

## Exhibit H

### **Emergency Response Plan (ERP)**

Battery Energy Storage System (BESS) Project

Guilford High School – Guilford, CT

---

#### **1.0 Introduction**

This Emergency Response Plan (ERP) has been prepared for the Tesla Megapack 2 XL Battery Energy Storage System (BESS) at Guilford High School in Guilford, Connecticut. The purpose of this plan is to provide clear guidance for preparing, responding, and coordinating during emergencies involving the BESS.

The system consists of:

- 1 Tesla Megapack 2 XL unit
- Configuration: 1927 kW AC / 3854 kWh (2-hour)
- Location: Guilford High School, Guilford, CT

This ERP outlines:

- Emergency roles and responsibilities
- Hazards and safety considerations specific to the Megapack 2 XL
- Coordination procedures with local fire, police, and emergency responders
- Training, drills, and plan review requirements

The BESS system will be located behind a secure fenced area within the customer's property line.

The plan will be reviewed annually or upon major changes in design, operations, or regulations.

#### **1.1 Site Security**

The Battery Energy Storage System (BESS) Project is secured entirely within a 7-foot perimeter fence. Entry to the equipment is managed by a locked, keyed gate which is always closed. Access is strictly limited to authorized individuals necessary for maintaining safe equipment operation.

Contractors and visitors must register using a written log-in system managed by the site host. Upon initial entry, all personnel are assigned and accompanied by an on-site contact.

The Project is unstaffed, with the exception of routine maintenance typically conducted based on the project's Preventative Maintenance Schedule. Remote system operators

continuously monitor the site, 24/7. They access operational data via the control system, which gathers information from the BESS Energy Management System. The Energy Management System monitors all data and controls system operations.

External lighting is installed across the entire site. Other security features include communication links with site host representatives, audible and visible fire alarms, and cellular communication between contractors and remote operators.

## **1.2 Plan Review**

The ERP is reviewed annually and as soon as practicable after any of the following situations:

1. Applicable regulations are revised
2. The ERP fails in an emergency
3. Circumstances arise that may increase the potential for emergencies, such as changes in Project design, construction, operation or maintenance practices
4. Emergency response procedures change
5. The list of emergency contacts or coordinators change
6. The list of emergency equipment changes, or
7. A significant change occurs in the operation of the Project

---

## **2.0 Facility Organization and Contact Information**

### **2.1 Site Characteristics**

The Project operates unattended except during scheduled routine maintenance. Off-site personnel are readily reachable by cell phone to initiate emergency support. The host facility maintains a designated local contact assigned to the system. The entire system is continuously monitored remotely; during an emergency, staff and first responders are automatically notified as detailed in this document.

Besides Scale Microgrids employees, external contractors and vendors will also visit the site. The total number of on-site contractors rises specifically during scheduled maintenance outages when the BESS Project is powered down.

### **2.2 Emergency Response Roles**

- Emergency Coordinator/Scale Asset Manager

The Scale Asset Manager officially holds the role of overseeing the long-term preparedness and plan. Immediate on-scene incident command is handled by a Facilities Manager who is employed by the customer or owner/operate of the building.

The Scale Asset Manager is accountable for ensuring the Project's emergency response and regulatory compliance programs are sound, fully implemented, adequately funded, and that all personnel receive appropriate training.

During an emergency, the Facilities Manager is the "person in charge" of the site and its operations until emergency response agencies (police, fire, etc.) arrive. They are supported by additional Project personnel who provide technical and operational data.

**Specific Duties:**

- Incident Command: Assess the emergency, determine the necessary response level, and direct all on-site activities.
  - Site Control: Authorize an emergency system shutdown, signal an evacuation if needed, and mobilize response contractors.
  - External Coordination: Act as the primary liaison between the Project and external responders.
  - Resource Management: Contact outside agencies to request emergency support, make required regulatory and corporate notifications, and provide the necessary personnel and financial resources for the response.
- Remote System Operator
    - The RSO is responsible for continuous monitoring and communication during Project emergencies. An emergency may be discovered through system monitoring or reported directly to the RSO. In either case, the RSO will immediately alert the Facilities Manager (EC) and contact off-site emergency responders when necessary. The RSO will also provide ongoing support to the Facilities Manager and assist with the post-incident investigation process.
  - On-Site Personnel/Contractors
    - Every employee has the duty to notify the Facilities Manager and Scale Asset Manager upon discovering an emergency. Employees are not expected to perform any emergency response actions, with the sole exception of calling 911.

## **2.3 Off-Site Emergency Organizations**

Effective emergency planning relies on close, ongoing coordination between Scale Microgrids and local external emergency organizations. These groups will be contacted via a 911 call to the site for immediate response when required.

The following organizations are designated as emergency resources:

#### **2.3.1 Local Fire Department**

The Local Fire Department is the primary off-site response agency. Coordination ensures they are familiar with the Project's layout, operations, and procedures. This is achieved by:

- Providing a copy of this Emergency Response Plan.
- Conducting and documenting periodic site familiarization visits.
- Inviting Fire Department members to participate in simulated training exercises.
- Soliciting their input for plan analysis and improvement suggestions.

#### **2.3.2 Local Police & State Police**

These law enforcement agencies will provide necessary assistance as required. In the event of a full Project evacuation, the local Police Department would primarily assist with traffic control.

#### **2.3.3 LEPC (Local Emergency Planning Commission)**

Although this Project is not subject to Emergency Planning and Community Right-to-Know Act (EPCRA) regulations, Scale Microgrids cooperates with the local Fire Department, which is integrated with local and state emergency planning processes.

#### **2.3.4 State Fire Marshal's Office**

This office may be contacted to assist with specific situations, including arson investigations, sabotage response, or the disposition of suspected bombs.

#### **2.3.5 Spill Cleanup Contractor**

No hazardous liquids are stored on-site. While minor spills (coolants, oils) are possible during maintenance, all but the smallest spill response and cleanup will be contracted through a third party. The preferred contractor is listed in Attachment A.

#### **2.3.6 Licensed Site Professional (LSP)**

Any cleanup activities related to reportable hazardous materials spills or contamination must be overseen by a Connecticut Licensed Environmental Professional (LEP). The preferred LEP is listed in Attachment A.

### **2.3.7 Local Medical Services**

YNHH Shoreline Medical Center (3.9 miles away) has a 24/7 Emergency Department available for emergency treatment of injured personnel. Local ambulance service provides off-site transportation for medical care.

Emergency Contact Information for all agencies and personnel is provided in Attachment A.

---

## **3.0 BESS Safety System**

This section outlines the key safety features and systems incorporated into the Tesla Megapack 2 XL, drawing on product documentation.

### **3.1 Battery Cell Chemistry and Design**

The Tesla Megapack products utilize sealed lithium-ion battery cells. Potential cell chemistries include:

- Lithium Iron Phosphate (LFP)
- Lithium Nickel Cobalt Aluminum Oxide (NCA)
- Lithium Nickel, Manganese, Cobalt Oxide (NMC)
- Lithium Cobalt Oxide (LCO)

Safety Design Features:

- Cells and batteries do not contain metallic lithium.
- Individual cells are hermetically sealed, and the product architecture prevents any direct contact with the battery cells, minimizing the possibility of an electrolyte spill at the project site.
- The system is engineered for safety and performance at every level.

### **3.2 Monitoring and Management Systems**

The Megapack 2 XL incorporates advanced systems to ensure safe operation:

- It features industry-leading power electronics and a high-performance thermal system.
- The product is designed with a focus on scaled and rigorously tested product safety and reliability.
- Continuous improvement based on large-scale operational experience is utilized.
- The system is an integrated solution that allows for battery augmentation over time.

### **3.3 Emergency Stop (E-Stop) and System Shutdown**

Procedures for emergency shutdown of the Megapack System are as follows:

- Engage the external emergency stop (E-Stop) button or remote shutdown contact to the Megapack.
- Alternatively, open the external AC breaker
- **WARNING:** Shutting off power to the product does not de-energize the battery, and a shock hazard may still be present.

### **3.4 Fire Detection, Alarming, and Mitigation**

The Megapack 2 XL system is designed to meet strict safety and fire standards:

- The system is NRTL listed to safety standards including UL 1973, UL 9540, and UL 9540A.
- The response guidance recommends a defensive fire-fighting approach:
  - Do not approach the unit or attempt to open any doors.
  - Allow the affected unit to consume itself as it is designed to do, as applying water directly to the burning unit will have minimal effect and will only slow its eventual combustion.
  - Apply water to adjacent exposures to protect them, using a fog pattern if possible to maximize cooling.
- If fire, smoke, or a suspicious odor is observed, assume a thermal event is occurring.
- Evacuate all non-emergency personnel from the area.
- Firefighters should wear self-contained breathing apparatuses (SCBAs) and standard structural firefighting gear.
- The cool-down and monitoring period after a fire may take 12-48 hours or longer.

## **4.0 BESS Hazards**

The Tesla Megapack 2 XL poses several potential hazards:

### **4.1 Electrical Hazards**

#### **4.1.1 DC Voltage**

- **Hazard:** Risk of electrocution due to High DC Voltage. The maximum system DC voltage is <1230 VDC. The DC battery system maximum voltage is up to 1500 VDC.
- **Location:** High DC voltage is present at the battery terminals and internal DC bus when the system is operating or if the primary disconnect is closed. Shutting off power to the product does not de-energize the battery, and a shock hazard may still be present.

#### **4.1.2 AC Voltage**

- Hazard: Risk of electrocution due to 480 V AC. This supplies auxiliary components, including HVAC systems and internal control systems.
- Location: 480 V AC power is routed to the unit's distribution management cabinet and powers internal auxiliary loads.

### **4.2 Chemical Hazards**

#### **4.2.1 Ethylene Glycol Coolant**

- Hazard: Exposure to the liquid coolant, an Ethylene Glycol solution (50% water, 50% Ethylene Glycol), which poses a health risk if exposed in sufficient quantity. It is generally not combustible.
- Location/Quantity: The Megapack 2 XL liquid cooling system utilizes up to 380 L of this solution. Leakage is possible with mechanical damage.

#### **4.2.2 Refrigerant**

- Hazard: Exposure to hazardous chemicals. The thermal management system uses refrigerant, primarily R-134a (1,1,1,2-Tetrafluoroethane). Exposure poses a health risk and the refrigerant can be combustible under certain circumstances.
- Location/Quantity: The Megapack 2 XL refrigerant system contains up to 3.0 kg of R-134a. A release may appear similar to smoke.

#### **4.2.3 Lithium-Ion Electrolyte**

- Hazard: Exposure to flammable and potentially hazardous cell contents. The electrolyte solution is volatile and can be combustible under certain circumstances. While leakage is remote due to the hermetically sealed cells, vented gases released during abnormal heating or thermal runaway are hazardous.
- Location: Electrolyte is contained within the product's sealed lithium iron phosphate (LFP) battery cells.

### **4.3 Fire & Explosion Hazards**

#### **4.3.1 Electrical Fire**

- Hazard: Electrical fires are possible from a short circuit, component failure, or failed over-current protection device (OCPD).
- Mitigation: The Megapack includes internal heat, smoke, and gas detectors to alarm to the site's fire panel/EMS and trigger audible/visible alarms.

#### **4.3.2 Thermal Runaway and Battery Fire**

- Hazard: Excessive heat buildup or internal cell failure can cause one or more cells to enter a state of thermal runaway.
- Safety Features & Testing:
  - The Megapack 2 XL is NRTL listed to UL 9540A at the cell, module, and unit levels, providing data on thermal runaway impacts.
  - The product uses Lithium Iron Phosphate (LFP) chemistry, which is designed for safety and to resist thermal runaway propagation.
  - In the event of thermal runaway, dedicated deflagration vents built into the roof passively mitigate explosion risk by directing all gases, smoke, and flame upwards.
  - Rigorous full-scale fire testing has shown that the Megapack performs in a safe and controlled manner, consuming itself slowly and without explosive bursts, projectiles, or propagation to neighboring units.

#### **4.3.3 Explosion of Battery Off-Gas (Deflagration)**

- Hazard: When Li-ion cells undergo thermal runaway, they release toxic and flammable gases (including hydrogen and carbon monoxide). Accumulation of these gases in a confined space can create an explosion risk.
  - Mitigation: The Megapack 2 XL includes a proprietary explosion mitigation system with overpressure vents and a sparker system. The sparkers continuously operate to ignite flammable gas build-up early, limiting gas concentration and relieving pressure through the vents. The gas detectors are calibrated to trigger alarms at 25% Lower Flammability Level (LFL).
- 

### **5.0 Emergency Response Procedures**

#### **5.1 Fire Response**

- If venting or smoke is observed, assume thermal runaway. Do not open doors.
- Actions:
  1. Evacuate personnel.
  2. If trained, initiate emergency shutdown (see Section 5.2).
  3. Maintain safe perimeter; deny entry.



4. Call 911 and notify Tesla Technical Support (e.g., North America 24/7 hotline: +1 650-681-6060).

- Fire suppression:
  - Allow the affected unit to consume itself. Direct water application is not effective at stopping thermal runaway.
  - Use fog water streams to cool adjacent units and protect exposures.
  - Monitor the unit until cool; the process may take 12–48 hours or longer. Full firefighter PPE and SCBA must be utilized until gas levels are confirmed safe.

## **5.2 Emergency Shutdown**

- Engage the local E-Stop (on the enclosure or at the entry gate) or remote shutdown contact, if safe to do so.
- Open the external AC breaker or disconnect that services the Megapack, if applicable.
- WARNING: Shutting off power does not de-energize the battery. A shock hazard may still be present.

## **5.3 Spill Response**

- Small leaks of Ethylene glycol coolant (a 50/50 mixture with water) or R134a refrigerant should be isolated and contact prevented.
- Leaked coolant is typically blue, green, or orange. Refrigerant release may appear similar to smoke.
- Call a spill cleanup contractor if the leak is beyond defensive capabilities.
- Reportable releases of hazardous materials must be managed by a Connecticut Licensed Environmental Professional (LEP).

## **5.4 Medical Emergencies**

- Seek immediate medical assistance for electric shock.
- Provide basic first aid for minor injuries if safe.
- Call 911 immediately for transport to the nearest hospital (e.g., Shoreline Medical Center, approximately 3.9 miles away).
- For contact with leaked cell electrolyte, flush immediately with water and seek medical assistance if irritation persists. For eyes, flush for 15 minutes.

## **5.5 Severe Weather / Sabotage**

- Units are designed for operation in ambient temperatures from –30°C to 50°C (–22°F to 122°F). The main enclosure has a rating of IP66/NEMA 3R.
- In case of flooding, storm damage, or vandalism: isolate the area and notify emergency contacts.
- A high-voltage and electrocution risk may exist if the outer enclosure or safety circuits have been significantly damaged or compromised.
- Do not approach the unit if a hurricane, tornado, or other severe weather event causes damage until assessed for hazards.

## **6.0 Training and Drills**

This section outlines the requirements for personnel training and periodic emergency drills.

### **6.1 Initial Training**

- All personnel, including contractors and staff, must receive training on the Energy Storage System's hazards and appropriate emergency response procedures prior to site access.
- Contractor training includes a site safety and environmental orientation. Specific job training is done through the job hazard analysis (JHA) process.

### **6.2 Annual Training**

- All employees associated with the Project are provided with refresher First Responder Awareness Level training and detailed training on the Emergency Response Plan (ERP).
- Training is conducted using various means, including classroom, computer-based learning, tabletop exercises, and emergency drills.

### **6.3 Periodic Drills**

- Emergency response drills are held on at least an annual basis to assess the effectiveness of procedures and maintain personnel proficiency.
- Drills may involve off-site response agencies, such as the Guilford Fire Department, to familiarize them with the Project and its procedures.
- All drills are documented and reviewed to identify areas for improvement.

## **7.0 Incident Investigation & Reporting**

Following any incident, a formal investigation is initiated to determine cause, assess response effectiveness, and document findings.

### **7.1 Incident Documentation and Reporting**

- The Scale Asset Manager must log the event into the incident reporting system immediately after the emergency.
- Corporate reporting is generally required for all emergencies.
- A formal report should be prepared, led by the Scale Asset Manager, and may include the Remote System Operator and off-site responders.

## **7.2 Investigation Requirements**

- The investigation must be initiated promptly following resolution of the incident.
- The investigation creates a formal report that details:
  - The Cause and contributing factors, including equipment failures or procedural errors.
  - A summary of the emergency response and actions taken.
  - Conclusions of the investigative group.
- The primary goal is to conduct a root cause analysis to prevent re-occurrence.

## **7.3 Plan Review and Improvement**

- The ERP is reviewed and updated as soon as practicable if the ERP fails in an emergency, procedures change, or a significant change in operation occurs.
- The final report must include recommendations resulting from the investigation and a critique of all response actions, including what went well and what could have been improved.

**Attachment A – Emergency Contact List (Full Details)**

<b>Organization / Role</b>	<b>Contact Information</b>	<b>Notes</b>
Scale Asset Manager	Spencer Bernstein (914) 512-0837	Sr. Director Client Success
Guilford Fire Department	390 Church Street, Guilford, CT 06437 Emergency: 911 Non-Emergency: (203) 453-8056 / (203) 453-8000	Primary fire/EMS responder
Guilford Police Department	400 Church Street, Guilford, CT 06437 Emergency: 911 Non-Emergency: (203) 453-8061	Law enforcement, traffic control
Connecticut State Police – Troop F (Westbrook)	315 Spencer Plains Road, Westbrook, CT 06498 Phone: (860) 399-2100	State police jurisdiction
Ambulance / EMS	Guilford Fire Department EMS (via 911)	Local ambulance service
Shoreline Medical Center (Yale New Haven Health)	111 Goose Lane, Guilford, CT 06437 Phone: (203) 453-7900	Nearest emergency medical facility
Yale New Haven Hospital (Main Campus, Level 1 Trauma Center)	20 York Street, New Haven, CT 06510 Phone: (203) 688-4242	Trauma and advanced emergency care
Connecticut State Fire Marshal's Office	Phone: (860) 713-5750	Fire/arson investigations, state-level coordination
CHEMTREC (HazMat Transport Support)	Contract No.: CCN204273 USA/Canada: 1-800-424-9300 International: +1-703-741-5970 (collect)	For transport-related spills, leaks, or fires
Tesla Energy Technical Support	24/7 North America Hotline: +1-650-681-6060	Technical support and system-specific guidance

**Attachment B – Industrial Lithium-Ion Battery Emergency Response Guide (by Tesla)**



**MEGAPACK**

**POWERPACK**

# Industrial Lithium-Ion Battery Emergency Response Guide

For Tesla Industrial Energy Products including Megapack and Powerpack

Revision 2.7

## PRODUCT SPECIFICATIONS

All specifications and descriptions contained in this document are verified to be accurate at the time of printing. However, because continuous improvement is a goal at Tesla, we reserve the right to make product or documentation modifications at any time, with or without notice.

The images provided in this document are for demonstration purposes only. Depending on product version and market region, details may appear slightly different.

This document does not create contractual obligations for Tesla or its affiliates and is provided without warranty of any kind, except to the extent expressly agreed in a contract.

## LATEST REVISIONS

Documents are periodically updated. To ensure you have the latest revision of this document, visit the Tesla Partner Portal at <https://partners.tesla.com/>.

## ERRORS OR OMISSIONS

To communicate inaccuracies or omissions in this document, reach out to your Tesla representative.

## COPYRIGHT

©2024 TESLA, INC. All rights reserved.

All information in this document is subject to copyright and other intellectual property rights of Tesla, Inc. and its licensors. This material may not be modified, reproduced or copied, in whole or in part, without the prior written permission of Tesla, Inc. and its licensors. Additional information is available upon request. The following are trademarks or registered trademarks of Tesla, Inc. in the United States and other countries:

TESLA



All other trademarks contained in this document are the property of their respective owners and their use herein does not imply sponsorship or endorsement of their products or services. The unauthorized use of any trademark displayed in this document or on the product is strictly prohibited.



---

1 Introduction and Scope.....	2
2 Company, Contact, & Product Info.....	4
3 Handling, Use, & Hazard Precautions.....	12
4 In Case of Emergency.....	15
5 Firefighting Measures.....	17
6 Shutting Down in an Emergency.....	18
7 First Aid Measures.....	19
8 Storage Precautions.....	20
9 Damaged Product Handling.....	21
10 Disposal Procedures.....	22
11 Maintenance or Repair.....	23
12 Transportation.....	24
Revision History.....	25





# 1 Introduction and Scope

This emergency response guide (ERG) serves as a resource for emergency responders and Authorities Having Jurisdiction (AHJs) with regard to safety surrounding Tesla Industrial Energy products. This guide should also be reviewed by customers, site managers, and operators to ensure a clear understanding of potential hazards and the procedures to follow in case of emergencies.

Tesla Industrial Energy products are defined as rechargeable lithium battery energy storage products designed, manufactured, and sold by Tesla, and include all versions of Megapack and Powerpack, collectively referred to in this guide as "Tesla Industrial Energy products," "Tesla Energy products," or "the product" unless otherwise noted. The information and recommendations set forth in this ERG are made in good faith and believed to be accurate as of the date of preparation.



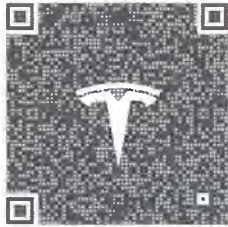
**NOTE:** The guidance in this publication applies to Megapack and Powerpack only and may not extend to the entire site's structures or equipment. As each site differs, accordingly each site's requirements for first responders differ, and this guide does not replace a site-wide plan.

## 1.1 Available ERG Translations

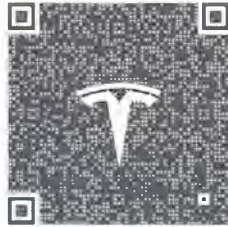
The *Industrial Lithium-Ion Battery Emergency Response Guide* (ERG) is available in various languages as indicated below. As information in the ERG is periodically updated and translations are periodically added, always check the Tesla First Responders Information page at <https://www.tesla.com/firstresponders> for the latest revision of this guide, for ERGs for other Tesla products, and for the latest additional translated versions.



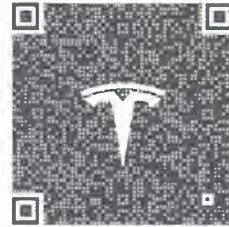
*English*



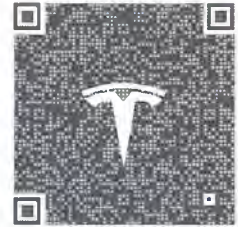
*Deutsch*



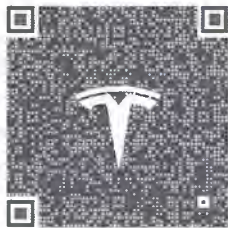
*Español*



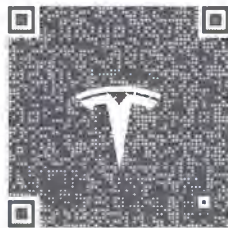
*Français*



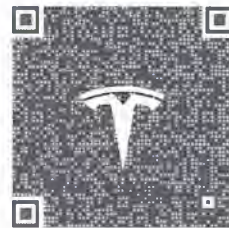
*עברית*



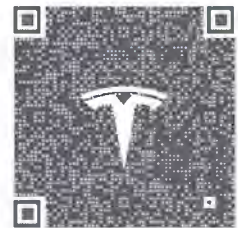
*Italiano*



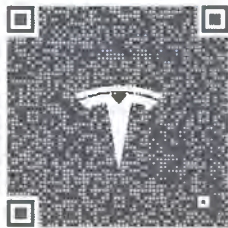
*日本語*



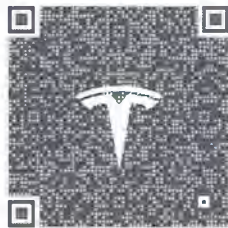
*한국어*



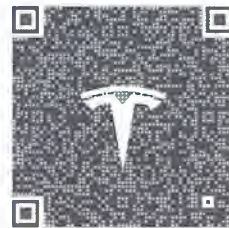
*Nederlands*



*简体中文*



*繁體中文*



*Português*



*Slovenščina*





## 2 Company, Contact, & Product Info

### 2.1 Identification of Company and Contact Information

Table 1. Company and Contact Information

Products	Tesla Industrial Energy products, designed for industrial, utility, or commercial energy applications, and modules and sub-assemblies that can be installed in such products. Descriptions and specific part numbers are listed in <a href="#">Product Descriptions on page 6</a> .	
Locations	Headquarters (USA)	<p>1 Tesla Road</p> <p>Austin, TX 78725 USA</p> <p>Tel. No. +1 512-516-8177 (do not use for emergencies; see below)</p>
	Europe and Africa	<p>Burgemeester Stramanweg 122</p> <p>1101EN Amsterdam, The Netherlands</p> <p>Tel. No. +31 20 258 3916 (do not use for emergencies; see below)</p>
	Australia and Asia	<p>Level-14, 15 Blue Street</p> <p>North Sydney NSW, 2060, Australia</p> <p>Tel. No. 1800 686 705 (do not use for emergencies; see below)</p>
	Manufacturer (USA)	<p>1 Tesla Road</p> <p>Austin, TX 78725 USA</p> <p>Tel. No. +1 512-516-8177 (do not use for emergencies; see below)</p>
Emergency Contacts	CHEMTREC (Transportation)	<p>For hazardous materials (or dangerous goods) incidents during transportation such as spill, leak, fire, exposure, or accident, call CHEMTREC, day or night.</p> <p>Contract Number: CCN204273</p> <p>Within USA and Canada: 1-800-424-9300</p> <p>Outside USA and Canada: +1 703-741-5970 (collect calls accepted)</p>
	Tesla Energy Technical Support Contacts	<p>Hotline telephone numbers:</p> <ul style="list-style-type: none"> <li>• Asia (24x7): +1 571 573 9163</li> <li>• Australia/New Zealand (24x7): +61 2 432 802 81</li> <li>• Europe/Middle East/Africa: +31 2 08 88 53 32</li> <li>• France: +33 173218702</li> <li>• Japan: +0120 312-441 / (24x7) +1 571 573 9163</li> </ul>



- North America (24x7): +1 650-681-6060
- Slovenia: +38 617778699
- South Africa: +27 213004878
- Switzerland: +41 445155607
- The Netherlands: +31 208885332
- United Kingdom: +44 1628450645

## 2.2 SDS Information

Safety Data Sheets (SDS) are available for materials in Tesla Energy products. Contact Tesla for a copy of these documents.

Table 2. Thermal Contents

Materials with SDS	Approximate Quantity
Ethylene glycol 50/50 mixture with water	<ul style="list-style-type: none"> <li>• Powerpack 1: 22 L of 50/50 mixture</li> <li>• Powerpack 2: 26 L of 50/50 mixture</li> <li>• Powerpack 1 or 2 Inverter: 11 L of 50/50 mixture</li> <li>• Powerpack 3: 37 L of 50/50 mixture</li> <li>• Powerpack 3 battery module: 20 L of 50/50 mixture</li> <li>• Megapack: 540 L of 50/50 mixture</li> <li>• Megapack battery module: 20 L of 50/50 mixture</li> <li>• Megapack 2: 360 L of 50/50 mixture</li> <li>• Megapack 2 battery module: 5 L of 50/50 mixture</li> <li>• Megapack 2 XL: Up to 380 L of 50/50 mixture</li> <li>• Megapack 2 XL battery module: 5 L of 50/50 mixture</li> </ul>
R-134a: 1,1,1,2-Tetrafluoroethane refrigerant	<ul style="list-style-type: none"> <li>• Powerpack 1 or 2: 400 g</li> <li>• Megapack: 7.6 kg</li> <li>• Megapack 2: 7.6 kg</li> <li>• Megapack 2 XL: Up to 3.0 kg</li> </ul>
R-1234yf: 2,3,3,3-Tetrafluoroethane refrigerant	<ul style="list-style-type: none"> <li>• Powerpack 3: Up to 650 g</li> </ul>

## 2.3 Lithium Cells

The products contain sealed lithium battery cells (cells). Cells each contain lithium electrodes, which can be composed of:

- Lithium Nickel Cobalt Aluminum Oxide (NCA material),  $\text{LiNi}_{0.8}\text{Co}_{0.1}\text{Al}_{0.1}\text{O}_2$
- Lithium Nickel, Manganese, Cobalt Oxide (NMC material)  $\text{LiNi}_{0.8}\text{Mn}_{0.1}\text{Co}_{0.1}\text{O}_2$
- Lithium Iron Phosphate (LFP material)  $\text{LiFePO}_4$
- Lithium Nickel, Manganese Oxide (NMO material),  $\text{LiNi}_{0.8}\text{Mn}_{0.2}\text{O}_2$
- Lithium Cobalt Oxide,  $\text{LiCoO}_2$





- or a mixture of these compounds

The cells and batteries do not contain metallic lithium. Individual cells have nominal voltages of up to approximately 3.6 V.

## 2.4 Product Descriptions

Individual lithium-ion cells are connected to form modules. Modules are battery sub-assemblies. These modules are installed into the products. Approximate product specifications are listed below.

### 2.4.1 Powerpack

Powerpack is Tesla's energy storage system for commercial and industrial use and for system augmentation.



**NOTE:** Images below are indicative representations designed to assist with product identification. Existing product models may vary.

Figure 1. Powerpack 1 or 2: Units and Inverter



1. Powerpack Units (include lithium-ion cells)
2. Powerpack Inverter

Figure 2. Example of a Powerpack 1 or 2 Site





Figure 3. Powerpack 3 Units (3)



Figure 4. Example of a Megapack Augmented with Powerpack 3 Units (3)



1. Megapack 2 XL
2. Powerpack 3 Units



Table 3. Approximate Powerpack Specifications

Part Number (Reman Number if available)	Description	Module Voltage - as shipped (V)	Max System DC Voltage	Max System AC Voltage	Weight	Height	Width	Depth
<b>Powerpack 1 Versions</b>								
1047404-x*y*-z*	POWERPACK  (2hr continuous net discharge)	<30 (DC)	450 (DC)	480 (AC)	1680 kg (3700 lb)	219 cm (86 in)	97 cm (38 in)	132 cm (52 in)
1060119-x*y*-z*	POWERPACK  (4hr continuous net discharge)	<30 (DC)	450 (DC)	480 (AC)	1665 kg (3670 lb)	219 cm (86 in)	97 cm (38 in)	132 cm (52 in)
1121229-x*y*-z*	POWERPACK  (4hr continuous net discharge)	<30 (DC)	450 (DC)	480 (AC)	2160 kg (4765 lb)	219 cm (86 in)	97 cm (38 in)	132 cm (52 in)
* The 8th or 9th digit could be any number or letter and the 10th digit could be any letter.								
<b>Powerpack 1.5 Version</b>								
1089288-x*y*-z*	POWERPACK 1.5 C/2 SYSTEM	<30 (DC)	960 (DC)	480 (AC)	1622 kg (3575 lb)	219 cm (86 in)	131 cm (51 ½ in)	82 cm (32 ½ in)
* The 8th or 9th digit could be any number or letter and the 10th digit could be any letter.								
<b>Powerpack 2 / 2.5 Versions</b>								
1083931-x*y*-z* (1130518-x*y*-z*)	POWERPACK 2,C/4 SYSTEM	<30 (DC)	960 (DC)	480 (AC)	2160 kg (4765 lb)	219 cm (86 in)	131 cm (51 ½ in)	82 cm (32 ½ in)



Part Number (Reman Number if available)	Description	Module Voltage - as shipped (V)	Max System DC Voltage	Max System AC Voltage	Weight	Height	Width	Depth
1083932-x*y*-z*	POWERPACK 2,C/2 SYSTEM	<30 (DC)	960 (DC)	480 (AC)	2160 kg (4765 lb)	219 cm (86 in)	131 cm (51 ½ in)	82 cm (32 ½ in)
1490025-x*y*-z*	POWERPACK 2.5,C/4 SYSTEM	<30 (DC)	960 (DC)	480 (AC)	2160 kg (4765 lb)	219 cm (86 in)	131 cm (51 ½ in)	82 cm (32 ½ in)
1490026-x*y*-z*	POWERPACK 2.5,C/2 SYSTEM	<30 (DC)	960 (DC)	480 (AC)	2160 kg (4765 lb)	219 cm (86 in)	131 cm (51 ½ in)	82 cm (32 ½ in)
1490027-x*y*-z*	POWERPACK 2.5,C/2 SYSTEM	<30 (DC)	960 (DC)	480 (AC)	2160 kg (4765 lb)	219 cm (86 in)	131 cm (51 ½ in)	82 cm (32 ½ in)

\* The 8th or 9th digit could be any number or letter and the 10th digit could be any letter.

#### Spare Parts - Powerpack 1-2

N/A	POWERPACK POD MODULE	<30 (DC)	960 (DC)	N/A	98 kg (215 lb)	12 cm (5 in)	100 cm (39 ½ in)	75 cm (29 ½ in)
-----	-------------------------	----------	----------	-----	-------------------	-----------------	---------------------	--------------------

#### Powerpack 3 Version

1930712-x*y*-z*	POWERPACK 3	480 (AC)	<1230 (DC)	480 (AC)	4760 kg (10,500 lb)	253 cm (99 ½ in)	110 cm (43 ¼ in)	180 cm (71 in)
-----------------	-------------	----------	------------	----------	------------------------	---------------------	---------------------	-------------------

\* The 8th or 9th digit could be any number or letter and the 10th digit could be any letter.

#### Spare Parts - Powerpack 3

N/A	POWERPACK 3 BATTERY MODULE	480 (AC)	<1230 (DC)	480 (AC)	1,250 kg (2,760 lb)	67 cm (26 ½ in)	81 cm (32 in)	149 cm (59 ½ in)
-----	-------------------------------	----------	------------	----------	------------------------	--------------------	------------------	---------------------





## 2.4.2 Megapack

Megapack is Tesla's all-in-one utility-scale energy storage system.



**NOTE:** Images below are indicative representations designed to assist with product identification. Existing product models may vary.

Figure 5. Megapack

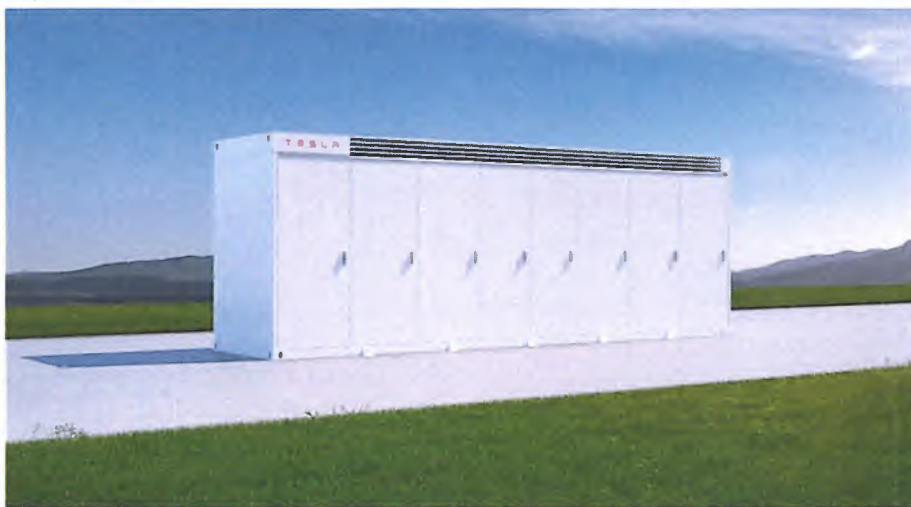


Figure 6. Example of a Megapack Site





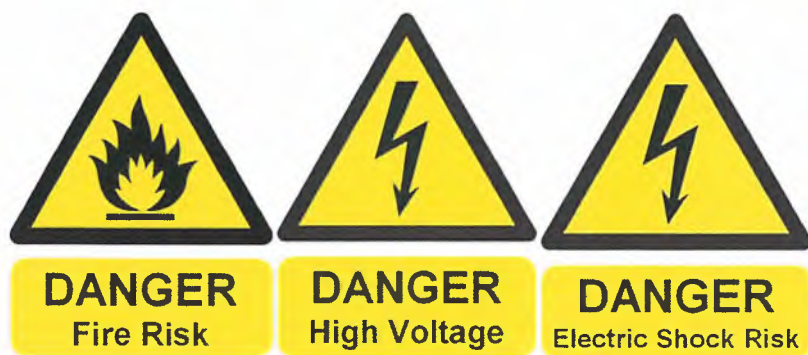
Table 4. Approximate Megapack Specifications

Part Number (Reman Number if available)	Description	Module Voltage – as shipped (V)	Max System DC Voltage	Max System AC Voltage	Weight	Height	Width	Depth
<b>Megapack (all versions - dimensions as measured for enclosure envelope for 1462965-x*y*-z*)</b>								
1462965-x*y*-z*	MEGAPACK	<450 (DC)	960 (DC)	518 (AC)	25,400 kg (56,000 lb) (max)	252.2 cm (99 ¼ in)	716.8 cm (282 ¼ in) (length)	165.9 cm (65 ¼ in)
1748844-x*y*-z*	MEGAPACK 2	480 (AC)	<1230 (DC)	480 (AC)	30,500 kg (67,250 lb) (max)	250.6 cm (98 ¾ in)	725.0 cm (285 ½ in) (length)	163.7 cm (64 ½ in)
1848844-x*y*-z*	MEGAPACK 2 XL	480 (AC)	<1230 (DC)	480 (AC)	38,100 kg (84,000 lb) (max)	278.5 cm (110 in)	880 cm (346 ½ in) (length)	165 cm (65 in)
<i>* The 8th or 9th digit could be any number or letter and the 10th digit could be any letter.</i>								
<b>Spare Parts</b>								
N/A	MEGAPACK BATTERY MODULE	<450 (DC)	960 (DC)	N/A	1,085 kg (2,400 lb)	66 cm (26 in)	81 cm (32 in)	149 cm (59 ½ in)
N/A	MEGAPACK 2 BATTERY MODULE	480 (AC)	<1230 (DC)	480 (AC)	1,250 kg (2,760 lb)	67 cm (26 ½ in)	81 cm (32 in)	149 cm (59 ½ in)
N/A	MEGAPACK 2 XL BATTERY MODULE	480 (AC)	<1230 (DC)	480 (AC)	1,250 kg (2,760 lb)	67 cm (26 ½ in)	81 cm (32 in)	149 cm (59 ½ in)



## 3 Handling, Use, & Hazard Precautions

### 3.1 General Precautions



The products described by this document are dangerous if mishandled. Injury to property or person, including loss of life is possible if mishandled.

The products contain lithium batteries. A battery is a source of energy. Do not short circuit, puncture, incinerate, crush, immerse, force discharge or expose to temperatures above the operating temperature range of the product as discussed in [Hazards Associated with Elevated Temperature Exposure on page 13](#). An internal or external short circuit can cause significant overheating and provide an ignition source resulting in fire, including surrounding materials or materials within the cell or battery. Under normal conditions of use, the electrode materials and electrolyte they contain are not exposed, provided the battery integrity is maintained and seals remain intact. The risk of exposure may occur only in cases of abuse (mechanical, thermal, electrical).

### 3.2 High-Voltage Hazards

Under normal conditions of use, provided that the product enclosure remains closed, handling the product does not pose an electrical hazard. Numerous safeguards have been designed into the product to help ensure that the high voltage battery is kept safe and secure under a number of expected abuse conditions. All of the component battery cells are sealed within the product as sub-groups within enclosures (Pods or battery modules), cannot be accessed from the exterior, and are not accessible to non-Tesla personnel.

A high voltage and electrocution risk may present if the product's outer enclosure and/or safety circuits have been compromised or have been significantly damaged. A battery pack, even in a normally discharged condition, is likely to contain substantial electrical charge and can cause injury or death if mishandled. If the product has been significantly visibly damaged or its enclosure compromised, practice appropriate high-voltage preventative measures until the danger has been assessed (and dissipated if necessary).



**WARNING:** Never cut into a sealed product enclosure due to high voltage and electrocution risks.

For proper installation / removal instructions, contact Tesla ([Identification of Company and Contact Information on page 4](#)).



### 3.3 Hazards Associated with Elevated Temperature Exposure

This product is designed to withstand operating ambient temperatures up to 50°C (122°F), or as indicated in the product specification, with up to 100% operating humidity (condensing). This product is designed to withstand storage temperatures up to 60°C (140°F), or as indicated in the product specification, and <95% relative humidity (non-condensing) for up to 24 hours without affecting the health of the unit.

Prolonged exposure of the product to conditions beyond these limits may increase the potential of thermal runaway and result in a fire. Exposure of battery packs to localized heat sources such as flames may result in cell thermal runaway reactions and should be avoided.

### 3.4 Hazards Associated with Mechanical Damage

Mechanical damage to the product can result in a number of hazardous conditions (discussed below) including:

- Leaked battery pack coolant (see [Hazards Associated with Leaked Coolant on page 13](#))
- Leaked refrigerant (see [Hazards Associated with Leaked Refrigerant on page 13](#))
- Leaked cell electrolyte (see [Hazards Associated with Leaked Electrolyte on page 13](#))
- Rapid heating of individual cells due to exothermic reaction of materials (cell thermal runaway), venting of cells, and propagation of self-heating and thermal runaway reactions to neighboring cells.
- Fire

To prevent mechanical damage to the product, these items should be properly stored when not in use or prior to being installed (see [Storage Precautions on page 20](#)).

### 3.5 Hazards Associated with Leaked Coolant

Thermal management of the product is achieved via liquid cooling using coolant in quantities as indicated in [Thermal Contents on page 5](#). Mechanical damage to a product that has been installed could result in leakage of the coolant. The fluid may be blue, green, or orange in color and does not emit a strong odor.

For information regarding the toxicological hazards associated with ethylene glycol, as well as ecological effects and disposal considerations, refer to the specific Safety Data Sheet (SDS) for battery coolant (see [SDS Information on page 5](#)).

Extended exposure of the product to leaked coolant could cause additional damage to the product such as corrosion and compromise of protection electronics.

### 3.6 Hazards Associated with Leaked Refrigerant

The product's thermal management systems include refrigerant in a sealed system in quantities as indicated in [Thermal Contents on page 5](#). Mechanical damage to the product could result in a release of the refrigerant. Such a release would appear similar to the emission of smoke.

For information regarding the toxicological hazards associated with refrigerant, as well as ecological effects and disposal considerations, refer to the appropriate Safety Data Sheet (SDS) for refrigerant (see [SDS Information on page 5](#)).

### 3.7 Hazards Associated with Leaked Electrolyte

The possibility of an electrolyte spill from the product's cells is very remote for the following reasons:





- Liquid electrolyte is largely absorbed within the cell materials during the manufacturing process. The electrolyte also gets consumed during the normal operation of the batteries.
- The cells are hermetically sealed. Even if a single cell were damaged in a manner that could cause a leak, the volume would be of negligible concern.
- Cells are assembled into enclosed module compartments and inaccessible to personnel. The product architecture prevents any direct contact with the battery cells.

As such, the absence of free liquid electrolyte makes it impractical to report the volume of electrolyte within the product, and the cell and product design prevent the possibility for spills at the project site.

### 3.8 Hazards Associated with Vented Electrolyte

Lithium cells are sealed units, and thus under normal usage conditions, venting of electrolyte should not occur. If subjected to abnormal heating or other abuse conditions, electrolyte and electrolyte decomposition products can vaporize and be vented from cells. Vented gases are a common early indicator of a thermal runaway reaction – an abnormal and hazardous condition.

Regulatory testing has shown that the products of combustion of lithium batteries can include flammable and nonflammable gases. Based on this testing, the flammable gases are found to be below their lower flammable limit (LFL) and do not pose a deflagration or explosion risk to first responders or the general public. The nonflammable gases were found to be comparable to smoke encountered in a Class A structure fire and do not produce any unique, or atypical, gases beyond what you would find in the combustion of modern combustible materials.

In close proximity, vented gases may irritate the eyes, skin, and throat. Cell vent gases are typically hot; upon exit from a cell, vent gas temperatures can exceed 600°C (1,110°F). Vented electrolyte is flammable and may ignite on contact with a competent ignition source such as an open flame, spark, or a sufficiently heated surface. Vented electrolyte may also ignite on contact with cells undergoing a thermal runaway reaction.



## 4 In Case of Emergency



**WARNING:** In case of emergency, severe physical impact, or transportation accident, do not approach the product or open any of its doors.



**WARNING:** In case of severe physical impact or transportation accident, it may take time before any visible indication of an abnormal and hazardous condition (e.g., smoke or fire) can be observed. Contact Tesla for guidance (*Identification of Company and Contact Information on page 4*).



**CAUTION:** Response should only be performed by trained professionals.

### 4.1 During Storage or Operation

During storage or operation, emergencies include but are not limited to:

- Suspicious odor observed near the product
- Smoke or fire emanating from the product
- Severe physical impact on the product

In case of emergency, isolate, deny entry, and perform the following:

1. If possible, and if trained and properly equipped, shut off the unit/system (see *Shutting Down in an Emergency on page 18*).
2. Evacuate the area.
3. If not already present, notify appropriately trained first responders, the local fire department, and any appointed subject matter expert (SME) if available.
4. Contact Tesla for guidance (*Identification of Company and Contact Information on page 4*).



## 4.2 During Transportation

During transportation, emergencies include but are not limited to:

- Suspicious odor observed near the product
- Smoke or fire emanating from the product
- Transportation accident causing a severe physical impact on the product
- Transportation accident leading to tipping over of the product

In case of emergency, perform the following:

1. If possible, move the unit/system to an open area and away from exposures (such as buildings, flammable material, or people).
2. Evacuate the area.
3. Notify appropriately trained first responders, the local fire department, and any appointed subject matter expert (SME) if available.
4. Contact Tesla for guidance (*Identification of Company and Contact Information on page 4*).



## 5 Firefighting Measures

### 5.1 Firefighter PPE

Firefighters should wear self-contained breathing apparatuses (SCBAs) and structural firefighting gear. Industry testing has shown that standard structural firefighting gear provides adequate protection.

### 5.2 Responding to a Venting Product



**WARNING:** Do not approach the unit and attempt to open any doors.

Smoke or suspicious odor emanating from a Tesla Energy product can be an indication of an abnormal and hazardous condition. Battery thermal runaway fires (also known as thermal events) are preceded by a period of smoke. If fire, smoke, or suspicious odor is observed emanating from the product at any time, assume a thermal event is occurring and perform the following:

1. If possible, shut down the system (see [Shutting Down in an Emergency on page 18](#)).
2. Evacuate the area of all non-emergency personnel.



**WARNING:** When responding to a fire event, do not approach the unit and attempt to open any doors. The doors are designed to remain shut.

3. If not already done, contact Tesla Energy Technical Support for assistance ([Identification of Company and Contact Information on page 4](#)).
4. While maintaining a safe distance from the unit:
  - Complete area size-up and identify water supply.
  - If needed, pre-position hose lines to protect adjacent exposures.
  - Monitor for evidence of continued smoke venting or fire.
5. If a fire develops:
  - Allow the affected unit to consume itself as it is designed to do. Applying water to the burning unit will have minimal effect and will only slow its eventual combustion.
  - At the discretion of first responders, apply water to the exposures. Tesla recommends using a fog pattern, if possible, to maximize cooling of the exposure.



**NOTE:** Water has been deemed appropriate for use on Tesla Energy products, thus will not create a hazard while protecting exposures.

6. Allow the unit to cool down while maintaining contact with Tesla for guidance (this process may take 12-48 hours or longer) and continuing to maintain a safe distance.
7. Contact Tesla Energy Technical Support for next steps ([Identification of Company and Contact Information on page 4](#)).





## 6 Shutting Down in an Emergency



**WARNING:** Shutting off power to the product does not de-energize the battery, and a shock hazard may still be present.



**WARNING:** If smoke or fire is visible, do not approach the product or open any of its doors.



**WARNING:** In case of flooding, stay out of the water if any part of the product or its wiring is submerged.

To shut the product down in an emergency, perform the appropriate steps below and then contact Tesla (*Identification of Company and Contact Information on page 4*):

### 6.1 Powerpack System

1. If an external emergency stop (E-Stop) button or remote shutdown contact to the Powerpack is present, engage it.
2. If the Powerpack is serviced upstream by an external AC breaker or disconnect, open the breaker or disconnect.

### 6.2 Megapack System

1. If an external emergency stop (E-Stop) button or remote shutdown contact to the Megapack is present, engage it.
2. If the Megapack is serviced upstream by an external AC breaker or disconnect, open the breaker or disconnect.



---

## 7 First Aid Measures

### 7.1 Electric Shock / Electrocution

Seek immediate medical assistance if an electrical shock or electrocution has occurred (or is suspected).

### 7.2 Contact with Leaked Electrolyte

Battery cells are sealed. Contents of an open (broken) battery cell can cause skin irritation and/or chemical burns. If materials from a ruptured or otherwise damaged cell or battery contact skin, flush immediately with water, remove all clothing around affected area, and wash affected area with soap and water. If a chemical burn occurs or if irritation persists, seek medical assistance.

For eye contact, flush with significant amounts of water for 15 minutes without rubbing and see a physician at once.

### 7.3 Inhalation of Electrolyte Vapors

If inhalation of electrolyte vapors occurs, move person into fresh air. If throat irritation is present, seek immediate medical assistance.

### 7.4 Vent Gas Inhalation

Battery cells are sealed and venting of cells should not occur during normal use. If inhalation of vent gases occurs, move person into fresh air. If signs of respiratory distress are present, seek immediate medical assistance.



## 8 Storage Precautions

Powerpack systems and sub-assemblies should be stored in approved packaging prior to installation. Megapack does not include packaging and can be stored as-shipped with a tarp.

Elevated temperatures can result in reduced battery service life. The product can withstand ambient temperatures of -40°C to 60°C (-40°F to 140°F) for up to 24 hours. Do not store the product near heating equipment.

Ideally, the product should be stored at 50% state of charge (SOC) or less. The product should not be stored for extended periods either at a full SOC or completely discharged since both conditions adversely impact battery life.

The storage area should be protected from flooding.

Long-term storage areas should be compliant with the appropriate local fire code requirements.

Acceptable storage density of battery packs and storage height of battery packs will be defined by the local authority having jurisdiction (AHJ). Requirements and limits will be based upon a number of factors including the structural and fire protection characteristics of the storage area and recommendations for fire protection promulgated by the National Fire Protection Association (NFPA) and similar organizations. At the time of this writing, no standard Commodity Classification has been defined for lithium cells or battery packs (see 2016 NFPA 13: Standard for the Installation of Sprinkler Systems). The product only has a 30-40% state of charge (SOC) while in storage which reduces the energy impact on fire occurrences. As an example of the reduced energy, the 30% level has been determined to be acceptable for air flight shipping based upon extensive testing and analysis in conjunction with the FAA. Tesla recommends treating lithium cells and batteries in packaging as equivalent to a typical Group A plastic commodity.



## 9 Damaged Product Handling

This section describes the handling, storage, and transportation of damaged products.

If the event of damage to a product, contact Tesla immediately (*Identification of Company and Contact Information on page 4*).

If a product has been damaged (for example, its battery enclosure has been dented or compromised), it is possible that heating is occurring that may eventually lead to a fire. Damaged or opened cells/batteries can result in rapid heating (due to exothermic reaction of constituent materials), the release of flammable vapors, and propagation of self-heating and thermal runaway reactions to neighboring cells.

Before handling or transporting a damaged product, wait at least 24 hours. Smoke may be an indication that a thermal reaction is in progress. If no smoke, flame, sign of coolant leakage, or signs of heat has been observed for 24 hours, the product may be disconnected and moved to a safe location. Contact Tesla (*Identification of Company and Contact Information on page 4*) to obtain specific instructions for evaluating, disconnecting, and preparing a damaged product for transport.

A damaged product should be monitored during storage for evidence of smoke, flame, sign of coolant leakage, or signs of heat. If full-time monitoring of the product is not possible (for example during extended storage), the product should be moved to a safe storage location.

A safe storage location for a damaged battery will be free of flammable materials, accessible only by trained professionals, and 50 feet (15 m) downwind of occupied structures. For example, a fenced, open yard may be an appropriate safe location. Do not store damaged products adjacent to undamaged products. It is possible that a damaged product may sustain further damage during transportation and may lead to a fire. To further reduce this risk, handle the damaged product with extreme caution.



---

## 10 Disposal Procedures

For disposal after a fire or thermal event, contact Tesla for guidance (*Identification of Company and Contact Information on page 4*).

In most cases, the product can be recycled. Contact Tesla to return the product to a Tesla facility for disassembly and further processing. If disposing of the product without returning it to Tesla, consult with local, state and/or federal authorities on the appropriate methods for disposal and recycling of lithium batteries. Note that the products do not contain heavy metals such as lead, cadmium, or mercury.



---

## 11 Maintenance or Repair

Tesla requests all maintenance, service, and repairs of the product be performed by Tesla-approved service personnel or Tesla-authorized repair facilities. This includes all proactive and corrective maintenance over the lifetime of the product. Improper service or repair by personnel not approved nor authorized by Tesla could void the product's Limited Warranty, lead to failure of the product, and potentially result in development of an unsafe condition and unexpected electrical events.



## 12 Transportation

Lithium batteries are regulated as Class 9 Miscellaneous dangerous goods (also known as “hazardous materials”) pursuant to the International Civil Aviation Organization (ICAO) Technical Instructions for the Safe Transport of Dangerous Goods by Air, International Air Transport Association (IATA) Dangerous Goods Regulations, the International Maritime Dangerous Goods (IMDG) Code, European Agreements concerning the International Carriage of Dangerous Goods by Rail (RID) and Road (ADR), and applicable national regulations such as the USA’s hazardous materials regulations (see 49 CFR 173.185). These regulations contain very specific packaging, labeling, marking, and documentation requirements. The regulations also require that individuals involved in the preparation of dangerous goods for transport be trained in how to properly package, label, mark and prepare shipping documents.



**NOTE:** Transportation regulations vary by region. To ensure compliant transportation, always refer to local regulations as applicable.

**UN Number, Proper  
Shipping Name**

**Powerpack 1 or 2:** 3480, Lithium-Ion Batteries

**Powerpack 3:** 3536, Lithium batteries installed in cargo transport unit

**Megapack:** 3480, Lithium-Ion Batteries OR 3536, Lithium batteries installed in cargo transport unit

**Hazard Classification**

Class 9 Miscellaneous

**Packing Group**

N/A



## Revision History

Revision	Date	Description
2.7	February 16, 2024	<ul style="list-style-type: none"> <li>Improved firefighting guidance (<i>Firefighting Measures on page 17</i>)</li> <li>Modified Asia-specific hotline numbers (<i>Identification of Company and Contact Information on page 4</i>).</li> <li>Modified UN Number and Proper Shipping Name information (<i>Transportation on page 24</i>)</li> <li>Updated (decreased) Megapack 2 and Megapack 2 XL coolant volume (<i>SDS Information on page 5</i>)</li> <li>Added Powerpack 3</li> </ul>
2.6	November 11, 2022	<ul style="list-style-type: none"> <li>Decoupled Powerwall information, now focusing on Industrial Energy products (including Megapack and Powerpack). Visit <a href="https://tesla.com/firstresponders">https://tesla.com/firstresponders</a> for all versions.</li> <li>Deleted trademarked brand name from <i>Firefighting Measures on page 17</i></li> <li>Improved language in <i>Hazards Associated with Vented Electrolyte on page 14</i></li> <li>Improved language in <i>Hazards Associated with Elevated Temperature Exposure on page 13</i></li> <li>Simplified language in <i>Hazards Associated with Leaked Electrolyte on page 13</i></li> <li>Simplified language in <i>Disposal Procedures on page 22</i></li> <li>Improved overall hazard and firefighting recommendations (<i>Firefighting Measures on page 17</i>)</li> <li>Improved first aid recommendations (<i>First Aid Measures on page 19</i>)</li> <li>Updated Tesla headquarters address (<i>Identification of Company and Contact Information on page 4</i>)</li> <li>Modified SDS language to reflect latest guidance (<i>SDS Information on page 5</i>)</li> <li>Clarified refrigerant volume (<i>Hazards Associated with Leaked Refrigerant on page 13</i>)</li> </ul>
2.5	May 23, 2022	<ul style="list-style-type: none"> <li>Added Megapack 2 XL (<i>SDS Information on page 5, Product Descriptions on page 6</i>)</li> </ul>
2.4	February 16, 2022	<ul style="list-style-type: none"> <li>Enhanced firefighting guidance regarding neighboring battery enclosures (<i>Firefighting Measures on page 17</i>)</li> <li>Clarified products of combustion (<i>Firefighter PPE on page 17</i>)</li> <li>Added Powerwall+ and Megapack 2 information.</li> <li>Provided reference to safety data sheet specific to Australia/New Zealand (<i>SDS Information on page 5</i>)</li> <li>Amended that coolant color can be blue, green, or orange (<i>Hazards Associated with Leaked Coolant on page 13</i>)</li> </ul>





Revision	Date	Description
		<ul style="list-style-type: none"> <li>Added links and QR codes to download this guide in additional languages (<i>Introduction and Scope on page 2</i>)</li> <li>Updated contact information (<i>Identification of Company and Contact Information on page 4</i>), including: Tesla headquarters, Powerwall North America hotline, Megapack and Powerpack Japan technical support</li> </ul>
2.3	July 28, 2021	<ul style="list-style-type: none"> <li>Added coolant volume for separately shipped Megapack battery modules (<i>SDS Information on page 5</i>)</li> <li>Clarified firefighting guidance (<i>Firefighting Measures on page 17</i>)</li> <li>Enhanced product identification information (<i>Product Descriptions on page 6</i>)</li> <li>Simplified emergency shut-down procedures for Megapack and Powerpack (<i>Shutting Down in an Emergency on page 18</i>)</li> </ul>
2.2	June 23, 2021	<ul style="list-style-type: none"> <li>Updated contact information in <i>Identification of Company and Contact Information on page 4</i></li> <li>Updated specs according to updated products in <i>SDS Information on page 5</i></li> <li>Added Powerwall part numbers to <i>SDS Information on page 5</i></li> <li>Enhanced firefighting guidance: <i>Firefighting Measures on page 17</i></li> <li>Added guidance in case of emergency: <i>In Case of Emergency on page 15</i></li> <li>Added additional early signs of thermal runaway: <i>Hazards Associated with Vented Electrolyte on page 14</i></li> <li>Updated Powerwall instructions in <i>Shutting Down in an Emergency on page 18</i></li> </ul>
2.1	August 28, 2020	Added spare parts specifications: <ul style="list-style-type: none"> <li>Megapack battery module</li> <li>Powerpack Pod module</li> </ul>
2.0	July 8, 2020	<ul style="list-style-type: none"> <li>Updated formatting</li> <li>Updated product specs</li> <li>Updated contact info</li> <li>Corrected elevated temperature topic to include Megapack</li> <li>Corrected name of Tesla Inverter to Powerpack Inverter</li> <li>Separated information on shutting down into its own topic for visibility</li> <li>Reorganized the Firefighting section for clarity</li> <li>Updated language on re-ignition risks</li> </ul>
1.8	March 11, 2020	Fixed footer; fixed styles.
07	17-Dec-2019	Updates to contact information (Tesla contact), product specs section, leaked electrolyte section, and inclusion of Megapack throughout the document.



---

Revision	Date	Description
06	27-Feb-2019	Updated storage conditions and firefighting measures section to provide further context on response tactics to Tesla Energy Product fires. Adjusted formatting, included graphics for warnings and notices.
05	22-Oct 2018	Reformatted for ease of use and translation; removed Confidential status; corrected phone number for CHEMTREC
04	30-June-2017	Added fire ground operations response for Powerpack 2, including approach; exhaust gases; and safety. Updated general product information and contacts, as well as part numbers and reman numbers
03	3-Oct-2016	Added part numbers, minor edits
02	3-Sept-2015	Added part numbers, updated weights, voltages, and temperatures, clarified hazards associated with spilled electrolyte, updated storage requirements, updated warning label icons, updated packing group.
01	14-July-2015	ERG for Tesla Powerpack systems, Powerwalls, and Sub-assemblies

TESLA