

Green-Cap(EDLC) Transportation Regulations (UN 3499)

SAMWHA ELECTRIC

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- Transport of EDLC (Electric Double Layer Capacitor)
 - All SAMWHA Green-cap(EDLC) follows UN No. 3499, 'Capacitor, electric double layer'
- General Information
 1. UN Number: UN3499
 2. Proper Shipping Name : Capacitor, electric double layer
(with an energy storage capacity greater than 0.3Wh)
Note : Capacitors not exceeding 0.3Wh are not subject to DGR
(Dangerous Goods Regulations)
 3. Packing Instruction Number : PI 971
 4. Applicable Special Provision Number : 361 (A186 in ICAO / IATA & 173, 176 US DOT)
 5. Types: Capacitor and Capacitor in Module.

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There are two transport categories, capacitor or module itself and capacitor

Class	Rated Voltage (V _R)	Rated Capacitance (F)	Energy Capacity (Wh)*	Less than 0.3Wh	~10Wh	10Wh~	Contained in equipment	Dangerous Goods
1 (capacitor)	2.5	3 ~ 200	0.003 ~ 0.174	○				N/A**
	2.7	3 ~ 200	0.003 ~ 0.203	○				N/A**
	3	3 ~ 200	0.003 ~ 0.250	○				N/A**
	5.4	1.5	0.006 ~ 0.020	○				N/A**
2 (capacitor)	2.7	300 ~ 3000	0.304 ~ 3.038		○			Y
	3	300 ~ 3000	0.375 ~ 3.750		○			Y
3 (module)	16.2	200~ 500	7.29 ~ 18.23				○	Y
	48.6	66.6 ~ 166.6	21.85~ 54.65				○	Y
	75	36	28.125				○	Y
	90	10	11.250				○	Y
	129.6	62.5	145.800				○	Y

* Energy storage capacity was calculated from the equation of $E(Wh) = 0.5CVR^2 / 3600$

** EDLCs which energy capacity is not exceeding 0.3Wh are not subject to Dangerous Goods Regulations.

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Class	Rated Voltage (V _R)	Rated Capacitance (F)	Energy Capacity (Wh)*	Drop	Protection	Pressure differential
1 (capacitor)	2.5	3 ~ 200	0.003 ~ 0.174	SAMWHA EDLC is designed to withstand 1.2m drop test	SAMWHA EDLC or module is protected against short circuit or fitted with a metal strap connecting terminals.	SAMWHA EDLC is designed to withstand a 95 kPa pressure differential.
	2.7	3 ~ 200	0.003 ~ 0.203			
	3	3 ~ 200	0.003 ~ 0.250			
	5.4	1.5	0.006 ~ 0.020			
2 (capacitor)	2.7	300 ~ 3000	0.304 ~ 3.038			
	3	300 ~ 3000	0.375 ~ 3.750			
3 (module)	16.2	200 ~ 500	7.29 ~ 18.23	-		
	48.6	66.6 ~ 166.6	21.85 ~ 54.65			
	75	36	28.125			
	90	10	11.250			
	129.6	62.5	145.800			

- Not more than 10Wh energy capacity
 - Not subject to other provisions when capable of withstanding a 1.2m drop test unpackaged on an unyielding surface without loss of contents.
- Capacitors contained in equipment
 - Not subject to other provisions provided the equipment is packed in a strong outer packaging constructed of suitable material and of adequate strength and design in relation to the packaging intended use and in such a manner as to prevent accidental functioning of capacitors during transport.