

Specification for the Environment - Dangerous Goods

Overview

This document outlines the requirements for the transportation of dangerous goods as it applies to Oracle products and specifically to the Oracle brand.

Audience

This document is for product teams with responsibility for product release and BOM structure.



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INTRODUCTION

The requirements in this document are for the transportation of dangerous goods for Oracle branded products as set out in the International Air Transport Association (IATA) Dangerous Goods Regulations (DGR), International Maritime Dangerous Goods (IMDG) Code, and the United States Department of Transportation (DOT) 49 CFR (parts 100-185) Hazardous Materials Regulations. In the event of a discrepancy between this document and the applicable DG Regulations, the DG Regulations shall take precedence unless otherwise noted.

This document must be used in conjunction with Global Supplier Management: Specification for the Environment - Dangerous Goods Label Placement, 914-1771-xx, which provides guidance on the application and positioning of labels.

1 BATTERIES

1.1 Lithium Batteries

All lithium batteries are regulated for transportation by IATA, International Civil Aviation Organization (ICAO), International Maritime Organization (IMO) and DOT. Each agency provides specific guidance including labeling and documentation by categorizing lithium batteries by battery type and packing method.

There are the following two types of lithium batteries:

- Lithium ion (including Lithium polymer or Lithium ion polymer batteries): Lithium ion batteries or secondary lithium batteries are typically used in battery pack configurations consisting of battery cells combined with charging and discharging support circuitry.
 - **NOTE 1: A secondary lithium battery is a rechargeable lithium ion battery.**
- Lithium metal: Lithium metal batteries or primary lithium batteries are used as non-rechargeable button cells on circuit boards for real time clock (RTC) applications.

- **NOTE 2: A lithium button cell is defined as a cell whose width is greater than its length.**

The packing categories for transportation are the following:

- Lithium batteries contained in equipment
- Lithium batteries packed with equipment
- Lithium batteries shipped separately

The requirements for each type are given in the following sections.

1.1.1 Lithium Ion Batteries – UN3480 / UN3481

1.1.1.1 General Requirements

The following requirements apply to all lithium ion or lithium polymer cells and batteries:

1. Each cell and battery must be of the type proven to meet the requirements of each test in the UN Manual of Tests and Criteria, Part III, Section 38.3.
2. Cells and batteries identified by the manufacturer as being defective for safety reasons, that are damaged, that have the potential of producing a dangerous evolution of heat, fire, or short circuit are forbidden for transport by air (for example, those being returned to the manufacturer for safety reasons). Such batteries may be transported by ocean or road only.
3. Waste batteries and batteries being shipped for recycling or disposal are forbidden from air transport unless approved by the appropriate national authority of the State of Origin and the State of the Operator.

4. Cells and batteries must be protected to prevent short circuits. This includes protection against contact with conductive materials within the same packaging that can lead to a short circuit.
5. Equipment must be equipped with an effective means of preventing accidental activation.
6. Equipment containing batteries must be packed in strong outer packaging that conforms to IATA DGR, Sections 5.0.2.4, 5.0.2.6.1, and 5.0.2.12.1.
7. The equipment containing the cells or batteries must be secured against movement within the outer packaging and be packed to prevent accidental operation during air transport.

1.1.1.1.1 Lithium Ion Cells and Batteries Meeting the Criteria of Section II of Packing Instruction 965, 966, 967

Lithium ion or lithium polymer cells and batteries offered for transport are not subject to other additional requirements of the regulations of this document if they meet the criteria of Section 1.1.1.1, General Requirements, above, and the following requirements:

1. For cells, the Wh rating cannot be more than 20 Wh.
2. For batteries, the Wh rating cannot be more than 100 Wh. The Wh rating must be marked on the outside of the battery case except those manufactured before 1/1/2009.

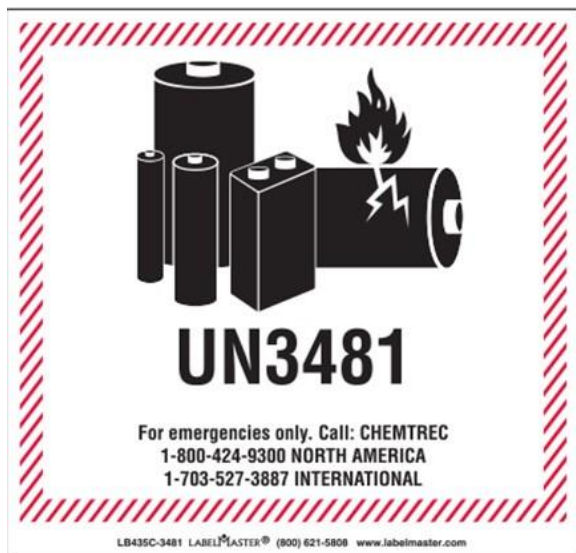
1.1.1.1.2 Labeling and Documentation Requirements

1. Packages containing lithium ion batteries meeting the criteria of Section II of IATA Packing instruction 965 must use the UN3480 lithium ion battery mark (7344559). Refer to Figure 1-1 UN3480 Lithium Ion Battery Mark (7344559) below.
2. Packages containing lithium ion batteries meeting the criteria of Section II of IATA Packing instruction 966 and 967 must use the UN3481 lithium ion battery mark (7344560) as required by the specific packing instruction. Refer to Figure 1-2 UN3481 Lithium Ion Battery Mark (7344560) below.

Figure 1-1 UN3480 Lithium Ion Battery Mark (7344559)



Figure 1-2 UN3481 Lithium Ion Battery Mark (7344560)



– NOTE 3: For clarification of label application and positioning, refer to GLOBAL Supplier Management: Specification for the Environment - Dangerous Goods Label Placement, 914-1771-xxx.

3. Each consignment with packages bearing the lithium ion battery mark (7344559 or 73445560) must be accompanied with a document with an indication that:

- The package contains lithium ion cells or batteries.
- The package must be handled with care and a flammability hazard exists if the package is damaged.
- Special procedures must be followed if the package is damaged, including inspection and repacking if necessary.
- A telephone number for additional information

– NOTE 4: The accompanying document is not a mandatory requirement by DGR, however, it is still sent with Oracle's shipments as required by the airline carriers.

4. A Shipper's Declaration for Dangerous Goods (DGD) is not required.

5. Where a consignment includes packages bearing the lithium battery handling label, the words "Lithium ion batteries in compliance with Section x of PI xxx" must be included on the air waybill, when an air waybill is used. The information should be shown in the "Nature and Quantity of Goods" box of the air waybill.

6. Any person preparing or offering lithium ion cells or batteries for transport must receive adequate instructions on the above requirements commensurate with their responsibilities.

1.1.1.2 Lithium Ion Batteries Contained in Equipment – IATA Packing Instruction 967, Section II

Each package containing lithium ion cells and batteries must have the UN3481 lithium ion battery mark (7344560) shown in Figure 1-2 UN3481 Lithium Ion Battery Mark (7344560), on page 6, applied to its packaging and the air waybill document outlined in Section 1.1.1.1.2, Labeling and Documentation Requirements, on page 5, included.

Consignments of two packages or less where each package contains four or less cells or two or less lithium ion batteries do not require the label.

– NOTE 5: Despite the above DGR exemption for labeling, Oracle requires all packages meeting the criteria of PI967 Section II be labeled with a UN3481 Lithium ion battery mark regardless of the number of packages within the consignment.

- NOTE 6: Battery packs consisting of battery cells in combination with charging and discharging support circuitry are considered as lithium ion batteries contained in equipment per IATA clarification.

The weight limit for packages shipped under this section is 5kg of Lithium ion batteries/cells per package on passenger or cargo aircraft.

- NOTE 7: For shipment of products containing Lithium ion batteries/cells beyond the above limit, IATA PI967 Section I may apply. Contact the Oracle DG Core Team (dg_questions_us_grp@oracle.com) for assistance.

1.1.1.3 Lithium Ion Batteries Packed with Equipment – IATA Packing Instruction 966, Section II

The number of cells or batteries in each package must not exceed the appropriate number for the equipment's operations, plus two spares.

Each package must have the UN3481 lithium ion battery mark (7344560) shown in Figure 1-2 UN3481 Lithium Ion Battery Mark (7344560), on page 6 applied to the packaging and the air waybill document outlined in Section 1.1.1.1.2, Labeling and Documentation Requirements, on page 5, included.

The weight limit for packages shipped under this section is 5kg of Lithium ion batteries/cells per package on passenger or cargo aircraft.

1.1.1.4 Lithium Ion Batteries Shipped Separately – IATA Packing Instruction 965, Section II

All lithium ion batteries and cells shipped separately require the UN3480 lithium ion battery mark (7344559) shown in Figure 1-1 UN3480 Lithium Ion Battery Mark (7344559), on page 7, applied and the air waybill document outlined in Section 1.1.1.1.2, Labeling and Documentation Requirements, on page 8, included.

All lithium ion batteries and cells shipped separately are forbidden for transport as cargo on passenger aircraft. All packages must bear a Cargo Aircraft Only label, in addition to existing labels. Refer to Figure 1-3 Cargo Aircraft Only label (267-4196-01, L20R), on page 9.

All lithium ion batteries and cells must be offered for transport at a state of charge (SoC) not exceeding 30% of their rated design capacity. Batteries and cells not meeting this requirement shall be shipped by ocean or ground.

A shipper is not permitted to offer for air transport more than one (1) package prepared according to this section in any single consignment. No more than one (1) package complying with the requirements of this section may be placed in an over pack.

The weight limit for packages shipped under this section on cargo aircraft is 8 cells per package for cells rated >2.7Wh and ≤20Wh, 2 batteries per package for batteries rated >2.7Wh and ≤100Wh, or 2.5kg of batteries/cells per package for batteries/cells rated ≤2.7Wh.

Figure 1-3 Cargo Aircraft Only Label (267-4196-01, L20R)



Table 1-1 Lithium Ion Battery Reference Table

	Contained in Equipment		Packaged with Equipment	Cells and Batteries Shipped Separately
	Cell ≤ 20 Wh Battery ≤ 100 Wh Package/consignment ≤ 2 & Cell/package ≤ 4 Battery/package ≤ 2	Cell ≤ 20 Wh Battery ≤ 100 Wh but either Package/consignment > 2 or Cell/package > 4 or Battery/package > 2	Cell ≤ 20 Wh Battery ≤ 100 Wh, Battery/package ≤ minimum to power unit plus two spares	Cell ≤ 20 Wh Battery ≤ 100 Wh
IATA DGR applicable Packing Instruction	967, Section II	967, Section II	966, Section II	965, Section II
Transportable by passenger aircraft?	Yes if net weight of batteries or cells/package ≤ 5 kg (IATA and US-DOT 49CFR 173.185)	Yes if net weight of batteries or cells/package ≤ 5 kg (IATA and US-DOT 49CFR 173.185)	Yes if net weight of batteries or cells/package ≤ 5 kg (IATA and US-DOT 49CFR 173.185)	No (IATA and US-DOT 49CFR 173.185)
Transportable by cargo aircraft?	Yes if net weight of batteries or cells/package ≤ 5 kg (IATA and US-DOT 49CFR 173.185)	Yes if net weight of batteries or cells/package ≤ 5 kg (IATA and US-DOT 49CFR 173.185)	Yes if net weight of batteries or cells/package ≤ 5 kg (IATA and US-DOT 49CFR 173.185)	Yes Rating ≤ 2.7Wh: 2.5kg; Cell rating > 2.7Wh ≤ 20Wh: 8 cells; Battery rating > 2.7Wh ≤ 100Wh: 2 batteries (IATA and US-DOT 49CFR 173.185)
Signed shipper's DGD required?	No	No	No	No
Package must have lithium ion battery	No	Yes	Yes	Yes

	Contained in Equipment		Packaged with Equipment	Cells and Batteries Shipped Separately
handling label (263-3945-01)?				
Each consignment must have accompanying document on exterior of packaging stating that package contains lithium ion cells or batteries, package must be handled with care and there is a flammability hazard if package is damaged, special procedures if packaging is damaged (inspection and repacking if necessary), and phone number for additional information?	No	Yes	Yes	Yes
The words “Lithium ion batteries in compliance with Section x of PI xxx” must be included on the air waybill, when an air waybill is used. The information should be shown in the “Nature and Quantity of Goods” box of the air waybill?	No	Yes	Yes	Yes
Must prove that battery meets requirements of each test in <i>UN Manual of Tests and Criteria, Part III, section 38.3?</i>	Yes	Yes	Yes	Yes
Packed in strong outer packaging conforming to IATA 5.0.2.4, 5.0.2.6.1, and 5.2.12.1?	Yes	Yes	Yes	Yes
Equipment packed with means to	Yes	Yes	Yes	n/a

	Contained in Equipment		Packaged with Equipment	Cells and Batteries Shipped Separately
prevent accidental activation?				
Cell and battery packaging that completely encloses the cell and battery required?	n/a	n/a	Yes	Yes
Cell and battery packaging must be capable of withstanding a 1.2 m drop test in all orientations?	n/a	n/a	Yes	Yes
Cells and battery protected to prevent short circuits?	Yes	Yes	Yes	Yes
Any person preparing or offering consignment for transport must receive adequate instruction on IATA DGR commensurate with their responsibilities?	Yes	Yes	Yes	Yes
Outer packaging must be boxes, drums, or jerrycans?	Unless equipment gives equivalent protection	Unless equipment gives equivalent protection	Yes	Yes
Lithium batteries identified as defective for safety reasons, damaged or have the potential of producing a dangerous evolution of heat, fire, or short circuits? (No unsafe or damaged battery returns to manufacturer by air.)	Forbidden	Forbidden	Forbidden	Forbidden
Watt-hour rating must be marked on the outside of the battery case except those manufactured before 1/1/2009	Yes	Yes	Yes	Yes

– NOTE 8: Contact the Oracle DG Core Team (dg_questions_us_grp@oracle.com) if a shipment has lithium ion cells or batteries that do not meet the conditions listed in the table above.

1.1.2 Lithium Metal Batteries – UN3090 / UN3091

1.1.2.1 General Requirements

The following requirements apply to all lithium metal or lithium alloy cells and batteries:

1. Each cell and battery must be of the type proven to meet the requirements of each test in the UN Manual of Tests and Criteria, Part III, Section 38.3.
2. Cells and batteries identified by the manufacturer as being defective for safety reasons, that were damaged, that have the potential of producing a dangerous evolution of heat, fire, or short circuit are forbidden for transport by air (for example, those being returned to the manufacturer for safety reasons). Such batteries may be transported by ocean or road only.
3. Waste batteries and batteries being shipped for recycling or disposal are forbidden from air transport unless approved by the appropriate national authority of the State of Origin and the State of the Operator.
4. Cells and batteries must be protected so as to prevent short circuits. This includes protection against contact with conductive materials within the same packaging that can lead to a short circuit.

1.1.2.1.1 Lithium Metal Cells and Batteries Meeting the Criteria of Section II of Packing Instruction 968, 969, 970

Lithium metal or lithium alloy cells and batteries offered for transport are not subject to other additional requirements of the regulations of this document if they meet the criteria of Section 1.1.2.1, General Requirements, and the following requirements:

1. For a lithium metal or lithium alloy cell, the lithium content cannot be more than 1 g.
2. For a lithium metal or lithium alloy battery, the aggregate lithium content cannot be more than 2 g.

1.1.2.1.2 Labeling and Documentation Requirements

1. Packages containing lithium metal batteries meeting the criteria of Section II of IATA Packing Instruction 968 must use the UN3090 lithium metal battery mark (7345099). Refer to Figure 1-4 UN3090 Lithium Metal Battery Mark (7345099), on page 14.

2. Packages containing lithium metal batteries meeting the criteria of Section II of IATA Packing Instruction 969 and 970 must use the UN3091 lithium metal battery mark. Exemptions apply as noted below in section 1.1.2.2.

Figure 1-4 UN3090 Lithium Metal Battery Mark (7345099)



– **NOTE 9:** For clarification of label application and positioning, refer to Global Supplier Management: Specification for the Environment - Dangerous Goods Label Placement, 914-1771-xx.

3. Each consignment with packages bearing the lithium metal battery mark (7345099) must be accompanied with a document, such as an air waybill indicating the following:

- The package contains lithium metal cells or batteries.
- The package must be handled with care and a flammability hazard exists if the package is damaged.
- Special procedures must be followed if the package is damaged, including inspection and repacking if necessary.
- A telephone number for additional information

– **NOTE 10:** The accompanying document is not a mandatory requirement by DGR, however, it is still sent with Oracle's shipments as required by the airline carriers.

4. A Shipper's DGD is not required.

5. Where a consignment includes packages bearing the lithium battery handling label, the words "Lithium metal batteries in compliance with Section x of PI xxx" must be included on the air waybill, when an air waybill is used. The information should be shown in the "Nature and Quantity of Goods" box of the air waybill.

6. Any person preparing or offering lithium metal cells or batteries for transport must receive adequate instructions on the above requirements commensurate with their responsibilities.

1.1.2.2 Lithium Metal Batteries Contained in Equipment – IATA Packing Instruction 970, Section II

Each package must be labeled with the UN3091 lithium metal battery mark. Consignments of two packages or less where each package contains four or less cells or two or less batteries do not require the label.

– **NOTE 11:** Button cells or coin cells contained in equipment or attached to a circuit board do not require labeling.

The weight limit for packages shipped under this section is 5kg of Lithium metal batteries/cells per package on passenger or cargo aircraft.

1.1.2.3 Lithium Metal Batteries Packed with Equipment – IATA Packing Instruction 969, Section II

For small, excepted lithium metal cells (less than 1g lithium content per cell) and batteries (less than 2g lithium content per battery) packed with an equipment, the maximum number of batteries in each package is limited to the minimum number required to power the equipment plus two spares. Each package must be labeled with a UN3091 lithium metal battery mark.

The weight limit for packages shipped under this section is 5kg of Lithium metal batteries/cells per package on passenger or cargo aircraft.

– **NOTE 12:** Oracle currently does not ship packages that require UN3091 lithium metal battery mark.

1.1.2.4 Lithium Metal Batteries Shipped Separately – IATA Packing Instruction 968, Section II

All lithium metal batteries require the use of the UN3090 lithium metal battery mark (7345099). Refer to Figure 1-4 UN3090 Lithium Metal Battery Mark (7345099) on page 14.

Lithium metal cells are forbidden from transportation on passenger aircraft when shipped separately and also require the use of the Cargo Aircraft Only Label (267-4196-01, L20R) and the Forbidden for Transportation Aboard Passenger Aircraft Label (267-4194-01). Refer to Figure 1-5 Cargo Aircraft Only Label (267-4196-01, L20R) and Figure 1-6 Forbidden for Transportation Aboard Passenger Aircraft Label (267-4194-01), on page 16.

In addition to "Lithium metal batteries in compliance with Section II of PI 968", the words "Cargo Aircraft Only" or "CAO" must be included on the air waybill, when an air way bill is used. The information should be shown in the "Nature and Quantity of Goods" box of the air waybill.

A shipper is not permitted to offer for transport more than one (1) package prepared according to this section in any single consignment. No more than one (1) package complying with the requirements of this section may be placed in an overpack.

The weight limit for packages shipped under this section on cargo aircraft is 8 cells per package for cells with Lithium metal content >0.3g and ≤1g, 2 batteries per package for batteries with Lithium metal content >0.3g and ≤2g, or 2.5kg of batteries/cells per package for batteries/cells with Lithium metal content ≤0.3g.

Figure 1-5 Cargo Aircraft Only Label (267-4196-01, L20R)



Figure 1-6 Forbidden for Transportation Aboard Passenger Aircraft Label (267-4194-01)



NOTE 13: For clarification of label application and positioning, refer to Global Supplier Management: Specification for the Environment - Dangerous Goods Label Placement, 914-1771-xx.

Table 1-2 Lithium Metal Battery Reference Table

	Contained in Equipment		Packaged with Equipment	Cells and Batteries Shipped Separately
	Lithium/cell ≤ 1 g Lithium/battery ≤ 2g Package/consignment ≤ 2 &	Lithium/cell ≤ 1g Lithium/battery ≤ 2 g but either Package/consignment	Lithium/cell ≤ 1g Lithium/battery ≤ 2g Battery/package ≤	Lithium/cell ≤ 1 g Lithium/battery ≤ 2 g

	Contained in Equipment		Packaged with Equipment	Cells and Batteries Shipped Separately
	<i>Cell/package ≤ 4 Battery/package ≤ 2</i>	<i>> 2 or Cell/package > 4 or Battery/package > 2</i>	<i>minimum to power unit plus two spares</i>	
IATA DGR applicable Packing Instruction	<i>970, Section II</i>	<i>970, Section II</i>	<i>969, Section II</i>	<i>968, Section II</i>
Transportable by passenger aircraft?	<i>Yes if net weight of batteries or cells/package ≤ 5 kg (IATA and US-DOT 49CFR 173.185)</i>	<i>Yes if net weight of batteries or cells/package ≤ 5 kg (IATA and US-DOT 49CFR 173.185)</i>	<i>Yes if net weight of batteries or cells/package ≤ 5 kg (IATA and US-DOT 49CFR 173.185)</i>	<i>No (IATA and US-DOT 49CFR 173.185)</i>
Transportable by cargo aircraft?	<i>Yes if net weight of batteries or cells/package ≤ 5 kg (IATA and US-DOT 49CFR 173.185)</i>	<i>Yes if net weight of batteries or cells/package ≤ 5 kg (IATA and US-DOT 49CFR 173.185)</i>	<i>Yes if net weight of batteries or cells/package ≤ 5 kg (IATA and US-DOT 49CFR 173.185)</i>	<i>Yes Lithium ≤ 0.3g: 2.5kg; Lithium/cell > 0.3g ≤ 1g: 8 cells; Lithium/battery > 0.3g ≤ 2g: 2 batteries (IATA and US-DOT 49CFR 173.185)</i>
Signed shipper's DGD required?	No	No	No	No
Package must have lithium metal battery handling label (263-3946-01)?	No	Yes	Yes	Yes
Each consignment must have accompanying document on exterior of packaging stating that package contains lithium metal cells or batteries, package must be handled with care and there is a flammability hazard if package is damaged, special procedures if packaging is damaged (inspection and repacking if necessary), and phone number for additional information?	No	Yes	Yes	Yes
The words "Lithium metal batteries in compliance with	No	Yes	Yes	Yes

	Contained in Equipment		Packaged with Equipment	Cells and Batteries Shipped Separately
Section x of PI xxx” must be included on the air waybill, when an air waybill is used. The information should be shown in the “Nature and Quantity of Goods” box of the air waybill?				
DOT label identifying the contents as having either 'Primary Lithium Batteries' or 'Lithium Metal Batteries' along with the statement 'Forbidden for Transport Aboard Passenger Aircraft'?	<i>Yes if net weight of batteries > 5 kg. Otherwise, no. (US-DOT 49CFR 172.102 A101 and A102)</i>	<i>Yes if net weight of batteries > 5 kg. Otherwise, no. (US-DOT 49CFR 172.102 A101 and A102)</i>	<i>Yes if net weight of batteries > 5 kg. Otherwise, no. (US-DOT 49CFR 172.102 A101)</i>	<i>Yes (IATA USG02 and 49CFR 172.102 A100)</i>
Package must have Cargo Aircraft Only Label (267-4196-01, L20R)?	No	No	No	Yes (IATA Section II of PI 968)
Must prove that battery meets requirements of each test in UN Manual of Tests and Criteria, Part III, section 38.3?	Yes	Yes	Yes	Yes
Packed in strong outer packaging conforming to IATA 5.0.2.4, 5.0.2.6.1, and 5.2.12.1?	Yes	Yes	Yes	Yes
Equipment packed with means to prevent accidental activation?	Yes	Yes	Yes	n/a
Cell and battery packaging that completely encloses the cell and battery required?	n/a	n/a	Yes	Yes
Cell and battery packaging must be capable of withstanding a 1.2 m drop test in all orientations?	n/a	n/a	Yes	Yes

	Contained in Equipment		Packaged with Equipment	Cells and Batteries Shipped Separately
Cells and battery protected to prevent short circuits?	Yes	Yes	Yes	Yes
Any person preparing or offering consignment for transport must receive adequate instruction on IATA DGR commensurate with their responsibilities?	Yes	Yes	Yes	Yes
Outer packaging must be boxes, drums, or jerrycans?	<i>Unless equipment gives equivalent protection</i>	<i>Unless equipment gives equivalent protection</i>	Yes	Yes
Lithium batteries identified as defective for safety reasons, damaged or have the potential of producing a dangerous evolution of heat, fire, or short circuits? (No unsafe or damaged battery returns to manufacturer by air.)	<i>Forbidden</i>	<i>Forbidden</i>	<i>Forbidden</i>	<i>Forbidden</i>

– NOTE 14: Contact the Oracle DG Core Team (dg_questions_us_grp@oracle.com) if a shipment has lithium metal cells or batteries that do not meet the conditions listed in the table above.

1.2 Lead Acid Batteries – UN2800, Batteries, wet, non-spillable

1.2.1 General Requirements

Non-spillable batteries meeting the following general and testing requirements are not subject to other additional DGR requirements when carried as cargo if, at a temperature of 55°C, the electrolyte will not flow from a ruptured or cracked case.

1. Substances must be compatible with their packagings as required by IATA DGR Section 5.0.2.6.
2. Metal packagings must be corrosion resistant or with protection against corrosion.
3. Closures must meet the requirements of IATA DGR Section 5.0.2.7.
4. Batteries or battery powered devices must be prepared for transport so as to prevent short circuit (e.g. in the case of batteries, by the effective insulation of exposed terminals; or in the case of equipment, by disconnection of the battery and protection of exposed terminals), and unintentional activation.

5. Non-spillable type batteries which are an integral part of and necessary for the operation of mechanical or electronic equipment, must be securely fastened in the battery holder on the equipment and protected in such a manner as to prevent damage and short circuits.

6. Waste batteries and batteries being shipped for recycling or disposal are forbidden from air transport unless approved by the appropriate national authority of the State of Origin and the State of the Operator.

1.2.2 Testing requirements

Batteries can be considered as non-spillable provided that they are capable of withstanding the vibration and pressure differential tests given below, without leakage of battery fluid:

1. Vibration test—The battery is rigidly clamped to the platform of a vibration machine and a simple harmonic motion having an amplitude of 0.8 mm (1.6 mm maximum total excursion) is applied. The frequency is varied at the rate of 1 Hz/min between the limits of 10 Hz to 55 Hz. The entire range of frequencies and return is traversed in 95 ± 5 minutes for each mounting position (direction of vibration) of the battery. The battery must be tested in three mutually perpendicular positions (to include testing with fill openings and vents, if any, in an inverted position) for equal time periods.

2. Pressure differential test—Following the vibration test, the battery is stored for six hours at $24^{\circ}\text{C} \pm 4^{\circ}\text{C}$ while subjected to a pressure differential of at least 88 kPa. The battery must be tested in three mutually perpendicular positions (to include testing with fill openings and vents, if any, in an inverted position) for at least six hours in each position.

1.2.3 Labeling and Documentation requirements

1. The outer packagings of non-spillable wet batteries (e.g. Lead acid batteries) must be plainly and durably marked “NONSPILLABLE” or “NONSPILLABLE BATTERY”.

2. A Shipper's Declaration for Dangerous Goods (DGD) is not required.

3. The words “Not Restricted” and the Special Provision number (A67) must be included in the description of the substance on the Air Waybill when an Air Waybill is issued.

1.3 Nickel-Metal Hydride Batteries – UN3496

1.3.1 General Requirements

1. Nickel-metal hydride batteries or nickel-metal hydride battery powered devices/equipment are not subject to DGR if they are prepared for transport so as to prevent short circuit (e.g. in the case of batteries, by the effective insulation of exposed terminals; or, in the case of equipment, by disconnection of the battery and protection of exposed terminals), and unintentional activation.

2. The UN number UN 3496 is only applicable in ocean transport.

1.3.2 Documentation Requirements

1. A Shipper's Declaration for Dangerous Goods (DGD) is not required.

2. The words “Not Restricted” and the Special Provision number (A199) must be included in the description of the substance on the Air Waybill when an Air Waybill is issued.

1.4 Dry Cell Batteries

1.4.1 General Requirements

Dry cell batteries are not restricted by DGR. The battery or battery powered devices/equipment must be prepared for transport so as to prevent short circuit (e.g. in the case of batteries, by the effective insulation of exposed terminals; or, in the case of equipment, by disconnection of the battery and protection of exposed terminals), and unintentional activation.

1.4.2 Documentation Requirements

1. A Shipper's Declaration for Dangerous Goods (DGD) is not required.

2. The words “Not Restricted” and the Special Provision number (A123) must be included in the description of the substance on the Air Waybill when an Air Waybill is issued.

2 CAPACITORS, ELECTRIC DOUBLE LAYER (EDLC'S) – UN3499

Electric Double Layer Capacitors (EDLC's) or Super Capacitors with an energy storage capacity greater than 0.3 Watt hour per capacitor are regulated for transportation. All EDLC's exceeding 0.3 Watt hour must be reviewed by Dangerous Goods Certified personnel. Contact the DG team (dg_questions_us_grp@oracle.com) for assistance.

– **NOTE 15:** Capacitors with an energy storage capacity of 0.3 Watt hour or less are not subject to these regulations.

2.1 Limits

The IATA Packing Instruction 971 does not limit the amount of UN3499, Capacitors, Electric Double Layer per package.

2.2 General Requirements

All capacitors in this category must meet the following conditions:

1. Capacitors not installed in equipment must be transported in an uncharged state. Capacitors installed in equipment must be transported either in an uncharged state or protected against short circuit;
2. Each capacitor must be protected against a potential short circuit hazard in transport
 - When a capacitor's energy storage capacity is less than or equal to 10 Wh or when the energy storage capacity of each capacitor in a module is less than or equal to 10 Wh, the capacitor or module must be protected against short circuit or be fitted with a metal strap connecting the terminals; and
 - When the energy storage capacity of a capacitor or a capacitor in a module is more than 10 Wh, the capacitor or module must be fitted with a metal strap connecting the terminals.
3. Capacitors containing dangerous goods must be designed to withstand a 95 kPa pressure differential;
4. Capacitors must be designed and constructed to safely relieve pressure that may build up in use, through a vent or a weak point in the capacitor casing. Any liquid which is released upon venting must be contained by packaging or by equipment in which a capacitor is installed; and
5. Capacitors manufactured after 31 December 2013 must be marked with the energy storage capacity in Wh.

Capacitors meeting one the following conditions are not subject to other provisions of the Dangerous Goods Regulations:

- Capacitors containing an electrolyte not meeting the classification criteria of any class or division of dangerous goods, including when installed in equipment.
- Capacitors containing an electrolyte meeting the classification criteria of any class or division of dangerous goods, with an energy storage capacity of 10 Wh or less, and are capable of withstanding a 1.2 m drop test unpackaged on an unyielding surface without loss of contents.
- Capacitors installed in equipment and containing an electrolyte meeting the classification criteria of any class or division of dangerous goods.

Capacitors containing an electrolyte meeting the classification criteria of any class or division of dangerous goods that are not installed in equipment and with an energy storage capacity of more than 10 Wh are subject to all relevant provisions of the Dangerous Goods Regulations.

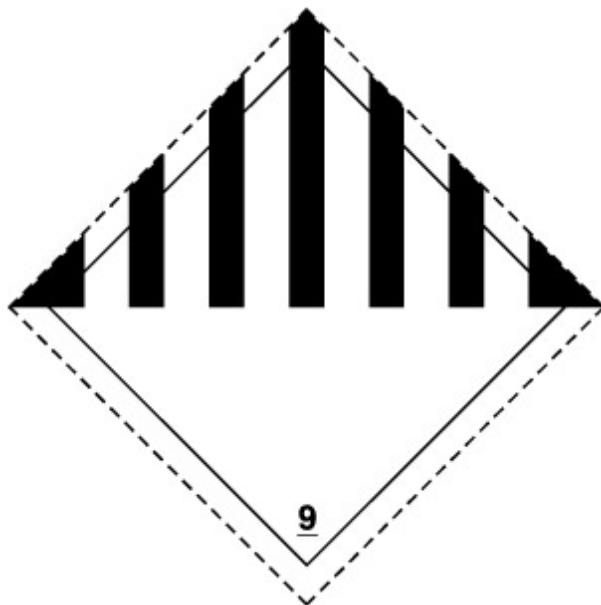
2.3 Labeling and Documentation Requirements

2.3.1 Labeling Requirements

Shipping packages containing EDLC's with an electrolyte meeting the classification criteria of any class or division of dangerous goods that are not installed in equipment and with an energy storage capacity of more than 10 Wh per capacitor must apply the Class 9 Miscellaneous DG Label. Refer to Figure 2-1 Class 9 Miscellaneous DG Label (7317326) below.

– **NOTE 16:** For shipment of EDLC's installed in equipment, or standalone EDLC's with an energy storage capacity of 10 Wh or less, the Class 9 DG label is not required.

Figure 2-1 Class 9 Miscellaneous DG Label (7317326)



NOTE 17: For clarification of label application and positioning, refer to Global Supplier Management: Specification for the Environment - Dangerous Goods Label Placement, 914-1771-xx.

2.3.2 Documentation Requirements

All packages applying the Class 9 Miscellaneous DG Label must be accompanied by a DGD created and signed by a Dangerous Goods Certified Shipper.

3 MAGNETIZED MATERIAL – UN2807

Magnetized material is material with enough magnetic field that can cause interference with a magnetic compass within a distance of 4.6 meters, usually caused by a large amount of steel in a chassis or rack. Magnetized material is not regulated for ground transportation.

3.1 Test Requirements

3.1.1 Criteria

All products with a gross weight of 650 kilograms or more of steel must be tested to IATA Packing Instruction 953. Contact the Compliance Engineering Department or the Dangerous Goods Officer for test support.

3.1.2 Procedure

Products meeting the above criteria must be tested in accordance with IATA Packing Instruction 953.

Magnetized materials with field strengths causing a compass deflection of more than 2 degrees at a distance of 2.1 m but not more than 2 degrees at a distance of 4.6 m (equivalent to 0.418 A/m or 0.00525 Gauss measured at a distance of 4.6 m) are subject to labeling and documentation requirements in section 3.2.

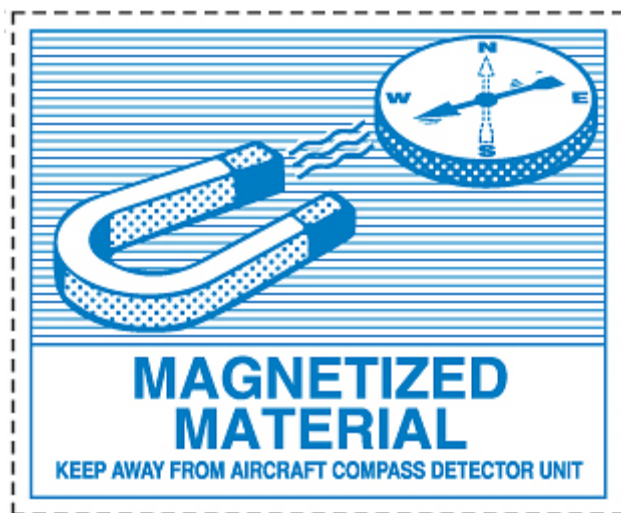
Magnetized materials with field strengths sufficient to cause a compass deflection of more than 2 degrees at a distance of 4.6 m may only be transported with the prior approval of the appropriate authority of the State of origin and the State of the operator.

3.2 Labeling and Documentation Requirements

3.2.1 Labeling Requirements

Packages exceeding the limits given in IATA Packing Instruction 953 must apply the UN2807, Magnetized Material label (267-1924-01). Refer to Figure 3-1, UN2807, Magnetized Material Label (267-1924-01), below.

Figure 3-1 UN2807, Magnetized Material Label (267-1924-01)



– NOTE 18: For clarification of label application and positioning, refer to Global Supplier Management: Specification for the Environment - Dangerous Goods Label Placement, 914-1771-xx.

3.2.2 Documentation Requirements

The shipper must make prior arrangements with the operator identifying the magnetized material. A Shipper's Declaration for Dangerous Goods is not required provided the words "magnetized material" and number of packages (unless these are the only packages within the consignment) are shown in the "Nature and Quantity of Goods" box on the air waybill when used, or in the appropriate location on alternate transport documentation. Where an agreement exists with the operator, the shipper may provide the information by EDP or EDI techniques.

APPENDIX A SUPPLIER STATEMENT

Material Suppliers are responsible for performing certain tasks with respect to the transportation of any and all Products by or on behalf of Oracle that are classified as 'Dangerous Goods' under the ICAO, and/or IATA, and/or IMDG, and/or US DOT Regulations (DG-activities). The DG-activities consist of ensuring that the shipment is properly labeled, marked, and packed, and creating and signing the Shipper's DGD and signing it on behalf of Oracle except where local regulations or custom contravene.

Material Suppliers must provide a list of countries where they cannot sign DGD with an alternative solution which Material Supplier can support for shipping DG from those countries. The DG-activities must be performed by Supplier in name, on behalf and entirely for risk and account of Oracle, provided such DG activities are performed in accordance with all applicable IATA and other DG Regulations and the provisions of this Agreement.

A. Package, mark, and label shipments classified as 'Dangerous Goods' under and according to the ICAO, and/or IATA, and/or IMDG, and/or DOT according to the requirements for marking and labeling established from time to time by ICAO, and/or IATA, and/or IMDG, and/or DOT.

B. Prepare, sign, and deliver Shipper's DGD for Oracle's shipments ensuring compliance with all ICAO, and/or IATA, and/or DOT regulations and requirements.

C. Perform any other act or condition which may be required by law or regulation of the ICAO, and/or IATA, and/or IMDG, and/or DOT, in connection with such marking or labeling or in connection with the preparation, signing, and delivery of the DGD, as contemplated in Subsection A and Subsection B, above.

In taking the actions stated in Subsection A and Subsection B, above, Material Supplier must strictly comply with the following requirements:

1. Material Supplier must mark and label as 'Dangerous Goods' all shipments containing Oracle Products and/or materials that have a manufacturing part number designated by Oracle as 'Dangerous Goods' from time to time.
2. Material Supplier must have and maintain at all times at least one employee who has been and is, on a current basis, certified at an IATA approved class to sign DGD (Certified Employees).
3. Only Certified Employees of Material Supplier can complete and sign the DGD on behalf of Oracle.
4. In preparing all DGDs, Material Supplier must use the DGD Preparation software as provided to Material Supplier by Oracle and as updated and maintained by Oracle from time to time (if the Material Supplier already has internal DGD Preparation program in place, this requirement does not apply).

Material Supplier is, and at all times during the effectiveness of this Agreement will remain an agent of Oracle for the purpose of shipping Oracle Products and/or products identified as 'Dangerous Goods' for the purpose of transportation on behalf of Oracle.

Training and certification is required by national and international law and is at the cost of the Material Supplier.

Preparation and documentation of DG shipments is a requirement if the bidder is to be successful and must be done at no additional cost to Oracle.

Related Information

REFERENCE DOCUMENTS AND RECORDS

Global Supplier Management: Specification for the Environment - Dangerous Goods Label Placement 914-1771-xx

International Air Transport Association (IATA) Dangerous Goods Regulations (DGR) (953 [formerly 902], 965, 966, 967, 968, 969, and 970)

United States Department of Transportation (DOT) 49 CFR (parts 100-185) Hazardous Materials Regulations
UN Manual of Tests and Criteria, Part III, Section 38.3

DOCUMENT HISTORY AND APPROVALS

Dash	Rev	Date	Description of Change	Originator
01	A	07 Oct 2010	Initial release.	
Agile History				
Rev	Date	Description of Change	Originator	
02	20 May 2015	Updated Lithium Battery requirements based on the latest PI's. Added the Cargo Aircraft Label to Li Metal battery FRU packages (PI 968). Changed to the Supercap requirements, which now aligns with the EDLC requirement. Updated the MM test requirement to equipment over 650 kgs. - based on test data.		
03	25 Aug 2016	Updated Lithium battery transportation requirements based on the latest IATA DGR (57 th edition). Updated the battery reference table accordingly. Added the Cargo Aircraft Only Label for Lithium Ion batteries shipped separately (PI965). Clarified the requirement for Supercaps below 0.3Wh. Added the Oracle part number for Class 9 label.		

04	11 Sep 2017	Updated Lithium battery shipping labels, transportation requirements and battery reference tables based on the latest 58 th edition IATA DGR. Added new sections for Lead acid batteries, NiMH batteries and dry cell batteries. Added reference to IMDG code for ocean transport. Addressed the differences between this document and DGR.	
	2 Nov 2018	Updated detailed IATA shipping requirements for UN3499 Electric double layer capacitors. Added weight/quantity limit for shipping various types of Lithium batteries.	
06	13 Apr 2022	AQP update to current corporate template	

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