



U.S. Department
of Transportation

**Pipeline and Hazardous
Materials Safety
Administration**

January 11, 2023

1200 New Jersey Avenue, SE
Washington, DC 20590

DOT-SP 21411

EXPIRATION DATE: 2024-12-31

(FOR RENEWAL, SEE 49 CFR 107.109)

1. GRANTEE: Thales Alenia Space
Cannes la Bocca, France

U.S. AGENT: ShipMate, Inc.
Sisters, OR

2. PURPOSE AND LIMITATION:

a. This special permit authorizes the transportation in commerce of prototype and low production lithium ion batteries and certain Division 2.2 liquefied and compressed gases in non-spec packaging (spacecraft). This special permit provides no relief from the Hazardous Materials Regulations (HMR) 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.

d. This special permit serves as an approval under Special Provisions A88 and A99 and State Variation US 3 of the ICAO TI and as a "Competent Authority Approval" as defined under 49 CFR 107.1.

3. REGULATORY SYSTEM AFFECTED: 49 CFR Parts 106, 107, 171-180, the ICAO TI, and IMDG Code.

4. REGULATIONS FROM WHICH EXEMPTED: 49 CFR § 172.101 Hazardous Materials Table, Column (9B) and Column 13 in Table 3-1 of the ICAO TI in that lithium batteries may not have a mass exceeding 35 kg per package; 49 CFR § 173.185(a)(1) in that lithium ion batteries must have passed the criteria in Part III, subsection 38.3 of the UN Manual of Tests and Criteria; 49 CFR §§ 172.300 and 172.400 in that marking and

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labeling of the packaging (pressure vessel) contained within the spacecraft (vessel) is not required; § 173.301(f) in that the pressure vessel within the equipment is not fitted with a pressure relief device; § 173.302a(a)(1) in that non-DOT specification packaging (vessel) is not authorized, except as specified herein; and § 173.304a(a)(2) and Packing Instruction 200 of the ICAO TI in that specification packaging is not authorized, except as provided herein. 49 CFR § 172.101 Hazardous Materials Table, Column (9B) and Columns 12 and 13 in Table 3-1 of the ICAO TI are waived in that anhydrous ammonia and articles containing toxic gas, n.o.s. (ammonia, anhydrous) are forbidden for cargo air transport.

5. BASIS: This special permit is based on the application of Thales Alenia Space dated July 15, 2022 submitted in accordance with § 107.105 and the public proceeding thereon.
6. HAZARDOUS MATERIALS (49 CFR 172.101):

| Hazardous Materials Description | | | |
|--|------------------------|-----------------------|---------------|
| Proper Shipping Name | Hazard Class/ Division | Identification Number | Packing Group |
| Ammonia solution, <i>relative density between 0.880 and 0.957 at 15 degrees C in water, with more than 10 percent but not more than 35 percent ammonia</i> | 8 | UN2672 | III |
| Lithium ion batteries contained in equipment <i>including lithium ion polymer batteries*</i> | 9 | UN3481 | N/A |
| Articles containing toxic gas, n.o.s (contains Ammonia, anhydrous)** | 2.3 | UN3539 | N/A |
| Cartridges, power device*** | 1.4S | UN0323 | N/A |
| Helium, compressed | 2.2 | UN1046 | N/A |
| Nitrogen, compressed | 2.2 | UN1066 | N/A |
| Propylene | 2.1 | UN1077 | N/A |

* Only low production lithium ion batteries may be offered for transportation. ("Low production" is defined as a production run of not more than 100 batteries annually of a particular type). Each different battery type must comply with all of the conditions of this special permit prior to being offered for transportation.

** Division 2.3 for international transportation. Division 2.2 as an alternate only when domestic transportation is involved.

*** Devices must have a valid EX approval.

7. SAFETY CONTROL MEASURES:

a. PACKAGING

Heat pipes: Packaging prescribed are non-DOT specification packagings as follows:

- (1) Up to 14 heat pipes, containing between 8 and 22 g of anhydrous ammonia (total capacity in all heat pipes does not exceed 263 g).
- (2) Heat pipes must be constructed of aluminum alloy 6063-T5 and have a minimum wall thickness of 0.75 millimeters. Heat pipes must be sealed on one end with a crimp and a soldered plug on the other end. Heat pipes must be in accordance with the application on file with the Office of Hazardous Materials Safety (OHMS).
- (3) The heat pipes have a minimum test pressure of 93.8 bars. The total capacity is 622.7 L. The pressure in the tank during transport is 15.4 +/- 0.5 bars. The minimum burst pressure of the heat pipes is 413.7 bars.

Lithium Ion Battery: Packaging prescribed are non-DOT specification packagings as follows:

- (1) Each battery must be contained in the equipment (spacecraft) designed for space application and constructed of suitable material of adequate strength and design.
- (2) The equipment containing the battery must be placed in a rigid and fully encased, specially designed non-DOT specification packaging (outer transport container) as described in the July 15, 2022 submission on file with the OHMS.
- (3) The aggregate net weight of each (9S28P) battery, which is comprised of four modules, where each of two modules has 72 SAFT VL16 cells (9S8P) and each of the other two modules has 54 SAFT VL16 cells (9S6P), is 46.9 kg (103.4 pounds). The total combined weight of the two batteries is 93.8 kg (206.8 pounds).

Helium Tank: Packaging prescribed are non-DOT specification packagings as follows:

- (1) The tank, manufactured by Orbital ATK (Commerce, CA), is constructed in accordance with the ISO 7866 or ISO 9809-1 Standards.
- (2) The tank has a minimum test pressure of 41.3 bars. The total capacity is 622.7 L. The pressure in the tank during transport is 2 +/- 0.5 bars. The minimum burst pressure of the helium tank is 55.1 bars.

Propylene: Packaging prescribed are non-DOT specification packagings as follows:

- (1) Up to four loop heat pipes (LHP) having a minimum test pressure of 86.2 bars. The loop heat pipe capacity is 1.2 kg. The pressure in the tank during transport is 16.4 +/- 0.5 bars. The minimum burst pressure of the heat pipes is 234.4 bars.
- (2) Heat pipes must be constructed of aluminum alloy 6063-T5 and have a minimum wall thickness of 0.75 millimeters. Heat pipes must be sealed on one end with a crimp and a soldered plug on the other end. Heat pipes must be in accordance with the application on file with the OHMS.

b. TESTING REQUIREMENTS:

- (1) Each cell within the battery must be of a type tested in accordance with the UN Manual of Tests and Criteria, 5th Revised Edition.
- (2) The battery may not be of a type tested in accordance with the UN Manual of Tests and Criteria.

c. OPERATIONAL CONTROLS:

- (1) There must not be more than two (2) batteries contained in equipment with an aggregate average energy capacity of not more than 8.064 kWh.
- (2) All batteries contained in equipment must be offered for transportation at a state of charge not exceeding 30 percent.
- (3) The batteries must be equipped with an effective means of preventing dangerous reverse current flow for the batteries that contain cells connected in parallel.
- (4) Cells and batteries must be protected against short circuiting.

(5) Transportation of the spacecraft contained in the transport container is authorized for the one-way movement from France to Vandenberg AFB, CA.

(6) Emergency response information provided with the shipment and available via an emergency response telephone number must indicate that certain packagings within the outer transport container are not fitted with pressure relief devices and provide appropriate guidance in case of fire exposure.

d. MARKING: The outer transport container must be plainly and durably marked on two opposite sides in letters at least 2 inches in height on a contrasting background “DOT-SP 21411” and “DO NOT STACK” as specified in § 172.301(c).

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 or its contents 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.

9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle, cargo-only aircraft, cargo vessel.

10. MODAL REQUIREMENTS: A current copy of this special permit must be carried aboard each cargo vessel, aircraft, or motor vehicle used to transport packages covered by this special permit. The shipper must furnish a copy of this special permit to the air carrier before or at the time the shipment is tendered.

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 William Schoonover
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-13, 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 <https://www.phmsa.dot.gov/approvals-and-permits/hazmat/special-permits-search>. Photo reproductions and legible reductions of this special permit are permitted. Any alteration of this special permit is prohibited.

PO: SH-AS/TG