U.S. Department
of Transportation

**Research and
Special Programs
Administration**

400 Seventh Street, S.W.
Washington, D.C. 20590

DOT-E 8978 (EXTENSION)
ORIGINAL May 25, 1983

In accordance with 49 CFR 107.105 of the Department of Transportation (DOT) Hazardous Materials Regulations DOT-E 8978 is hereby extended for the party(ies) listed below by changing the expiration date in paragraph 10 to September 30, 1994. This change is effective from the issue date of this extension. All other terms of the exemption remain unchanged.

This extension applies only to party(ies) listed below based on the application(s) received in accordance with 49 CFR 107.105. This extension constitutes a necessary part of this exemption and must be attached to it.

Suzanne Hedgepeth

Alan I. Roberts
Associate Administrator
for Hazardous Materials Safety

JUN 16 1993
(DATE)

Dist: FHWA FRA USCG FAA

EXEMPTION HOLDER	APPLICATION DATE
Yardney Technical Products, Inc. Pawcatuck, CT	November 24, 1992
Battery Engineering, Inc. Hyde Park, MA	December 10, 1992
ECO Energy Conversion d/b/a Tracer Technologies Somerville, MA	April 12, 1993
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DOT-E 8978

1. A/S Hellesens, Soborg, Denmark, (U.S. Agent: Martin H. Johnson, Verona, Wisconsin) is hereby granted an exemption from those provisions of this Department's Hazardous Materials Regulations specified in paragraph 5 below to offer packages prescribed herein of lithium cells and batteries for transportation in commerce subject to the limitations and special requirements specified herein. This exemption authorizes the transportation of lithium cells containing more than 12, but not more than 50, grams of lithium metal and provides no relief from any regulation other than as specifically stated.

2. BASIS. This exemption is based on an application from A/S Hellesens dated January 12, 1983, submitted in accordance with 49 CFR 107.103 and the public proceeding thereon.

3. HAZARDOUS MATERIALS (Descriptor and class). Lithium cells containing more than 12 but not more than 50 grams of lithium metal and batteries constructed of these cells, classed as flammable solid. The cells must be of the lithium - thionyl chloride type and must be "low rate" cells as described in the application for exemption.

This exemption does not authorize the transportation of cells containing lithium metal which have been discharged to the extent that the open circuit voltage is less than two volts, or batteries containing one or more such cells.

4. PROPER SHIPPING NAME (49 CFR 172.101). Lithium batteries.

5. REGULATION AFFECTED. 49 CFR 172.101, 175.3.

6. MODES OF TRANSPORTATION AUTHORIZED. Motor vehicle, rail freight, cargo vessel, cargo-only aircraft.

7. SAFETY CONTROL MEASURES.

a. Packaging prescribed is a non-DOT Specification, non-reusable, open head, steel drum meeting the specifications in Appendix 4a and 4b of the application. The cells and batteries must be packaged in polyethylene bags constructed of polyethylene at least 3 mils thick and cushioned in the drums with mineral wool, vermiculite or other incombustible cushioning material.

b. Packages must be marked as prescribed in subpart "D" of 49 CFR Part 172. Packages must be labeled with the FLAMMABLE SOLID label shown in 49 CFR 172.420.

c. Each cell and battery must be equipped with an effective means of preventing external short circuits.

d. Each cell and battery must incorporate a safety venting device or be designed in such a manner that will preclude a violent rupture under any condition incident to transportation. The design of cells and batteries not equipped with a safety venting device must be specifically identified to this office prior to the first shipment. Batteries containing cells or series of cells connected in parallel must be equipped with diodes to prevent reverse current flow.

e. Three representative cells must be taken from each week's production of each cell type and be subjected to the test prescribed in section 3.2.1(1) of Appendix B, Report ECOM730242F on file with the Office of Hazardous Materials Regulation (OHMR).

f. One representative battery must be taken from each week's production of each battery type and must be subjected to the test prescribed in Section 3.2.2(1) of the above referenced report.

g. At least 10 cells and one battery of each type of each week's production must be subjected to a thermal stability test at 75°C., for 48 hours and show no evidence of distortion, leakage or internal heating.

8. SPECIAL PROVISIONS.

a. Persons who receive cells and batteries covered by this exemption may reship them pursuant to the provisions of 49 CFR 173.22a.

b. A copy of this exemption must be carried aboard each vessel and aircraft used to transport packages covered by this exemption.

c. Cells authorized under this exemption are excepted from the requirements of 7e, 7f and 7g of this exemption when in compliance with the following:

Prior to the first shipment, 10 cells or 4 batteries of each type to be offered for transportation must be tested as follows, or by equivalent test methods, without showing any evidence of out-gassing, leakage, loss of weight, or distortion:

i. The cells or batteries shall be stored for 6 hours at a pressure corresponding to an altitude of 50,000 feet at 24°C ± 4°C.

ii. The cells or batteries shall then be subjected to the thermal stability test at 75°C for 48 hours as required in paragraph 7g.

iii. The cells or batteries shall be rigidly clamped to the platform of a vibration machine. A simple harmonic motion having an amplitude of 0.03 inch (0.06 inch maximum total excursion) shall be applied. The frequency shall be varied at the rate of 1 cycle per second per minute between the limits of 10 and 55 cycles per second. The entire range of frequencies and return shall be transversed in 95 ± 5 minutes for each of three mutually perpendicular mounting positions of the battery and two perpendicular positions of the cells. One of the directions of vibration shall be perpendicular to the terminal face of the battery or cell. Open circuit voltage shall be observed for 30 seconds during the last quarter of each vibration period. Periodic retesting is not required.

iv. The batteries (not cells) must be subjected to a shock test as follows:

The battery shall be secured to the testing machine by means of a rigid mount which will support all mounting surfaces of the battery. Each battery shall be subjected to a total of three shocks of equal magnitude. The shocks shall be applied in each of three mutually perpendicular directions. Each shock shall be applied in a direction normal to a face of the battery. For each shock, the battery shall be accelerated in such a manner that during the first 3 milliseconds the minimum average acceleration is 75 gravity units (G). The peak acceleration shall be between 125 and 175 G. Cells and batteries meeting the requirements of this paragraph must be packaged in accordance with 7.a.

9. REPORTING REQUIREMENTS.

a. Any incident involving loss of contents of the packages must be reported to the OHMR as soon as practicable.

b. Application for renewal of this exemption must include test data obtained under 7e, 7f and 7g. This data must also be made available upon request by the OHMR.

10. EXPIRATION DATE. April 30, 1985.

Issued at Washington, D.C.:

MAY 25 1983

(DATE)

Alan I. Roberts
Associate Director for
Hazardous Materials Regulation
Materials Transportation Bureau

Address all inquiries to: Associate Director for Hazardous Materials Regulation, Materials Transportation Bureau, Research and Special Programs Administration, U.S. Department of Transportation, Washington, D.C. 20590. Attention: Exemptions Branch.

Dist: FHWA, FRA, USCG, FAA