

May 29, 2015



U.S. Department  
of Transportation

East Building, PHH-30  
1200 New Jersey Avenue S.E.  
Washington, D.C. 20590

**Pipeline and Hazardous  
Materials Safety Administration**

DOT-SP 15848  
(FIRST REVISION)

**EXPIRATION DATE: April 30, 2019**

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: Ambri, Inc.  
Cambridge, MA
2. PURPOSE AND LIMITATION:
  - a. This special permit authorizes the transportation in commerce of a specialized battery that exceeds the net quantity weight restriction of hazardous materials as Dangerous Goods in Apparatus when transported by motor vehicle, rail freight, and cargo vessel. This special permit provides no relief from the Hazardous Materials Regulations (HMR) or the International Maritime Dangerous Goods Code (IMDG) other than as specifically stated herein. The most recent revision supersedes all previous revisions.
  - b. The safety analyses performed in the development of this special permit only considered the hazards and risks associated with the transportation in commerce.
  - c. No party status will be granted to this special permit.
3. REGULATORY SYSTEM AFFECTED: 49 CFR Parts 106, 107 and 171-180, and IMDG 301.
4. REGULATIONS FROM WHICH EXEMPTED: 49 CFR § 173.222(c)(1) in that the maximum net quantity of solid hazardous material is limited to 1 kg (2.2 pounds), and IMDG Code Special Provision 301 in that the weight of dangerous goods may not exceed the limited quantities, except as provided herein.

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5. BASIS: This special permit is based on the modification and renewal application of Ambri, Inc. dated December 18, 2014 submitted in accordance with § 107.105 and the public proceeding thereon and § 107.109.
6. HAZARDOUS MATERIALS (49 CFR § 172.101):

<b>Hazardous Materials Description</b>			
<b>Proper Shipping Name</b>	<b>Hazard Class/ Division</b>	<b>Identification Number</b>	<b>Packing Group</b>
Dangerous Goods in Machinery <i>or</i> Dangerous Goods in Apparatus	9	UN3363	N/A

7. SAFETY CONTROL MEASURES:

a. PACKAGING -

1. Outer casing of CORE™ cells is made of robust 1/8" thick stainless steel and must be adequately sealed to prevent contact with moisture or water.
2. The outer construction of CORE™ and its modules must provide adequate protection to the cells and the batteries within.
3. CORES™ "liquid" metal battery and the modules must be packaged in strong outer packaging or may be packaged in protective enclosures or on pallets.

b. OPERATIONAL CONTROLS -

1. Hazardous materials in "liquid" metal cells, CORE™ systems, and Power Modules (APM™) must remain "solids" during transport. The solids will be heated to molten state to form a "liquid" metal battery consisting of anode, salt electrolyte, and cathode made molten ("liquid") at user location.
2. The liquid metal cells or battery (modules or systems) transported at solid state must have zero voltage.

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3. This Special Permit authorizes the following two sizes of cell design:

i) four (4) inch cell design (4"L x 4"W x 2"H)

a). Each cell must contain not more than 30 grams of hazardous material with a capacity not more than 90 Ah when activated

b). A CORE™ system and a Power Module (APM™) may contain up to 12 kg and 72 kg of hazardous material, respectively, in solid form.

ii) eight (8) inch cell design (8"L x 8"W x 3"H)

a). Each cell must weigh not more than 9 kg with a capacity not more than 370 Ah when activated.

b). A CORE™ system and a Power Module (APM™) may contain up to four hundred (400) cells and four (4) CORE systems, respectively.

c. TESTING:

1. The battery of a specific design must be subjected to external short circuit test T.5 in accordance with the UN Manual of Tests and Criteria, Fifth revised edition and have passed the test.

2. The battery of a specific design must have passed the UL 2054 Bunsen burner test and UL 2054 crush test.

8. SPECIAL PROVISIONS:

a. A person who is not a holder of this special permit who receives a package covered by this special permit may reoffer it for transportation provided no modification or change is made to the package and it is reoffered for transportation in conformance with this special permit and the HMR.

b. A current copy of this special permit must be maintained at each facility where the package is offered or reoffered for transportation.

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9. MODES OF TRANSPORTATION AUTHORIZED: Motor Vehicle, Rail Freight, Cargo Vessel.
10. MODAL REQUIREMENTS: A current copy of this special permit must be carried aboard each motor vehicle, rail freight, and cargo vessel used to transport packages covered by this special permit.
11. COMPLIANCE: Failure by a person to comply with any of the following may result in suspension or revocation of this special permit and penalties prescribed by the Federal hazardous materials transportation law, 49 U.S.C. 5101 et seq:
  - o All terms and conditions prescribed in this special permit and the Hazardous Materials Regulations, 49 CFR Parts 171-180.
  - o Persons operating under the terms of this special permit must comply with the security plan requirement in Subpart I of Part 172 of the HMR, when applicable.
  - o Registration required by § 107.601 et seq., when applicable.

Each "Hazmat employee", as defined in § 171.8, who performs a function subject to this special permit must receive training on the requirements and conditions of this special permit in addition to the training required by §§ 172.700 through 172.704.

No person may use or apply this special permit, including display of its number, when this special permit has expired or is otherwise no longer in effect.

Under Title VII of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU)—"The Hazardous Materials Safety and Security Reauthorization Act of 2005" (Pub. L. 109-59), 119 Stat. 1144 (August 10, 2005), amended the Federal hazardous materials transportation law by changing the term "exemption" to "special permit" and authorizes a special permit to be granted up to two years for new special permits and up to four years for renewals.

12. REPORTING REQUIREMENTS: Shipments or operations conducted under this special permit are subject to the Hazardous Materials Incident Reporting requirements specified in 49 CFR §§ 171.15 Immediate notice of certain hazardous materials incidents, and 171.16 Detailed hazardous materials incident reports. In addition, the grantee(s) of this special permit must notify the Associate Administrator for Hazardous Materials Safety, in writing, of any incident involving a package, shipment or operation conducted under terms of this special permit.

Issued in Washington, D.C.:



for Dr. Magdy El-Sibaie  
Associate Administrator for Hazardous Materials Safety

Address all inquiries to: Associate Administrator for Hazardous Materials Safety, Pipeline and Hazardous Material Safety Administration, U.S. Department of Transportation, East Building PHH-30, 1200 New Jersey Avenue, Southeast, Washington, D.C. 20590.

Copies of this special permit may be obtained by accessing the Hazardous Materials Safety Homepage at [http://hazmat.dot.gov/sp\\_app/special\\_permits/spec\\_perm\\_index.htm](http://hazmat.dot.gov/sp_app/special_permits/spec_perm_index.htm). Photo reproductions and legible reductions of this special permit are permitted. Any alteration of this special permit is prohibited.

PO: Hwang/SG