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Mighty Max Battery ML35-12GEL193

Mighty Max Battery 12V 35AH GEL Battery User Manual

Model: ML35-12GEL193

1. Product Overview

The Mighty Max ML35-12GEL is a 12V 35AH GEL rechargeable, maintenance-free battery designed for deep cycle applications, including solar systems. This battery offers reliable and consistent power delivery.

- **Reliable Performance:** GEL batteries provide consistent, long-lasting power with a slower self-discharge rate compared to AGM batteries, retaining charge longer when not in use.
- **Durability in Extreme Conditions:** Engineered to perform consistently across a wide range of temperatures, from hot summers to cold winters.
- **Rugged and Safe Design:** Features a thick, non-spillable gel paste that minimizes leak risks and reduces the chance of acid spills or harmful fumes. This design also enhances resistance to vibrations and shocks.



Image 1.1: Key highlights of the Mighty Max GEL Series battery, emphasizing performance, durability, and safety features.

2. Safety Information

Read and understand all safety instructions before installing or operating the battery. Failure to follow these instructions may result in serious injury or property damage.

- **Risk of Fire, Explosion, or Burns:** Do not short-circuit the battery terminals.
- **Do Not Disassemble:** The battery is sealed and maintenance-free. Do not attempt to open or disassemble the battery.
- **Temperature Limits:** Do not heat the battery above 40°C (104°F) or incinerate it. The recommended storage temperature should not exceed 50°C (122°F).
- **Ventilation:** Ensure adequate ventilation when charging or operating the battery to prevent gas accumulation.
- **Eye Protection:** Always wear appropriate eye protection when working with batteries.
- **Keep Away from Children:** Store batteries out of reach of children.

- **Proper Disposal:** Batteries must be recycled or disposed of properly. Do not dispose of in household waste.

3. Installation and Setup

Follow these guidelines for proper installation of your Mighty Max GEL battery.

3.1 Physical Dimensions

Before installation, verify that the battery dimensions are compatible with your application's space requirements.

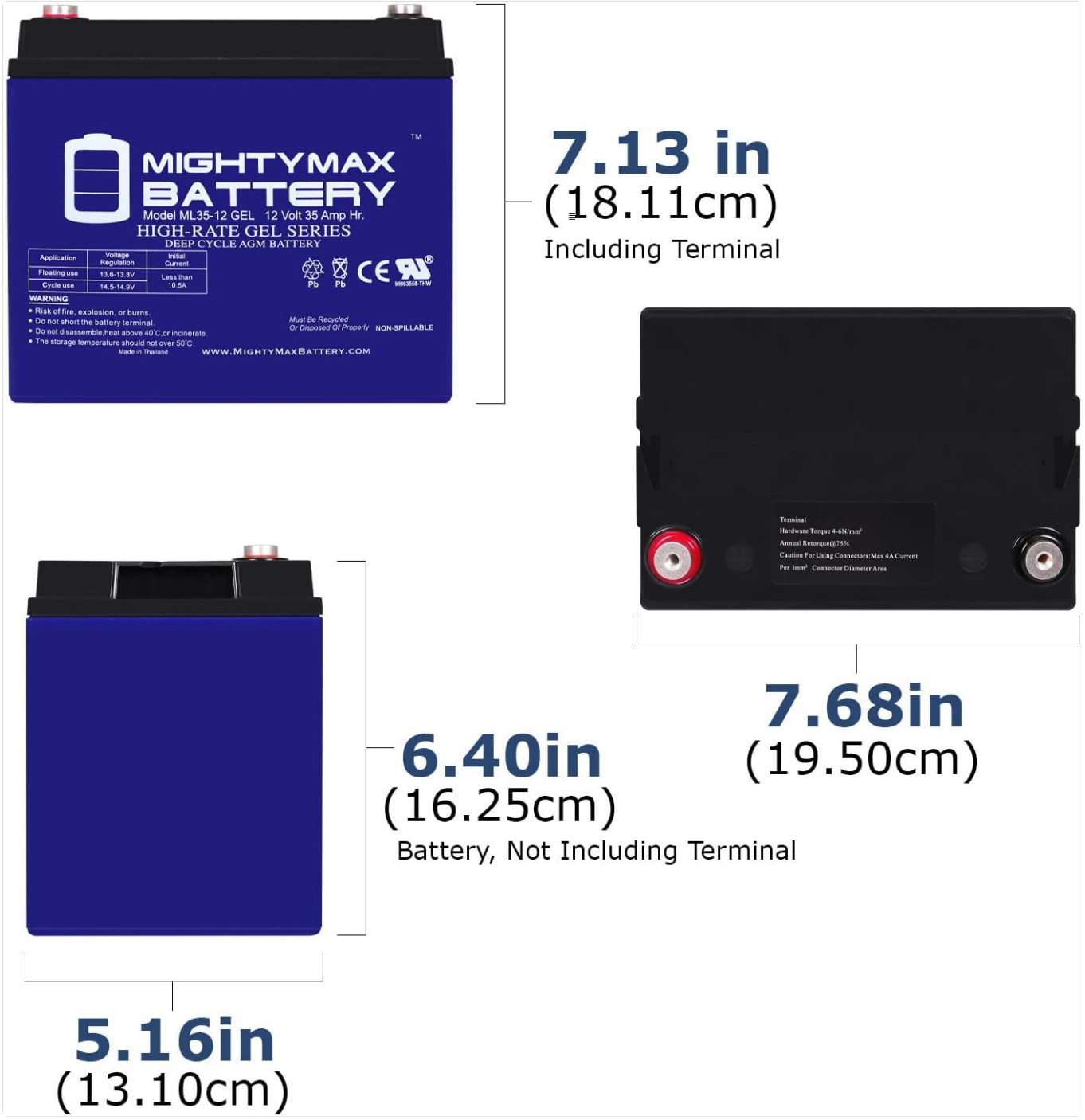


Image 3.1: Detailed dimensions of the ML35-12GEL battery.

3.2 Mounting Versatility

Mighty Max GEL batteries can be mounted in any position or orientation, offering flexibility for various applications. Ensure the battery is secured to prevent movement or damage.

▶ **Watch video online**
Mighty Max Battery

Video 3.2: This video demonstrates the mounting versatility of Mighty Max batteries, highlighting that they can be installed in any position or orientation. It also shows that the batteries are maintenance-free and easy to use.

3.3 Terminal Connections

The ML35-12GEL battery uses Internal Thread (INT) terminals. Ensure all connections are clean, tight, and properly insulated to prevent short circuits and ensure optimal performance.



Image 3.3: Close-up of the battery terminal, illustrating the internal thread design for secure connections.

3.4 Internal Configuration

Understanding the internal components can aid in proper handling and troubleshooting, though the battery is sealed and not user-serviceable.

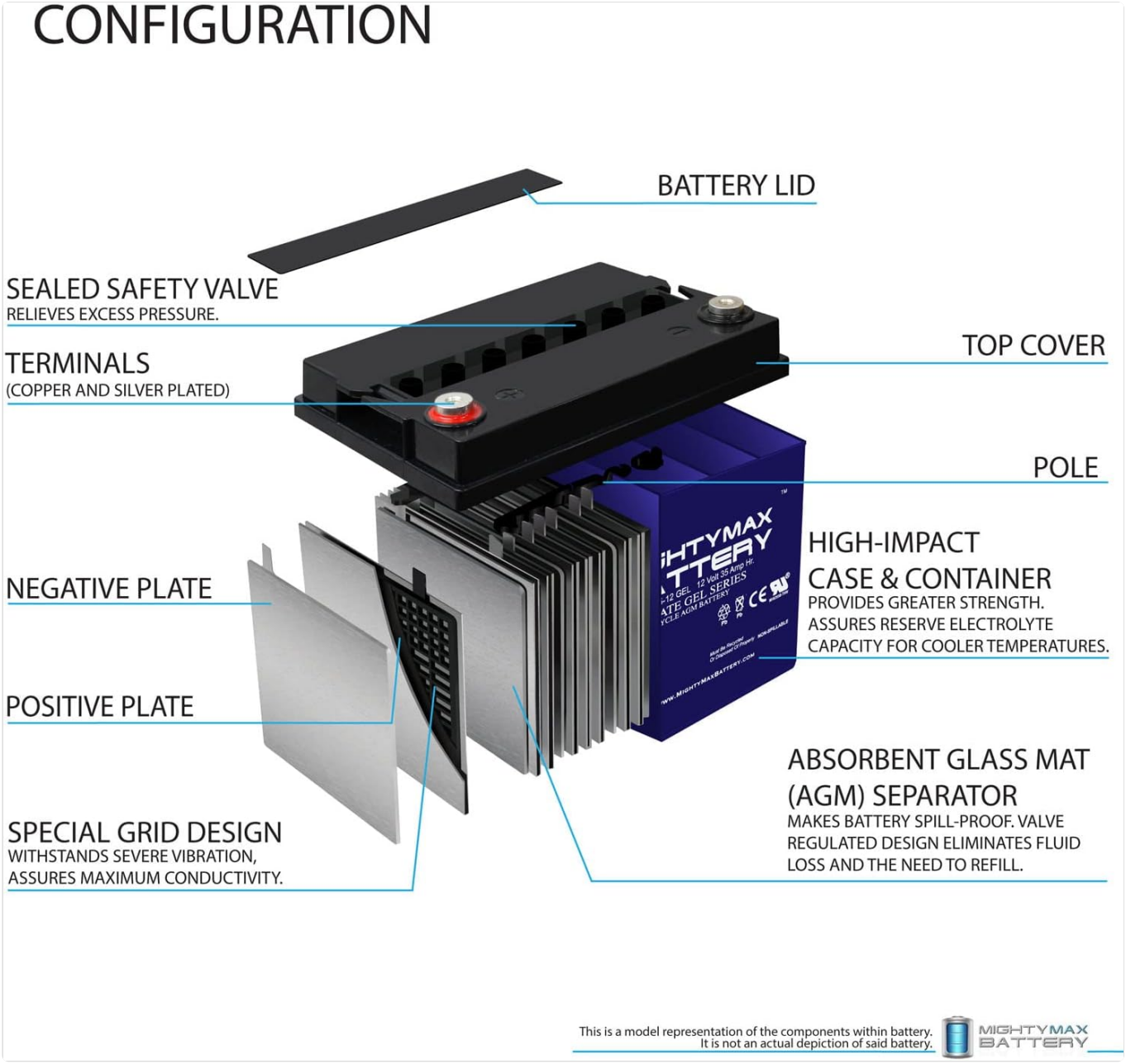


Image 3.4: Exploded view diagram of the battery's internal components, including plates, separator, and safety valve.

4. Operating Instructions

The ML35-12GEL is a deep cycle GEL battery suitable for both float and cyclic applications. It is designed to be maintenance-free.

4.1 Charging

Use a charger specifically designed for GEL batteries. Refer to the specifications section for recommended charging voltages and currents.

- **Float Use:** 13.5V - 13.8V (at 25°C)
- **Cyclic Use:** 14.5V - 14.9V (at 25°C)
- **Max. Charge Current:** Less than 10.5A

4.2 Discharge

Avoid deep discharging the battery below its recommended voltage limits to prolong its lifespan. The battery is designed

for deep cycle applications, allowing for sustained discharge over time.

5. Maintenance

The Mighty Max ML35-12GEL battery is a maintenance-free unit. No water addition or electrolyte checks are required.

- **Cleaning:** Keep the battery terminals and top clean and free of corrosion. Use a damp cloth to wipe down the battery casing.
- **Inspection:** Periodically inspect the battery for any signs of damage, swelling, or leaks.
- **Storage:** If storing the battery for an extended period, ensure it is fully charged and stored in a cool, dry place. Recharge periodically to compensate for self-discharge. The self-discharge rate is approximately 3% of capacity declined per month at 20°C.

6. Troubleshooting

If you encounter issues with your battery, consider the following common problems and solutions:

- **Battery Not Holding Charge:**
  - Ensure the charger is functioning correctly and is compatible with GEL batteries.
  - Check for proper terminal connections; loose connections can prevent full charging.
  - Verify that the charging voltage and current are within the specified limits.
- **Low Voltage Output:**
  - Check the battery's state of charge. It may require recharging.
  - Inspect for any short circuits in the connected system.
  - Ensure the battery is not overloaded beyond its capacity.
- **Physical Damage/Swelling:**
  - If the battery shows signs of physical damage or swelling, discontinue use immediately and contact customer support. Do not attempt to repair.

7. Specifications

Detailed technical specifications for the Mighty Max ML35-12GEL battery.

Specification	Value
Brand	Mighty Max Battery
Model Number	ML35-12GEL193
Voltage	12 Volts
Battery Capacity	35 Amp Hours
Battery Cell Composition	Lead Acid (GEL Type)
Item Weight	24 Pounds
Product Dimensions (D x W x H)	7.68" x 5.16" x 7.13"
Terminal Type	Internal Thread (INT)
Manufacturer Warranty	1 Year

ML35-12 GEL 12V35Ah/20hr



GEL battery which is manufactured with AGM separator and col loidal Silicon. Gel battery are featured with low self-discharge strong ability to recover from deep Discharging excellent cycle life and performance at cold ambient temperatures than conventional VRLA

Battery Construction

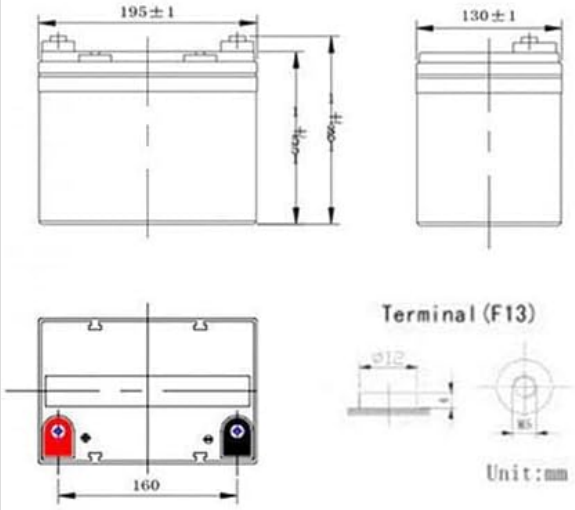
Component	Positive plate	Negative plate	Container	Cover	Safety valve	Terminal	Separator	Electrolyte
Raw material	Lead dioxide	Lead	ABS	ABS	Rubber	Copper	Fiberglass	Colloidal silicon

General Feature

- Micro millimeter SiO_2 and H_2SO_4 technology for Efficient gas recombination of up to 99% and Freedom from electrolyte maintenance or water adding.
- Computer designed lead, calcium tin alloy grid for high power density.
  Long service life, float or cyclic applications.
  Maintenance-free operation.
- Low self discharge.

SPECIFICATION

Nominal voltage 12V
Number of cell 6
Length(mm/inch) 195/7.68
Width(mm/inch 130/5.12
Height(mm/inch) 155/6.10
Total Height(mm/inch) 168/66.1
Approx. Weight(kg/lbs) 10.5/23.1



Performance Characteristics

Capacity 77°F(25℃)	100 hour rate (0.39A、11.1V)	39Ah
	20 hour rate (1.75A、10.8V)	35Ah
	10 hour rate (3.1A、10.5V)	31Ah
	1 hour rate (18.5A、9.6V)	18.5Ah
Internal Resistance	Full charged Battery77°F(25℃):10mΩ	
Operating Temperature Range	Discharge：-20～60℃	
	Charge：-10～60℃	
	Storage：-20～60℃	
Self-Discharge 3% of capacity declined per month at 20℃(average)		
Max. discharge current77°F(25℃): 350A(5S)		
Charge (Constant Voltage)	Float：13.38～13.68 V/77° F/(25℃)	
	Cycle:14.28～14.52 V/77°F/(25℃) Max. Current：10.5A	

Discharge Constant Current (Amperes at 77° F25 ℃)

End Point Volts/Cell	10min	15min	30min	1h	3h	5h	10h	20h	100h
1.60V	75.2	58.4	33.5	19.0	8.47	5.82	3.23	1.69	0.42
1.65V	71.4	55.5	31.8	18.5	8.35	5.76	3.20	1.68	0.41
1.70V	67.1	52.1	29.8	18.0	8.20	5.68	3.15	1.67	0.41
1.75V	62.5	48.5	28.3	17.4	8.05	5.60	3.10	1.66	0.40
1.80V	57.5	44.6	26.0	16.7	7.86	5.48	3.00	1.65	0.40

Discharge Constant Power (watts at 77° F 25℃)

End Point Volts/Cell	10min	15min	30min	45min	1h	2h	3h	5h	10h
1.60V	142	106	68.2	50.9	41.9	23.2	16.9	11.2	6.18
1.65V	134	102	66.1	49.8	41.2	22.8	16.8	11.1	6.15
1.70V	126	97.8	64.1	48.8	40.6	22.3	16.6	11.0	6.10
1.75V	118	94.2	62.0	47.8	39.8	21.9	16.3	10.9	6.05
1.80V	110	90.2	59.8	46.8	39.1	21.5	15.9	10.7	5.94

(Note)The above characteristics data are average values obtained Within three charge/discharge cycles not the minimum values.

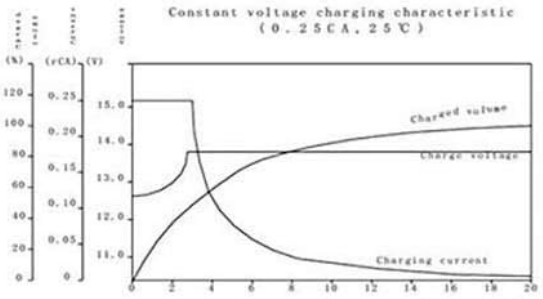
Image 7.1: Page 1 of the detailed specification sheet for the ML35-12GEL battery.

MIGHTYMAX BATTERY

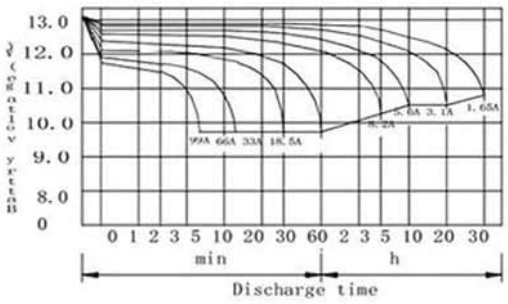
ML35-12 GEL (12V35Ah)

charge characteristic curve

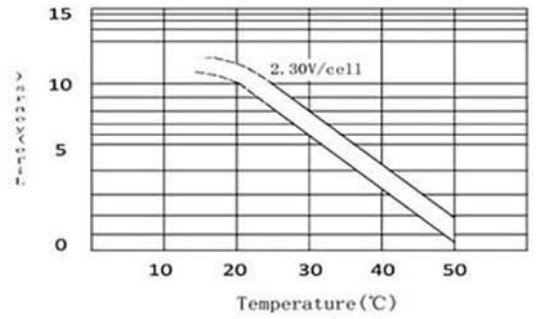
Constant voltage charging characteristic (0.25CA, 25℃)



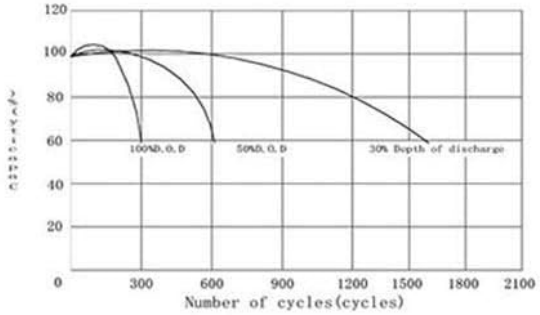
Discharge characteristic(25℃)



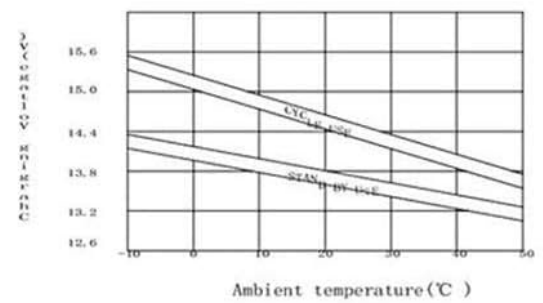
Temperature effects on float life



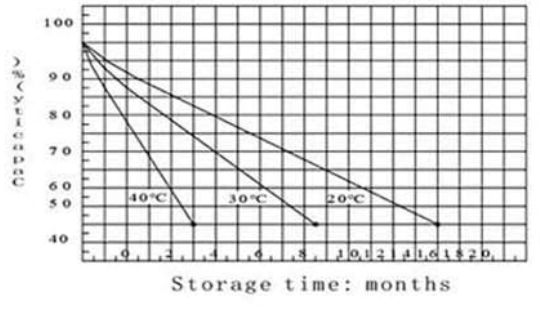
Cycle service life in relation to depth of discharge



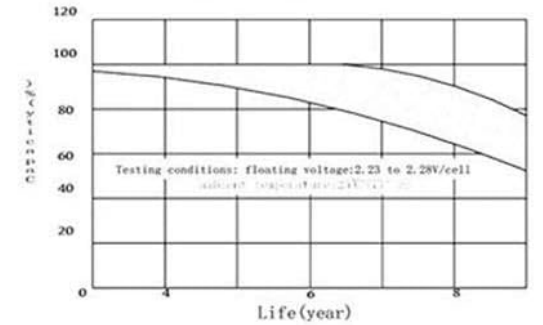
Relationship between charging voltage and temperature



Self-discharge characteristic



Life characteristics of standby use



Temperature effects on capacity

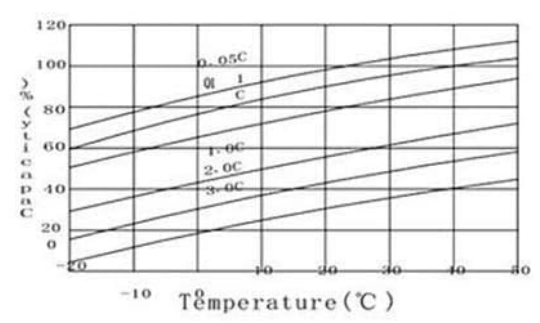


Image 7.2: Page 2 of the detailed specification sheet, showing various performance curves and characteristics.

8. Warranty and Support

The Mighty Max ML35-12GEL battery comes with a**1-Year Manufacturer's Warranty**. This warranty covers defects in materials and workmanship under normal use.
For warranty claims, technical assistance, or any product-related inquiries, please contact Mighty Max Battery customer support through their official website or the retailer where the product was purchased.

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