



HP Requirements for Lithium Metal and Lithium Ion Cells, Batteries, and Battery Packs

Revision and Date	D, 07-Aug-2009
Abstract	This specification identifies the product content and testing requirements for lithium metal and lithium ion cells, batteries, and battery packs used in HP brand and HP owned brand products.
Applicability	Suppliers of lithium metal and lithium ion cells, batteries, and battery packs used in HP brand and HP owned brand products must follow the requirements in this specification. Non-HP brand products must comply with applicable legal requirements.
Status	APPROVED

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1 Introduction

This specification identifies HP's product content, testing, and related requirements for lithium metal and lithium ion batteries, cells, and battery packs (referred to jointly as "Lithium Batteries") used in HP brand products. All references to HP brand products in the General Specification for the Environment (GSE) include HP owned brand products.

- 1.1 The requirements in this specification are based on the Dangerous Goods Regulations issued by the International Air Transport Association (IATA), as well as Special Provision 188 of the Hazardous Materials Regulations issued by the U.S. Department of Transportation (DOT) and codified in Title 49 of the U.S. Code of Federal Regulations (CFR), the European Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR), and the International Maritime Dangerous Goods Code (IMDG).
- 1.2 All references in this specification to "lithium metal" batteries, cells, and battery packs include lithium metal and lithium alloy batteries, cells, and battery packs. All references in this specification to "lithium ion" batteries, cells, and battery packs include lithium ion, lithium polymer, and equivalent lithium content batteries, cells, and battery packs.

2 Restriction

All Lithium Batteries supplied to HP must meet the battery-specific requirements of both the IATA Part 1 Packing Instructions 965, 966, 967, 968, 969, and 970 and DOT, ADR, and IMDG Special Provision 188. These battery-specific requirements include, but are not limited to, the following:



- 2.1 Each Lithium Battery must be of a type that has been demonstrated to meet the lithium metal or lithium ion battery testing requirements in the most recent version of the UN Manual of Tests and Criteria, Part III, Subsection 38.3 (including any revisions, amendments, addenda, or other changes to those testing requirements that are effective as of the date on which the Lithium Battery is supplied to HP).
- 2.2 Each Lithium Battery must meet the following requirements for lithium content or its equivalent:
 - 2.2.1 Each lithium metal cell must contain no more than 1.0 gram of lithium. Each lithium metal battery or battery pack must contain no more than 2.0 grams of lithium. For these purposes, the lithium content is the mass of lithium in the anodes of the lithium metal cell, battery, or battery pack.
 - 2.2.2 Each lithium ion cell must have an equivalent lithium content of no more than 1.5 grams. Each lithium ion battery or battery pack must have an equivalent lithium content of no more than 8.0 grams. For these purposes, the equivalent lithium content is calculated by multiplying the rated capacity (in ampere-hours) of a cell, battery, or battery pack by 0.3, with the result expressed in grams.
- 2.3 Lithium ion batteries, cells, and battery packs that are shipped on or after January 1, 2009 must meet the following requirements:
 - 2.3.1 Each lithium ion cell must have a Watt-hour rating of no more than 20 Wh, and each lithium ion battery or battery pack must have a Watt-hour rating of no more than 100 Wh. For these purposes, the Watt-hour rating is calculated by multiplying the rated capacity (in ampere-hours) of a cell, battery, or battery pack by its nominal voltage.
 - 2.3.2 Each lithium ion battery or battery pack must be marked with the Watt-hour rating on the outside case. This marking requirement does not apply to single lithium ion cells, unless they are combined or assembled into a battery or battery pack. This marking requirement also does not apply to lithium metal cells, batteries, or battery packs.

3 Required Actions

Suppliers must ensure that each Lithium Battery used in HP brand products complies with the Restrictions in Section 2 of this document, and must provide HP upon request with documentation such as a Material Safety Data Sheet (MSDS) or Product Data Sheet (PDS) demonstrating compliance with the requirements in this specification.

References

NOTE: Suppliers must use the most recent versions of these documents, including any revisions, amendments, addenda, or other changes that are effective as of the dates on which they supply Lithium Batteries to HP.

International Air Transport Association (IATA) Dangerous Goods Regulations

UN Manual of Tests and Criteria, Part III, Subsection 38.3

Title 49 of the U.S. Code of Federal Regulations, including Special Provision 188 of the Hazardous Materials Regulations issued by the U.S. Department of Transportation (DOT)

European Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR)



07-Aug-2009

International Maritime Dangerous Goods Code (IMDG)

Revision History:

Revision, Date, Change Number	Brief Description of change
B 10-Sep-2007	This document was previously released as document 5990-5694, Revision A. Clarifications were made to make the requirements more clear.
C 01-Aug-2008	Modifications were made to clarify certain requirements and to reflect regulatory changes that have recently been issued and/or are expected to become effective in the future. HP brand products was defined.
D 07-Jul-2009	Added references to road and water transportation requirements. Clarified previous references.