	SDS-IBH-00484	121500127_UN38.3	3.6	10.8	62	311	5.22
121500210		L12S6Z53	SDS-IBH-00484	121500210_UN38.3	3.6	10.8	48	310	3.96
121500209		L13S3Z61	SDS-IBH-00484	121500209_UN38.3	3.7	11.1	24	154	1.93
121500242		L13S4A01	SDS-IBH-00484	121500242_UN38.3	3.6	14.4	32	222	2.64
5B10K10153		L13S4A01	SDS-IBH-00484	5B10K10153_UN38.3	3.6	14.4	32	222	2.64
121500260		L13S4A61	SDS-IBH-00484	121500260_UN38.3	3.6	14.4	32	222	2.64
121500245		L13S4E61	SDS-IBH-00484	121500245_UN38.3	3.6	14.4	41.6	270	3.48
5B10H42831		L14S3A01	SDS-IBH-00484	5B10H42831_UN38.3	3.6	10.8	24	220	1.98

Battery Part Numbers			Battery Information						
Lenovo ASM Lenovo PN Part Number	Lenovo FRU Part Number	Lenovo model name	MSDS Type #	UN DOT 38.3 Test Certificate	Cell Voltage (V)	Battery Voltage (V)	Watt hour Rating (Wh)	Weight (grams)	Equivalent Lithium Content (grams)
5B10K10177		L14S3A01	SDS-IBH-00484	5B10K10177_UN38.3	3.6	10.8	24	220	1.98
5B10H13097		L14S4A01	SDS-IBH-00484	5B10H13097_UN38.3	3.7	14.8	32	270	2.64
5B10K10216		L14S4A01	SDS-IBH-00484	5B10K10216_UN38.3	3.7	14.8	32	270	2.64
5B10H13091		L14S4E01	SDS-IBH-00484	5B10H13091_UN38.3	3.6	14.4	41	270	3.48
5B10K10172		L14S4E01	SDS-IBH-00484	5B10K10172_UN38.3	3.6	14.4	41	270	3.48
5B10G09007		L14S6F01	SDS-IBH-00484	5B10G09007_UN38.3	3.6	10.8	72	333	6.03
5B10L04214		L15S3A01	SDS-IBH-00484	5B10L04214_UN38.3	3.7	11.1	24	220	1.98
5B10L04215		L15S3A02	SDS-IBH-00484	5B10L04215_UN38.3	3.7	11.1	24	220	1.98
5B10H71978		L15S4A01	SDS-IBH-00484	5B10H71978_UN38.3	3.7	14.8	32	270	2.64
5B10K02215		L15S4A01	SDS-IBH-00484	5B10K02215_UN38.3	3.7	14.8	32	270	2.64
5B10L12769		L15S4A01	SDS-IBH-00484	5B10L12769_UN38.3	3.7	14.8	32	270	2.64
5B10L04212		L15S4A02	SDS-IBH-00484	5B10L04212_UN38.3	3.7	14.8	32	270	2.64
5B10H71979		L15S4E01	SDS-IBH-00484	5B10H71979_UN38.3	3.6	14.4	41	270	3.48
5B10L04213		L15S4E01	SDS-IBH-00484	5B10L04213_UN38.3	3.6	14.4	41	270	3.48
5B10L30040		L15S4E01	SDS-IBH-00484	5B10L30040_UN38.3	3.6	14.4	41	270	3.48
5B10L79054		L15S6A01	SDS-IBH-00484	5B10L79054_UN38.3	3.7	11.1	48	380	3.96
SB10F46471	00HW033		SDS-IBH-00484	SB10F46471_UN38.3	3.6	10.8	72	329	6.03
SB10H45073	00NY488		SDS-IBH-00484	SB10H45073_UN38.3	3.6	10.8	48	310	3.96
SB10H45074	00NY489		SDS-IBH-00484	SB10H45074_UN38.3	3.6	10.8	48	310	3.96
SB10J78995	00HW047		SDS-IBH-00484	SB10J78995_UN38.3	3.6	7.2	24	116	2.01
SB10K97574	01AV417		SDS-IBH-00484	SB10K97574_UN38.3	3.6	14.4	41	230	3.48
SB10K97582	01AV425		SDS-IBH-00484	SB10K97582_UN38.3	3.6	10.8	48	306	3.96
SB10K97584	01AV427		SDS-IBH-00484	SB10K97584_UN38.3	3.6	10.8	72	334	6.03
31507325		31507325	SDS-IBH-00484	31507325_UN38.3	3.6	10.8	48	310	3.96
121000649		121000649	SDS-IBH-00484	121000649_UN38.3	3.7	11.1	57	341.5	4.62
121001175		121001175	SDS-IBH-00484	121001175_UN38.3	3.6	10.8	52	330	4.32
888007014		888007014	SDS-IBH-00484	888007014_UN38.3	3.6	10.8	78	461	6.48

Safety data sheet for product

1. PRODUCT AND COMPANY IDENTIFICATION

- Product name: Lithium ion rechargeable battery cell
- Product code: None
(All cylindrical models Sanyo manufactured and whose capacity is less than or equal to 5.4Ah, including the cell branded as Panasonic)
- Company name: Sanyo Electric Co., Ltd., Panasonic group
- Address: 222-1 , Kaminaizen, Sumoto City, Hyogo, Japan
- Telephone number: +81-799-24-4111
- Fax number: +81-799-23-2879
- Emergency telephone number: [Daytime of business day] +81-799-23-3931
[Night and holiday] +81-799-24-4131

2. HAZARDS IDENTIFICATION

For the battery cell, chemical materials are stored in a hermetically sealed metal or metal laminated plastic case, designed to withstand temperatures and pressures encountered during normal use. As a result, during normal use, there is no physical danger of ignition or explosion and chemical danger of hazardous materials' leakage.

However, if exposed to a fire, added mechanical shocks, decomposed, added electric stress by miss-use, the gas release vent will be operated. The battery cell case will be breached at the extreme, hazardous materials may be released.

Moreover, if heated strongly by the surrounding fire, acrid gas may be emitted.

- GHS classification: Not available
(This product is outside the scope of GHS system since it's considered as an "article".)
- Most important hazard and effects
Human health effects:
 - Inhalation: The steam of the electrolyte has an anesthesia action and stimulates a respiratory tract.
 - Skin contact: The steam of the electrolyte stimulates a skin. The electrolyte skin contact causes a sore and stimulation on the skin.
 - Eye contact: The steam of the electrolyte stimulates eyes. The electrolyte eye contact causes a sore and stimulation on the eye. Especially, substance that causes a strong inflammation of the eyes is contained.Environmental effects: Since a battery cell remains in the environment, do not throw out it into the environment.
- Specific hazards:
 - If the electrolyte contacts with water, it will generate detrimental hydrogen fluoride.
 - Since the leaked electrolyte is inflammable liquid, do not bring close to fire.

3. COMPOSITION / INFORMATION ON INGREDIENTS

- Substance or preparation: Preparation
- Information about the chemical nature of product: *1

Portion	Material name	CAS No.	Concentration range (wt %)
Positive electrode	Lithium transition metal oxidate (Li[M] _m [O] _n *2)	12190-79-3 12057-17-9 182442-95-1	20~60
Positive electrode's base	Aluminum	7429-90-5	1~10
Negative electrode	Carbon	7782-42-5 7440-44-0	10~30
Negative electrode's base	Copper	7440-50-8	1~15
Electrolyte	Ethyl methyl carbonate Diethyl carbonate Ethylene carbonate	623-53-0 105-58-8 96-49-1	5~25
Outer case	Iron	7439-89-6	1~30

*1 Not every product includes all of these materials.

*2 The letter M means transition metal and candidates of M are Co, Mn, Ni and Al. One compound includes one or more of these metals and one product includes one or more of the compounds. The letter m and n means the number of atoms.

4. FIRST-AID MEASURES**Spilled internal cell materials**

- Inhalation:
Make the victim blow his/her nose, gargle. Seek medical attention if necessary.
- Skin contact:
Remove contaminated clothes and shoes immediately. Wash extraneous matter or contact region with soap and plenty of water immediately.
- Eye contact:
Do not rub one's eyes. Immediately flush eyes with water continuously for at least 15 minutes. Seek medical attention immediately.

A battery cell and spilled internal cell materials

- Ingestion:
Make the victim vomit. When it is impossible or the feeling is not well after vomiting, seek medical attention.

5. FIRE-FIGHTING MEASURES

- Suitable extinguishing media: Plenty of water, carbon dioxide gas, nitrogen gas, chemical powder fire extinguishing medium and fire foam.
- Specific hazards: Corrosive gas may be emitted during fire.
- Specific methods of fire-fighting: When the battery burns with other combustibles simultaneously, take fire-extinguishing method which correspond to the combustibles. Extinguish a fire from the windward as much as possible.
- Special protective equipment for firefighters:
 - Respiratory protection: Respiratory equipment of a gas cylinder style or protection-against-dust mask
 - Hand protection: Protective gloves
 - Eye protection: Goggle or protective glasses designed to protect against liquid splashes
 - Skin and body protection: Protective cloth

6. ACCIDENTAL RELEASE MEASURES

Spilled internal cell materials, such as electrolyte leaked from a battery cell, are carefully dealt with according to the followings.

- Precautions for human body:
Remove spilled materials with protective equipment (protective glasses and protective gloves). Do not inhale the gas as much as possible. Moreover, avoid touching with as much as possible.
- Environmental precautions: Do not throw out into the environment.
- Method of cleaning up: The spilled solids are put into a container. The leaked place is wiped off with dry cloth.
- Prevention of secondary hazards: Avoid re-scattering. Do not bring the collected materials close to fire.

7. HANDLING AND STORAGE

- Handling suggestions
 - Do not connect the positive terminal to the negative terminal with electrical wire or chain.
 - Avoid polarity reverse connection when installing the battery to an instrument.
 - Do not wet the battery with water, seawater, drink or acid; or expose to strong oxidizer.
 - Do not damage or remove the external tube.
 - Keep the battery away from heat and fire.
 - Do not disassemble or reconstruct the battery; or solder the battery directly.
 - Do not give a mechanical shock or deform.
 - Do not use unauthorized charger or other charging method. Terminate charging when the charging process doesn't end within specified time.
- Storage
 - Do not store the battery with metalware, water, seawater, strong acid or strong oxidizer.
 - Make the charge amount 30~50% then store at room temperature or less (temperature= -20~35 degree C) in a dry (humidity: 45~85%) place. Avoid direct sunlight, high temperature, and high humidity.
 - Use insulative and adequately strong packaging material to prevent short circuit between positive and negative terminal when the packaging breaks during normal handling. Do not use conductive or easy to break packaging material.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION (WHEN THE ELECTROLYTE LEAKS)

- Control parameters
 - ACGIH has not been mentioned control parameter of electrolyte.
- Personal protective equipment
 - Respiratory protection: Respirator with air cylinder, dust mask
 - Hand protection: Protective gloves
 - Eye protection: Goggles or protective glasses designed to protect against liquid splashes
 - Skin and body protection: Working clothes with long sleeve and long trousers

9. PHYSICAL AND CHEMICAL PROPERTIES

- Appearance
 - Physical state: Solid
 - Form: Cylindrical
 - Color: Metallic color (without tube if it has tube)
 - Odor: No odor

10. STABILITY AND REACTIVITY

- Stability: Stable under normal use
- Hazardous reactions occurring under specific conditions
 - Conditions to avoid: When a battery cell is exposed to an external short-circuit, crushes, deformation, high temperature above 100 degree C, it will be the cause of heat generation and ignition. Direct sunlight and high humidity.
 - Materials to avoid: Conductive materials, water, seawater, strong oxidizers and strong acids.
 - Hazardous decomposition products: Acrid or harmful gas is emitted during fire.

11. TOXICOLOGICAL INFORMATION

Organic Electrolyte

- Acute toxicity:
 - LD₅₀, oral - Rat 2,000mg/kg or more
- Irritating nature: Irritative to skin and eye

12. ECOLOGICAL INFORMATION

- Persistence/degradability:
Since a battery cell and the internal materials remain in the environment, do not bury or throw out into the environment.

13. DISPOSAL CONSIDERATIONS

- Recommended methods for safe and environmentally preferred disposal:

Product (waste from residues)

Specified collection or disposal of lithium ion battery is required by the law like as "battery control law" in several nations. Collection or recycle of the battery is mainly imposed on battery's manufacturer or importer in the nations recycle is required.

Contaminated packaging

Neither a container nor packing is contaminated during normal use. When internal materials leaked from a battery cell contaminates, dispose as industrial wastes subject to special control.

14. TRANSPORT INFORMATION

In the case of transportation, avoid exposure to high temperature and prevent the formation of any condensation. Take in a cargo of them without falling, dropping and breakage. Prevent collapse of cargo piles and wet by rain. The container must be handled carefully. Do not give shocks that result in a mark of hitting on a cell. Please refer to Section 7-HANDLING AND STORAGE also.

UN regulation

- UN number: 3480 (3481 when the battery is contained in equipment or packed with equipment)
- Proper shipping name:
Lithium ion batteries ("lithium ion batteries packed with equipment" or "lithium ion batteries contained in equipment")
- Class: 9 *

** Although this product meets the criteria of "dangerous goods" and are classified as "lithium ion batteries", depending on the battery's total capacity in the packaging, etc., they may not be subject to the fully regulated provisions.*

Regulation depends on region and transportation mode

- Worldwide - Air transportation:
ICAO/IATA-DGR [packing instruction 965 section IB or II]
(When shipping batteries "packed with" or "contained in" equipment, use packing instruction 966 or 967 as appropriate.)
- Worldwide - Ocean transportation:
IMO-IMDG Code [special provision 188]
- Europe - Ground transportation:
ADR [special provision 188]

** Instructions or provisions in the box brackets are conditions to make the battery cell exempted from full regulation.*

15. REGULATORY INFORMATION

- Regulations specifically applicable to the product:
Wastes Disposal and Public Cleaning Law [Japan]
Law for Promotion of Effective Utilization of resources [Japan]
US Department of Transportation 49 Code of Federal Regulations [USA]

** About overlapping regulations, please refer to Section 14-TRANSPORT INFORMATION.*

16. OTHER INFORMATION

- This safety data sheet is offered an agency who handles this product to handle it safely.
- The agency should utilize this safety data sheet effectively (put it up, educate person in charge) and take proper measures.
- ***The information contained in this Safety data sheet is based on the present state of knowledge and current legislation.***
- This safety data sheet provides guidance on health, safety and environmental aspects of the product and should not be construed as any guarantee of technical performance or suitability for particular applications.

Reference

Dangerous Goods Regulations – 59th Edition Effective 1 January 2018: International Air Transport Association (IATA)

IMDG Code – 2016 Edition: International Maritime Organization (IMO)

The European Agreement concerning the International Carriage of Dangerous Goods by Road – 2017:

The United Nations Economic Commission for Europe (UNECE)

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Rechargeable Battery Business Division
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Panasonic group