



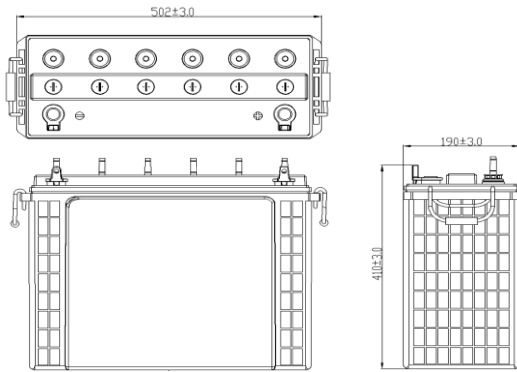
TALL TUBULAR CONVENTIONAL BATTERY (150Ah to 220Ah)



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TECHNICAL SPECIFICATION - Tall Tubular Conventional Battery



Product Features :-

1. Robust Tubular with High Pressure diecasted spine- resulting low rate of spine corrosion.
2. Spill Proof Vent plug – resulting in no spillage on top and low controlled acid fumes.
3. Optimized Negative paste receipt for fast charge acceptance
4. Consistent backup throughout life
5. Excellent behavior in PSOC condition as compare
6. Low Self Discharge
7. Excellent performance on deep cyclic application as compare to AGM VRLA
8. Very High Design & Service Life
9. Low water loss

Technical Specifications

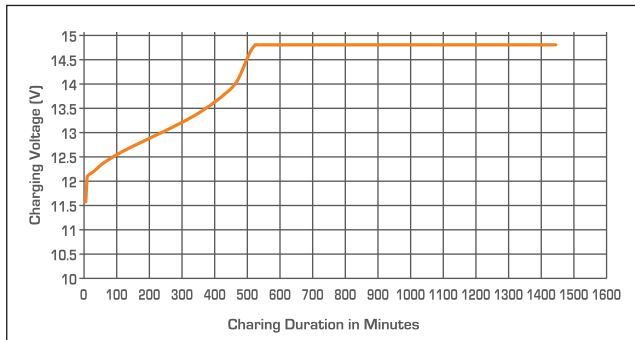
Model	Nominal Voltage	Rated Capacity 20 Hr @ 27°C (Ah)	Dimensions in mm			Filled Battery Weight [Kg] [±3%]	Terminal Type
			Length [± 3 mm]	Width [± 3 mm]	Height [± 3 mm]		
EM150D [12 V 150 AH @ C20]	12	150	502	190	402	55.5	L
EM200D [12 V 200 AH @ C20]	12	200	502	190	402	61.5	L
EM220D [12 V 220 AH @ C20]	12	220	502	190	402	68	L

Electrical Parameters & Charging Profile

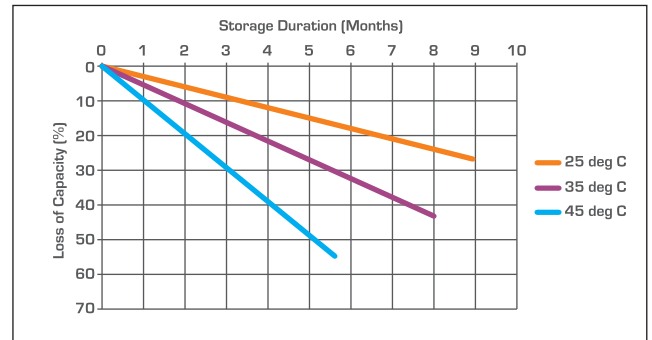
Battery Specified Capacity Test @ 27 °C						
	C20 @10.5V	C10 @10.5V	C7 @10.5V	C5 @10.5V	C3 @10.5V	C1 @10.5V
EM150D [12 V 150 AH @ C20]	150	135	124	112	97	68
EM200D [12 V 200 AH @ C20]	200	180	166	150	129	90
EM220D [12 V 220 AH @ C20]	220	200	184	166	143	100
Ah & Wh Efficiency						
Ah Efficiency	>90%		Wh Efficiency		>75%	

- Poly Components Material :- Polypropylene Co polymer
- Watering system :- Individual to every cell in Monobloc
- Color :- Blue
- Testing Parameters :- IS 13369:2005 & IEC 60896-11

Charging Profile



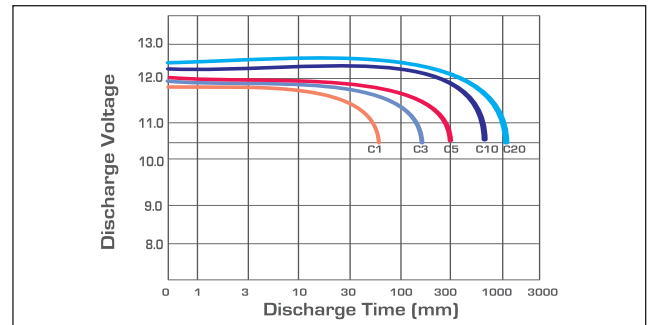
Self Discharge Characteristics @ Different Temperature



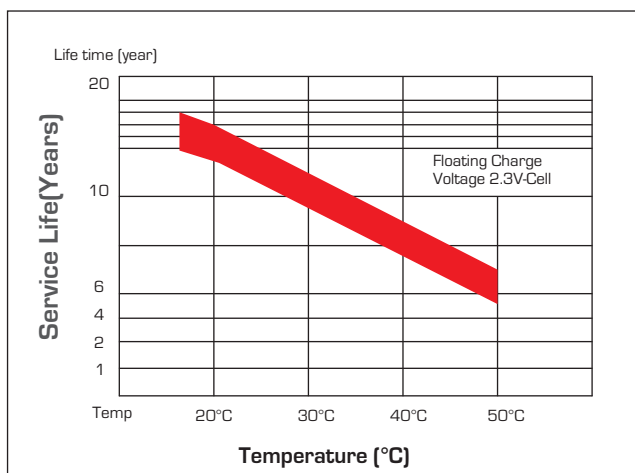
State of Charge Measure of Open-circuit Voltage @ 27°C

State of Charge	Specific Gravity	Voltage
100%	1.260	12.7V
75%	1.225	12.4V
50%	1.190	12.1V
25%	1.155	12.0V
0%	1.120	11.8V

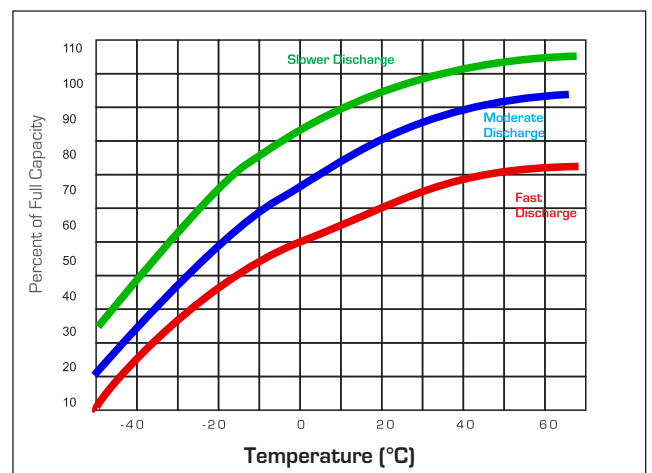
Discharging Characteristics at various rates @ 27°C



Service (Float) Life and Temperature



Expected Capacity vs Temperature



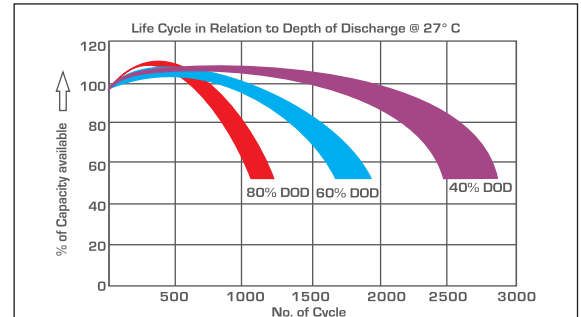
Eastman Battery Manufacturing Certified by Vincotte for



Specific Gravity & Self Discharge w.r.t. Temperature

CHARGING TEMPERATURE COMPENSATION	Add	Subtract
	0.005 volt per cell for every 1°C below 25°C 0.0028 volt per cell for every 1°F below 77°F	0.005 volt per cell for every 1°C above 25°C or 0.0028 volt per cell for every 1°F above 77°F
OPERATIONAL DATA	Operating Temperature	Self Discharge
	-4°F to 131°F (-20°C to +55°C) At temperatures below 32°F (0°C) maintain a state of charge greater than 60%.	As per discharge Graph

Expected Life



Charging Instructions

Charger Voltage Settings (at 77° F/ 25°C)			
System Voltage	12V	24V	48V
Maximum Charge Current	0.2C10		
Maximum Absorption Phase Time (hours)	4		
Absorption Voltage	14.4	28.8	57.6
Float Voltage	13.6	27.2	54.4
Equalization Voltage	16	32	64
Do not install or charge batteries in a sealer or non-ventilated compartment. Constant under or overcharging will damage the battery and shorten its life as with any battery.			
Periodic Charge	Provide a periodic freshening charge to maintain a SOC greater than the threshold of 70%		

Comparison in between Eastman TTC & AGM VRLA

S.No	Parameter	Eastman Tall Tubular Conventional	AGM VRLA
1	Plate Technology	Tall Tubular Plate	Flat Pasted Plate
2	Electrolyte	Free Flow Electrolyte	Electrolyte in- between AGM
3	Water Loss	Low	Negligible
4	Self Discharge	Low <2.0%	Low <2.0%
5	Life Cycle w.r.t DOD	1300 Cycle @ 80% DOD	450 Cycle @ 80%DOD
6	Water Top up	Low water top up	Water top up not required throughout life
7	Plastic Material	PPCP Material	PPCP material & ABS material
8	Battery Technology	Conventional Technology	Valve Regulated Technology
9	Separator	Polyethylene (PE)	AGM Separator (Very low Electrical resistance)
10	Life w.r.t Application	Excellent performance on cyclic application	Not good for cyclic application
11	Acid Stratification	Low	No
12	Discharge Current	Low Range	Wide Range
13	Charging setting	Generic set point for chargers	Required special set point for charges
14	Operating Temperature	Wide Temperature Operating range	Temperature Operating range is limited
15	Spillage	Low Spill-proof	Spill-proof
16	Application	Suitable for Float application above 1H: discharge rate	Good for float & stand by application
17	Recovery in PSOC	Excellent	Low

Terminal Configuration :-
Terminal Type :- L
Terminal Height :- 24 mm
Torque Value :- 8-10 N.m
Bolt Type :- M8



Vent Plug Type :-
M22 coin type



Vent Plug Type :-
M30 Dummy Plug

