

Brightspeed –TRANSPORTATION SHIPPING MANUAL

TRANSPORTATION ROUTING GUIDE: FOB ORIGIN TERMS ONLY

UPS: Parcel

Non-Palletized - Small Parcel Shipments (US Domestic and cross border Canada/ Mexico)
0–150lbs.

- A) Parcel shipments from vendors to **Brightspeed** will utilize the Brightspeed UPS account – **21V1A1 (ZIP Code = 28203)**. Please reach out to the Brightspeed Supply Chain Leadership directly with question.
- B) Small Parcel Shipments must be:
 - a. Fewer than 10 packages total and less than 150 lbs total shipment.
 - b. Single package must be less than 9" length and less than 130" in length and girth combined.
 - c. If Material does not meet UPS specifications or cannot be safely shipped via UPS, please ship LTL
 - d. If packages can be consolidated onto a skid or are oversized, LTL is acceptable.
- C) Please contact Travis.Barber@Brightspeed.com when shipping hazardous waste.
- D) For information regarding the Battery Recycle Process and forms, contact Travis.Barber@Brightspeed.com

Freight Shipping: KGPCo

Vendor Requirements & Information

All Brightspeed freight shipments will be arranged through KGPCo's TMS Portal.

New Vendors will need to complete the following:

- 1) Contact Brightspeed Supply Chain to initiate KGPCo TMS set up.
- 2) KGPCo TMS training via KGPCo provided Vendor Training Guide available from the Brightspeed Supply Chain Team.
- 3) User template to create user accounts.
- **Any shipment destined for a KGP location will automatically flow into the KGP TMS Portal.**
 - o Olathe KS – 15251 S Green Road
 - o Suwanee GA – 3000 Shawnee Ridge Court Northwest
 - o Bethlehem PA – 2900 Brodhead Road
- **Any shipment destined for a Brightspeed field location will not automatically flow into the KGP TMS Portal. Please provide a hard copy of the PO or PO details to kgptmg@KGPCo.com**

Contact Information

Email : KGPTMG@kgpco.com

Phone: 800-776-3963

Hours: Monday – Friday
7a – 6p CST

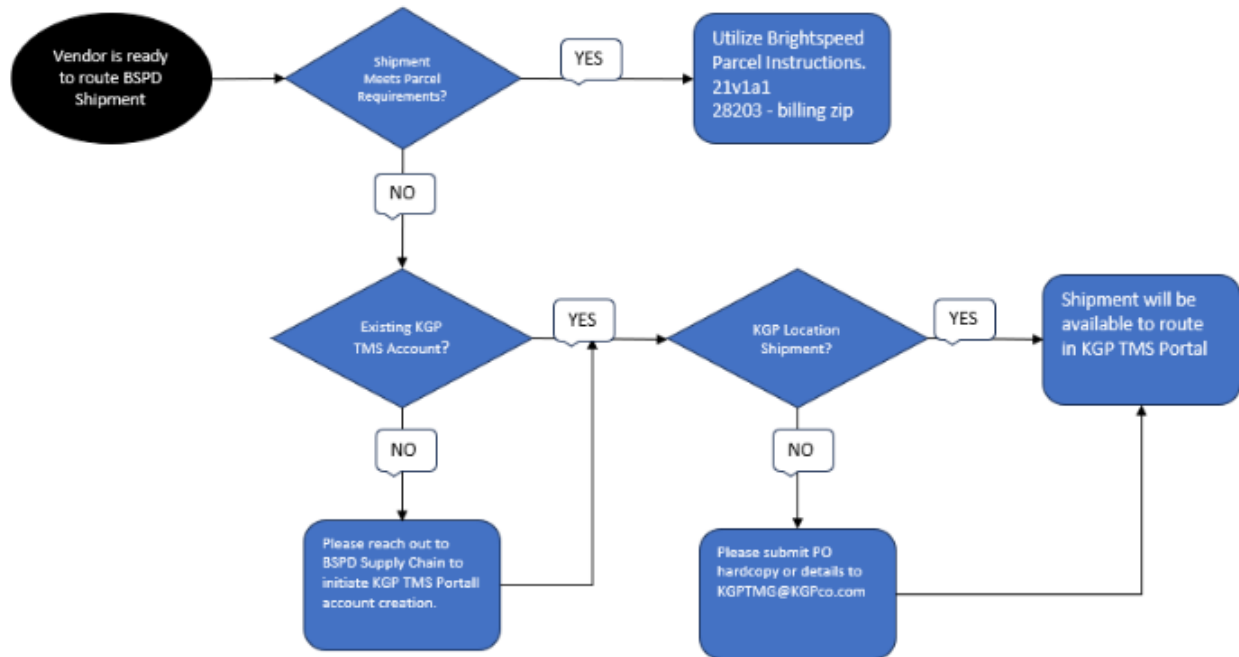
After Hours Support: 24/7: 800-755-1950

For Escalations reach out to:

Kyle Sierks 952-208-7164 Ext 65 – Kyle.Sierks@kgpco.com

Jerry Garcia 913-393-6944 – Jerry.Garcia@kgpco.com

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OVERVIEW: This “Brightspeed Shipping Manual” contains instructions that are made a part of the Agreement between Customer and Supplier and pertains to all orders delivered to Customer’s destinations. All Products shall be shipped to Customer under the Terms of Sale, Freight Terms and Incoterms agreed to and by the route and method of transportation specified by Customer’s “Brightspeed Transportation Routing Guide” (made a part to this “Brightspeed Shipping Manual”) or by Customer’s Shipment Management Center or Transportation Operations Department. Please note that this “Brightspeed Shipping Manual” applies only to Customer’s “Furnish Only (FO)”, “Engineered and Furnish (E&F)” Orders or to Product/Material Orders and does not apply to any “Engineered, Furnish and Install (EF&I)” Orders or “Furnish and Install (F&I)” Orders.

For general transportation questions, please contact transportation@brightspeed.com

Brightspeed Transportation Department Contacts:

Name	Title	Responsibility	Phone	Email
Travis Barber	Senior Manager, Supply Chain	Manager		Travis.barber@brightspeed.com
Kelly Huguelet	Manager, Critical Spares	Lead		Kelly.Huguelet@brightspeed.com
Aaron Higgs	Manager, Warehouse Supply Chain Operations	Lead		Aaron.c.higgs@brightspeed.com

Section A. COMPLIANCE WITH INSTRUCTIONS:

Sections A. through G. contain all shipping instructions for Customer’s U.S. locations. These terms and conditions cannot be altered, changed, or varied, without written consent from Customer. If Supplier outsources the shipment of products to a third party, Supplier is responsible for ensuring that the third party ships any Brightspeed, orders in accordance with this Shipping Manual and Routing Guide. Deviations from these instructions without prior written approval from the Customer’s Strategic Sourcing Manager or the Customer’s Procurement Department or Transportation Department will result in the enforcement of the Supplier being held responsible for reimbursing Brightspeed for the entire shipping cost.

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Compliance by the Supplier to the Terms of Sale, Freight Terms and transportation instructions will be audited by Customer. All invoices will also be subject to examination (both the Supplier's product invoices and collect freight invoices) by Customer's Strategic Sourcing Department and/or the Transportation and Shipment Compliance Team. Shall the Customer's Strategic Sourcing Department and/or the Transportation and Shipment Compliance Team find any non-compliant by Supplier, they will take the following steps:

1. Advise and review with the Supplier and the Customer's responsible Strategic Sourcing Manager of any non-compliance to Customer's transportation/shipping instructions and contractual requirements.
2. Request a written explanation for the non-compliance and a written action plan from the Supplier to remedy any substantial non-compliance.
3. Review the Customer's non-compliance "Charge-back Policy" with the Supplier.
4. Advise the Supplier of any actual charge-back amount(s) to billed to Supplier or taken as a credit memo on the Supplier's futures invoice(s).

Customer's Strategic Sourcing Department and/or Transportation and Shipment Compliance Team and responsible Strategic Sourcing Manager will then follow-up regularly with Supplier to ensure corrective action is taking place, non-compliance is being resolved and Suppliers actions on these matters is included in regular Supplier's performance reviews and in Supplier's Performance scorecards. Shall Customer's Strategic Sourcing Department and/or Transportation and Shipment Compliance Team and responsible Strategic Sourcing Manager determine Supplier is grossly out of compliance and/or will not act to quickly correct any non-compliance, the Customer may exercise contractual right to terminate Agreement.

1. International Originating Orders to U.S. Destinations: This applies to when the customer is purchasing material directly from a foreign supplier not when a US based customer supplier is sourcing from their foreign supplier.
 - a) All Products shall be shipped to Customer under the Terms of Sale and Freight Terms specified by the following Incoterms 2010, as published by the International Chamber of Commerce:

Air Freight Shipments:

FCA Named Carrier/Forwarder, (named place)

Ocean Freight Shipments:

FCA Named Carrier/Forwarder, (named place)

Motor Freight Shipments (Canada and Mexico origins only):

FCA Shipper's Dock

DEFINITIONS:

FCA - FREE CARRIER (... named place):

"Free Carrier" means that the seller fulfills its obligation to deliver when it has handed over the goods, cleared for export, into the charge of the Carrier/Forwarder named by the Customer at the Customer's named place. This term may be used for any mode of transport, including multi-modal transport. "Carrier/Forwarder" means any person or company who, in a contract of carriage, with the Customer, arranges transport of Customer's shipments by rail, road, sea or air. Title passes when Supplier delivers shipment to Customer's "Named Carrier/Forwarder" at Customer's named place free and clear of any delivery exceptions.

- b) Licenses, authorizations, security clearances and other formalities – Where applicable, the Supplier must obtain, at its own risk and expense, any export license or other official authorization and carry out all customs formalities necessary for the export of the goods. The Supplier must also obtain at its own expense any applicable transportation, insurance, or documentation required to deliver the shipment into the charge of the Carrier/Forwarder named by the Customer at the Customer's named place.

Air Freight and Ocean Freight Shipments:

FCA Shipper's Dock

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- a) Licenses, authorizations, security clearances and other formalities – Where applicable, the Supplier must obtain, at its own risk and expense, any export license or other official authorization and carry out all customs formalities necessary for the export of the goods. The Supplier must also obtain at its own expense any applicable transportation, insurance, or documentation required to deliver the shipment into the charge of the Carrier/Forwarder named by the Customer at the Customer's named place.

Section A. **BILL OF LADING PREPARATION:**

1. The following information is required on all Bills of Lading, in any shipping manifest system (so that this information will reside on the manifest system's shipping label), and on all invoices:
 - a) Customer's Purchase Order number(s) or if provided by Customer, Customer's WBS Element, Internal Order Number or Cost Center
 - b) Customer's Shipment or Load Number for authorization (if required by Customer's Shipment Management Center)
2. Description of Articles:
 - a) **U.S. Originating Orders to U.S. Destinations:** The description of articles must conform to the National Motor Freight Classification (NMFC) or taken from Customer's third-party transportation provider's approved generic items list. If the Product(s) being shipped are classified under COMMON LANGUAGE Equipment Codes (CLEI Codes) established by Telcordia Technologies, Inc. (GR-485-CORE), then Supplier shall also utilize the associated equipment description for that CLEI Code(s). Note: In any case, a clear description of the Product(s) being shipped is necessary so that any party reading the Bill of Lading and invoice would be able to recognize the freight belonging to the shipment.
 - b) **International Orders:** This only applies when Customer is purchasing directly from a foreign supplier. The description of articles and product(s) freight classification must conform to the Harmonized Tariff System (HTS). If the Product(s) being shipped are classified under COMMON LANGUAGE Equipment Codes (CLEI Codes) established by Telcordia Technologies, Inc. (GR-485-CORE), then Supplier shall also utilize the associated equipment description for that CLEI Code(s). Note: In any case, a clear description of the Product(s) being shipped is necessary so that any party reading the Bill of Lading and invoice would be able to recognize the freight belonging to the shipment.
 - c) **Hazmat Orders:** Supplier must provide a Hazmat Compliant Bill of Lading (not Customer's third party generated BOL) to include the following information: number of packages, type of packages, identification number, proper shipping name, hazard class, packing group number (if applicable), the weight of the material, and the Supplier owned emergency response phone number. Supplier must provide a MSDS (Material Safety Data Sheet), if applicable, and any placards to Customer's selected carrier.
3. Zip/Postal Codes: Origin and destination addresses must include postal codes on the Bill of Lading.
4. Shipments:
 - a) All packages or containers shipping on a single carrier and on a single ship method from one origin, addressed to the same company and same destination and that ship the same day must be consolidated into a single shipment and onto one Bill of Lading.
 - b) Misdirected shipments will be reshipped to the correct destination at Supplier's cost and Customer is entitled to deduct from Supplier's invoices any costs incurred by Customer as a result, or Supplier will pay the shipping charges directly to the carrier.
5. Bill of Lading must show Brightspeed or a Brightspeed affiliate company as either consignee or as third-party bill to. If shown as consignee, bill of lading must be marked freight collect.
 - a) The bill to address on the bill of lading, for freight charges only, must reference the following:
Brightspeed
1120 South Tryon Street Suite 700
Charlotte NC 28203

Noncompliance may result in Supplier being held responsible for reimbursing or paying the carrier directly for the incurred shipping costs.

Section B. **PACKING AND MARKINGS REQUIREMENTS:**

1. Marking:

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Packages and containers shall be marked in accordance with Telecommunications Industry Form (TCIF) standards unless otherwise noted in this document. Supplier shall utilize the following guidelines and requirements of Customer in packing Product(s):

- a) Bill of Lading or transportation carrier tracking number must be clearly visible on the outside of each shipping carton or on the master shipping carton;
 - b) Packing List(s) must be clearly pouched and visible on the outside of each shipping carton or on the master shipping carton (also see item 7 below entitled "Packing List Requirements");
 - c) Shipping carton must have shipping label prepared and clearly affixed in accordance with Shipping Manual instructions in Section D, items number 8 and 9;
 - i) Shipping label must correctly identify the "Ship To" address as stated on the purchase order.
 - d) Purchase Order must be clearly visible on the outside of each shipping carton;
 - e) Contact name (tech name) must be clearly visible on the outside of each shipping carton, if applicable.
 - f) All Product containers shall be labeled with Customer Purchase Order, Manufacture Part Number(s), Material Code(s) description and quantity. If available, also include Job Number, WBS Element, Project Number, Cost Center and CLEI codes.
 - g) Recommended size for package labels is 3" wide by 3" long and contains the minimum barcode fields;
 - h) Date sensitive material noted on outside of container as required.
 - i) Case quantity noted on case lots.
 - j) Box quantity noted on each box; (box 1 of X) and
 - k) Hazardous Material shipments must be marked and packed in accordance with and be in compliance with all applicable international, foreign, federal, state and local requirements and industry standards (also see Section H below entitled "HAZARDOUS MATERIALS").
2. Multiple Order Shipments:
Purchase Orders shipping on a single carrier and on a single ship method from one origin, addressed to the same company and same destination and that ship the same day must be consolidated into a single shipment and onto one Bill of Lading. Such multiple Purchase Orders in a single shipment will be referred to "Multiple Order Shipments".
- a) Multiple Order Shipments that are combined in master cartons, overpacks or on pallets must be clearly labeled as "MULTIPLE ORDER SHIPMENT" or "MIXED LOAD" on the exterior of the shipping container(s).
 - b) Multiple Order Shipments, when palletized or over-cartoned, must also be clearly labeled on the exterior of the palletized load with clear and highly visible markings or labels that state "CARRIER: DO NOT BREAK PALLET" (these markings and labels must clearly show that these instructions are for the transportation carrier only);
 - c) In addition to the original Packing List on each carton, additional copies of all Packing Lists for each Purchase Order contained within a Multiple Order Shipments must be placed in a master Packing List pouch attached to the exterior of the final shipping container or final master shipping container.
 - d) All Product containers shall be labeled, at a minimum, with Customer Purchase Order / Job Order / WMB Element / Internal Order Number / Project Number(s) / Cost Center, Part Number(s) (PID No.), quantity, CLEI codes (if applicable) and Product description(s);
3. Product(s) shall be packaged by Supplier in packages, containers, reels or other enclosures or receptacles to ensure adequate protection against corrosion, static charge, discharge, deterioration and physical damage to ensure safe delivery.
- a) All parts ordered shall be packaged consistent with the ordering unit of measure, usually each, to accommodate stocking and issuing to our customer requirements.
 - b) Material shall be packaged based on the address stated on the "Ship To" of the purchase order and not consolidated into the same packaging by the street address.
4. U.S. Originating Orders to U.S. Destinations: All products are to be packaged in accordance with the packaging standards for the National Motor Freight Classification (NMFC) for the product(s) being shipped.
5. Palletized Loads:
Palletized loads shall comply with the following requirements:
- a) All items must be palletized (unless mutually agreed) and not shipped loose
 - b) Pallets must include a "DO NOT STACK" label if product is not stackable.

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- c) Pallets must be in good condition, with no broken boards.
 - d) The Bill of Lading must indicate the total number of cartons/pieces.
 - e) The maximum height of cartons loaded on pallets shall not exceed 48" (unless mutually agreed);
 - f) If Product(s) is secured to pallet with strapping, then a minimum of two non-metallic straps is required and must be of sufficient quantity, width, and thickness to preclude failure during transit and handling.
 - g) The use of stretch netting film (shrink wrap) to secure the load to the pallet is permitted; and
 - h) Containers that are too large or heavy to be palletized shall be shipped in their own containers, crates, or whatever else Product(s) would be shipped in, and when practical shall be skidded to facilitate forklift handling.
 - i) All Product containers that are included in Palletized loads shall be labeled, at a minimum, with Customer Purchase Order / Job Order / WBS Element / Internal Order Number Project Number(s) / BVAPP / Cost Center, Part Number(s) (PID No.), quantity, CLEI codes (if applicable) and Product description(s).
6. Packing List Requirements:
- All Packing Lists must be attached to the outside of the package in which the product(s) are shipped. If multiple packages or pieces are included in a single shipment and individual Packing Lists are not placed on each package, then the Packing List(s) for that shipment must be placed on the master or lead package in the shipment (box 1 of X). The Packing List must contain:
- a) Customer's Purchase Order Number Job Order / WBS Element / Internal Order Number, Project Number(s) / Cost Center.
 - b) Customer's SAP Material Code or Common Language Identification Codes (CLEI) if applicable.
 - c) Customer Product Descriptions.
 - d) Quantities Ordered.
 - e) Quantities Shipped.
 - f) Quantities Previously Shipped against the same Purchase Order Number.
 - g) Quantities on Backorder.
 - h) Units of Measure.
 - i) Total weight of the Shipment.
 - j) "Ship To" address as stated on the purchase order.
 - k) Transportation Carrier Name.
 - l) Transportation Carrier Tracking Number; and
 - m) Packing List Page Number (if multi-page Packing List)

Section C. **TRANSPORTATION (FREIGHT) CHARGES:**

- 1. C.O.D. shipments will NOT be accepted.
- 2. Bill of lading must show Brightspeed or Brightspeed Affiliate Company as either consignee or as third-party bill to. If shown as consignee, bill of lading must be marked freight collect.
 - a) The bill to address on the bill of lading, for freight charges only, must reference the following:

Section D. **PREMIUM/EXPEDITED SHIPMENTS:**

RAS Date: RAS date is the date in which material must be delivered to the delivery address listed on the purchase order, also referred to as required at site date.

- 1. Supplier shall ship all material in accordance to the RAS date per the ship method indicated on the Purchase Order. Supplier must estimate the anticipated transportation time, per the ship method indicated on the order. Ground freight shipments should be estimated at 7 business days.
- 2. Supplier is not authorized to adjust the ship method for a purchase order unless Brightspeed Procurement issues a change order to supplier with the adjusted ship method.
- 3. If the ship method is not included on the Purchase Order OR the ship method is Brightspeed Routing Guide, the default ship method will be standard ground.

Noncompliance may result in Supplier being held responsible for reimbursing or paying the carrier directly for the incurred shipping costs.

Section E. **HAZARDOUS MATERIALS:**

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1. Hazardous Material shipments must be marked and packed in accordance with and follow all applicable international, foreign, federal, state and local requirements and industry standards.
2. In connection with its shipments under this Agreement, Supplier will comply with all applicable provisions of the Hazardous Materials Transportation Act (49 USC 1801, et seq.), the Resource Conservation and Recovery Act (42 USC 6901, et seq.), the Toxic Substances Control Act of 1976 (15 USC 2601, et seq.), the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 USC 9601 et seq.), the Occupational Safety and Health Act of 1970, the Clean Air Act, the Clean Water Act, and any other applicable federal, state and local laws, ordinances, rules, regulations, court orders, and governmental or regulatory agency orders governing Hazardous Materials or safety, including but not limited to state and federal motor carrier safety regulations, the DPT Hazardous Materials regulations and any regulations governing conveyance, packaging, marking, identification, storage, handling and/or disposition of Hazardous Materials, or governing any accidents or incidents involving Hazardous Materials, all as they may be amended or supplemented from time to time. Supplier shall furnish Customer with Material Safety Data Sheets that comply with laws and other environmental compliance data requested by Customer.
3. "Hazardous Materials" means any hazardous, radioactive, or toxic substance, material or waste defined or regulated as such in or under any environmental, health or safety law including without limitation, asbestos, and those hazardous materials, substances, and wastes defined as such by the United States Department of Transportation ("DOT"), Occupational Safety and Health Administration ("OSHA"), Environmental Protection Agency ("EPA") or the Nuclear Regulatory Commission ("NRC") through their enabling statutes, or regulations, orders or rules.
4. Supplier shall immediately remedy any noncompliance and indemnify and hold Customer harmless from any claims, liabilities and damages, including but not limited to attorneys' fees, costs of defense, cleanup costs, response costs, costs of corrective action, costs of financial assurance, and/or natural resource damages, that may arise, or be imposed on, be incurred by, be asserted against or be sustained by Customer by reason of Supplier's failure to comply with this Section.

Section F. **U.S. CUSTOMS CLEARANCE:**

1. When Customer is the importer of record of a shipment the Customer or a broker representing the interests of Customer shall be responsible for U.S. Customs clearance and payment of U.S. import duties and taxes.
2. Shipments must include all appropriate and required documentation for U.S. Customs clearance, including Commercial Invoice as well as any additional documentation required by the exporting country's laws and regulations and by U.S. laws and regulations (such as Certificates of Origin, Certificates of Value and Origin, Shipper's Export Declarations, etc.).

Section G. **SPECIAL INSTRUCTIONS:**

1. Goods must be shipped from Supplier's origin that is closest to the shipment's destination and that has Customer's Products available.
2. Supplier is not authorized to request any additional insurance coverage with Customer's transportation carriers unless Customer authorizes Supplier in writing.
3. If Supplier designates the transportation carrier for any Order(s), then Supplier shall obtain and maintain, at its expense, cargo and/or riggers insurance to cover the value of the Product(s) being shipped in addition to paying the transportation carrier for the shipment. Supplier must receive authorization in writing from Customer's Purchasing Department to utilize supplier's transportation carrier.

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UPS GUIDELINES

UPS Weight and Size Restrictions:

- UPS has established specific weight and size limits for the packages that you send with all UPS services. The restrictions below only pertain to individual packages.
- Note: UPS PARCEL DOES NOT ACCEPT PALLETIZED OR CRATED SHIPMENTS. Please refer to page 1 of the Routing Guide for instructions on shipping freight.
 - Packages can be up to 150 lbs (70 kg)
 - Packages can be up to 165 inches (419 cm) in length and girth combined
 - Packages can be up to 108 inches (270 cm) in length
 - Packages more than 70 lbs (31.5 kg, 25 kg within the EU) require a special heavy-package label.
- The limits listed above apply to most packages and destinations, but there are some variances because of different local restrictions in some countries. Please contact UPS for more details.
- It is the responsibility of the shipper to be aware of the most current UPS weight and size restrictions. Please refer to UPS.com if you are not certain of current restriction.
- All manifested shipments must include dimensions.

Suppliers:

- For domestic shipments, bill charges as “Third Party” to Brightspeed’s third-party billing UPS account number. For foreign origins, bill charges as “Third Party” to Brightspeed’s third-party billing Import UPS account number. Contact the Brightspeed Transportation Department at transportation@brightspeed.com for the appropriate third-party billing account number.

THE BRIGHTSPEED PURCHASE ORDER NUMBER / CHARGE CODE MUST BE IN EITHER REFERENCE 1 OR REFERENCE 2

- Brightspeed shipments must be prepared for UPS shipment using a UPS online-compatible shipping system. **Brightspeed does not allow the use of handwritten shipping documents for UPS shipments.** Contact the Brightspeed Transportation Department for information if you are not currently using a UPS On-line-compatible shipping system.
- Any parcel shipment must be prepared and shipped using a “Package Level Detail” compliant shipping manifest system or method. Shippers must submit end of day manifest to UPS when shipments for Brightspeed exist.

International Shipments:

Note: It is the shipper’s responsibility to comply with current government regulations or laws applicable in each country. Shipments are subject to inspection and possible delay by customs officials or representatives of other government agencies. Certain countries have additional prohibited articles. Additional questions should be directed to: transportation@brightspeed.com

Failure to comply with U.S. export laws can result in large civil penalties and criminal prosecution

U.S. export law requires licenses prior to “exporting” certain technology, including software. Determining whether a specific technology is classified as requiring a license involves a legal analysis against BIS Regulations

Export Regulations and Compliance

Under the EAR regulations, license requirements are on an item by item, country by country basis. As such, your particular item may or may not require a license. Under the ITAR defense regulations, exports to all countries presumptively require a license and, in some cases, depending on the country, the State Department will not, as a matter of policy, issue a license. For example, China is per se a prohibited country under the ITAR USML regulations; the State Department will not consider issuing a license of a USML item to China. There are approximately 10 other countries that are likewise prohibited under ITAR. Therefore, it is essential that all exports be cleared for export control.

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Contact transportation@brightspeed.com for Export Control.

Technical Data / Technology

- Regulations are “personal” to the exporter, regardless of whether a 3rd party developed the subject technology
- Technology exported by vendor prior to Brightspeed Technologies taking title does not subject Brightspeed Technologies, to export regulations, unless we re-export the technology
- If appropriate, approval will be “postponed” until BIS Agency approval
- If the submitted technology has been previously approved, international logistics will proceed with export.
- If the submitted technology has **NOT** been previously approved, a request will be sent to legal for classification and review. This could take up to 3 business days.

Technical Data/Technology may be in any tangible or intangible form, such as written or oral communications, blueprints, drawings, photographs, plans, diagrams, models, formulae, tables, engineering designs and specifications, computer-aided design files, user manuals or documentation, electronic media or information revealed through visual inspection.

The information can take the form of technical data or technical assistance. Technical assistance may take forms such as instruction, skills training, working knowledge, or consulting services. Technical assistance may involve transfer of technical data.

As defined under the ITAR, [22 C.F.R. § 120.10](#), Technical Data means:

“(1) Information, other than software as defined [below][1], which is required for the design, development, production, manufacture, assembly, operation, repair, testing, maintenance or modification of defense articles. This includes information in the form of blueprints, drawings, photographs, plans, instructions or documentation.

(2) Classified information relating to defense articles and defense services . . . ;[2]

(3) Information covered by an invention secrecy order; or

(4) Software . . . directly related to defense articles.”

This definition does not include the following: (1) information concerning general scientific, mathematical, or engineering principles commonly taught in schools, colleges, and universities, (2) information in the public domain,[3] or (3) basic marketing information on function or purpose or general system descriptions of defense articles.

As defined under the EAR, [15 C.F.R. § 772](#), Technology means information necessary for the ‘development,’ ‘production,’ ‘use,’ operation, installation, maintenance, repair, overhaul, or refurbishing of an item. Technology “may be in any tangible or intangible form, such as written or oral communications, blueprints, drawings, photographs, plans, diagrams, models, formulae, tables, engineering designs and specifications, computer-aided design files, manuals or documentation, electronic media or information revealed through visual inspection.”

[1] “Software includes but is not limited to the system functional design, logic flow, algorithms, application programs, operating systems, and support software for design, implementation, test, operation, diagnosis and repair.” [22 C.F.R. § 120.45\(f\)](#).

[2] Includes classified information relating to defense articles and defense services on the U.S. Munitions List, and classified information related to formerly ITAR-controlled articles subsequently appearing on the Commerce Control List (e.g. those in the ECCN -500 or -600 series).

[3] Public domain means “information which is published and which is generally accessible or available to the public.” [22 C.F.R. § 120.11](#).

Screening, embargos, disbarred counties and denied persons

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All shipments (including temporary shipments, repairs, and shipments of test equipment or software) or transfers of technology to foreign persons must be screened before they are shipped/released. The screens that must be performed—at both the contract-formation stage and/or immediately before export—are described below. In addition to list-driven requirements based on the U.S. Munitions List (USML) or Commerce Control List (CCL), a range of other factors, including the country of destination, the identity of the end-user, and the proposed end-use, must be examined to determine whether a license is required

A. Screening Based on Export Classification

International logistics will check the classification of the product, software, or technology to be shipped to determine if it requires a license. If the item has not yet been previously classified and reviewed by International Logistics or legal counsel must be contacted. If the product or technology falls under a classification requiring a license, International Logistics will determine whether a license exemption or exception is available. Export of a licensable product, software or technology may not take place until the license has been granted. Controlled technical data may not be released until a license is obtained. In particular, foreign nationals may not have access to controlled Technical Data until a license and Technology Control Plan is in place.

B. Screening for Embargoed Countries

If screening results identifies embargoes, sanctions, other alerts, International Logistics and / or legal counsel will conduct an export analysis and seek the appropriate US government authorization.

C. Screening for Prohibited Individuals or Entities

To ensure that Brightspeed does not engage with unauthorized parties, personnel must conduct export screening to include prospective and existing customers for software, technology, and servicing, against the Denied Persons List (“DPL”), the Entity List, Unverified Parties List, the List of Specially Designated Nationals List (SDN List), and the State Department’s list of debarred parties, before entering into a contract relationships or effects a transaction with that party. (These lists are collectively referred to in this Manual as the “Restricted Parties Lists.” In addition, freight forwarders, vendors, banks and issuers of letters of credit, foreign visitors, and consultants must be screened against the Restricted Parties Lists. If a party’s name is found on one of the Restricted Parties Lists at any point legal counsel and export compliance must be notified immediately. Any order or further action with respect to that party must be suspended pending the outcome of consultations with export compliance and legal counsel, if required.

D. Screening for Diversion Risks

The export or re-export of U.S.-origin products to unauthorized destinations, end-users, or end-uses may trigger licensing requirements (even for EAR 99 items). Therefore, all transactions are subject to diversion risk screening. To assist in determining when a transaction may not be authorized or may lead to an illegal diversion, the Department of Commerce has published a list of red flags (Export Administration Regulations, Supplement 3 to Part 732), listed below. International Logistics must check potential customers/transactions against the red flags described below. While this list is not all-inclusive, these indicators should be used as a guide for identifying suspicious or unusual transactions that warrant further scrutiny before going forward. The following are red flags:

- The recipient or end user is reluctant to offer information about the end-use of material being transferred.
- The item or material being transferred does not fit the recipient’s end use. For example, shipment of a toxic reagent being sent to a liberal arts department.

The material being transferred is incompatible with the technical level of the recipient to which the material is being shipped. For example, semiconductor material, prototypes would be of little use if the recipient is researching an infectious disease.

- The recipient is unknown to Brightspeed.
- The recipient does not want to document the material or information transfer.
- The recipient is a middle person for the end user of the material or information to be transferred.
- Installation, training, or maintenance services are declined by the end user.
- Delivery addresses are not associated with the end user, or deliveries are planned for out-of-the- way destinations.
- A freight-forwarding firm or post office box is listed as the product’s final destination.
- A requested shipping route is abnormal for the material and destination.

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- Packaging requirements are inconsistent with the stated method of shipment or destination. Brightspeed International Logistics will review the terms and conditions and all other pertinent information when planning an export and take note of these or any other abnormal circumstances that indicate the export is intended for an inappropriate end-use, end-user, or destination. If the planned export raises any red flags, International Logistics will contact export compliance and / or legal counsel for guidance.

E. Screening for Proliferation Activities

U.S. law prohibits the export and re-export of items or technology if they are destined for certain activities or projects in countries of concern. Activities of proliferation concern include activities involving nuclear production or technology, missile technology, and chemical and biological weapons. (Each area is described below.)

If there is doubt as to whether or not proliferation concerns exist, international logistics should be contacted. If any Brightspeed employee has any reason to suspect that a recipient is involved in a prohibited end-use, notify legal counsel immediately. No export or re-exports to the recipient should occur unless and until International Logistics and / or legal counsel obtains a license or determines that a license is not required.

F. Screening for Anti-boycott Language

The United States has a policy of opposing restrictive trade practices or boycotts fostered or imposed by foreign countries against other countries friendly to the U.S. The antiboycott laws were adopted to encourage, and in specified cases, require U.S. firms to refuse to participate in foreign boycotts that the U.S. does not sanction. They have the effect of preventing U.S. firms from being used to implement foreign policies of other nations which run counter to U.S. policy.

This policy is implemented through the anti-boycott provisions of the Export Administration Act of 1979 (EAA)—enforced by the U.S. Department of Commerce—and through a 1977 amendment to the Tax Reform Act of 1976—enforced by the U.S. Department of the Treasury.

Part 760 of the Export Administration Regulations (EAR) implements the EAA's anti-boycott provisions. U.S. persons are prohibited from taking certain actions with the intent to comply with, further, or support an unsolicited foreign boycott. Prohibitions include:

- Refusing to do business with a boycotted or blacklisted entity.
- Discriminating against, or agreeing to discriminate against, any U.S. person on the basis of race, religion, sex, or national origin.
- Furnishing information about business relationships with a boycotted country or a blacklisted entity. In addition, the EAR requires a U.S. person to notify the U.S. Department of Commerce if he or she receives a request to comply with an unsanctioned foreign boycotted country or a blacklisted entity.

In addition, the EAR requires a US person to notify the U.S. Department of Commerce if he or she receives a request to comply with an unsanctioned foreign boycott. The Export Administration Act (EAA) specifies penalties for violations of the Antiboycott Regulations as well as export control violations. These can include:

Criminal: The penalties imposed for each "knowing" violation can be a fine of up to \$50,000 or five times the value of the exports involved, whichever is greater, and imprisonment of up to five years. During periods when the EAR are continued in effect by an Executive Order issued pursuant to the International Emergency Economic Powers Act, the criminal penalties for each "willful" violation can be a fine of up to \$50,000 and imprisonment for up to ten years.

Administrative: For each violation of the EAR any or all of the following may be imposed:

- General denial of export privileges;
- The imposition of fines of up to \$11,000 per violation; and/or
- Exclusion from practice.

Exports or Imports containing Lithium Metal and Lithium Ion Batteries

Revised for the 2021 Regulations

This document is based on the provisions set out in the 2021-2022 Edition of the ICAO *Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Technical Instructions) and the 62nd

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Edition of the IATA Dangerous Goods Regulations (DGR).

The provisions of the DGR with respect to lithium batteries may also be found in the IATA lithium Battery Shipping Guidelines (LBSG) 8th Edition. In addition to the content from the DGR, the LBSG also has additional classification flowcharts and detailed packing and documentation examples for lithium batteries.

Information on the DGR and LBSG can be found here:

<http://www.iata.org/dgr>

<http://www.iata.org/lbsg>

The purpose of this document is to provide guidance for complying with provisions applicable to the transport by air of lithium batteries as set out in the DGR. Specifically, the document provides information on:

- Definitions;
- Classification (including classification flowcharts);
- Prohibitions;
- Restrictions;
- Frequently Asked Questions
- Additional Information
- Abbreviations, Acronyms, Symbols

Definitions

Lithium Battery – The term “lithium battery” refers to a family of batteries with different chemistries, comprising many types of cathodes and electrolytes. For the purposes of the DGR they are separated into:

Lithium metal batteries. Are generally primary (non-rechargeable) batteries that have lithium metal or lithium compounds as an anode. Also included within lithium metal are lithium alloy batteries. Lithium metal batteries are generally used to power devices such as watches, calculators, cameras, temperature data loggers, car key fobs and defibrillators.

Δ Note:

Lithium metal batteries packed by themselves (not contained in or packed with equipment) (Packing Instruction 968) are forbidden for transport as cargo on passenger aircraft). In accordance with Special Provision A201, lithium metal cells or batteries that meet the quantity limits of Section II of PI 968 may be shipped on a passenger aircraft under an approval issued by the authority of the State of Origin, State of Destination and State of the Operator. Or in the case of urgent medical need, one consignment of lithium batteries may be transported as Class 9 (UN 3090) on passenger aircraft with the prior approval of the authority of the State of origin and with the approval of the operator, see Special Provision A201. All other lithium metal cells and batteries can only be shipped on a passenger aircraft under exemption issued by all States concerned.



Figure 1 - Example of Lithium Metal Cells and Batteries

Lithium-ion batteries (sometimes abbreviated Li-ion batteries) are a secondary (rechargeable)

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battery where the lithium is only present in an ionic form in the electrolyte. Also included within the category of lithium-ion batteries are lithium polymer batteries. Lithium-ion batteries are generally used to power devices such as mobile telephones, laptop computers, tablets, power tools and ebikes.



Figure 2 - Example of Lithium Ion Cells and Batteries

Note:

Lithium ion batteries packed by themselves (Packing Instruction 965) (not contained in or packed with equipment):

(a) must be shipped at a state of charge (SoC) not exceeding 30% of their rated capacity. Cells and/or batteries at a SoC of greater than 30% may only be shipped with the approval of the State IATA Lithium Battery Guidance Document – 2021

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of Origin and the State of the Operator under the written conditions established by those authorities, see Special Provision A331; and

(b) may be shipped as cargo on a passenger aircraft under an approval issued by the authority of the State of Origin, State of Destination and State of the Operator where the lithium ion cells or batteries that meet the quantity limits of Section II of PI 965, or in the case of urgent medical need, one consignment of lithium batteries may be transported as Class 9 (UN 3480) on passenger aircraft with the prior approval of the authority of the State of origin and with the approval of the operator, see Special Provision A201. All other lithium ion cells and batteries can only be shipped as cargo on a passenger aircraft under exemption issued by all States concerned.

Aggregate lithium content means the sum of the grams of lithium content contained by the cells comprising a battery.

The technical definition of a battery and cell, as indicated in the UN Manual of Tests and Criteria, is as follows:

Battery means two or more cells or batteries which are electrically connected together and fitted with devices necessary for use, for example, case, terminals, marking and protective devices. Units which have two or more cells that are commonly referred to as "battery packs", "modules" or "battery assemblies" having the primary function of providing a source of power to another piece of equipment are for the purposes of the UN Model Regulations and this guidance document treated as batteries. See definitions for "cell" and "single cell battery". (See also "Power Banks")

Button cell or battery means a round small cell or battery when the overall height is less than the diameter.

Cell means a single encased electrochemical unit (one positive and one negative electrode) which exhibits a voltage differential across its two terminals. Under the UN Model Regulations, UN Manual of Tests and Criteria and this guidance, to the extent the encased electrochemical unit meets the definition of "cell" herein, it is a "cell", not a "battery", regardless of whether the unit is termed a "battery" or a "single cell battery" outside of the UN Model Regulations, the UN Manual of Tests and Criteria and this guidance.

Consignment, one or more packages of dangerous goods accepted by an operator (airline) from one

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shipper at one time and at one address, receipted for in one lot and moving to one consignee at one destination address.

Net Quantity Either:

(a) the weight or volume of the dangerous goods contained in a package excluding the weight or volume of any packaging material; or

(b) the weight of an unpackaged article of dangerous goods (e.g. UN 3166).

For the purposes of this definition “dangerous goods” means the substance or article as described by the proper shipping name shown in Table 4.2, e.g. for “Fire extinguishers”, the net quantity is the weight of the fire extinguisher. For articles packed with equipment or contained in equipment, the net quantity is the net weight of the article, e.g. for “Lithium ion batteries contained in equipment”, the net quantity is the net weight of the lithium ion batteries in the package.

Overpack means an enclosure used by a single shipper to contain one or more packages and to form one handling unit for convenience of handling and stowage. Dangerous goods packages contained in the overpack must be properly packed, marked, labelled and in proper condition as required by the IATA Dangerous Goods Regulations.

The overpack must not contain packages enclosing different substances which might react dangerously with each other or packages of dangerous goods which require segregation according to Table 9.3.A. In addition, packages containing UN 3090, lithium metal batteries prepared in accordance with Section IA or Section IB of PI968 or UN 3480, lithium ion batteries prepared in accordance with Section IA or Section IB of PI 965 are not permitted in an overpack with packages containing dangerous goods classified in Class 1 other than Division 1.4S, Division 2.1, Class 3, Division 4.1 or Division 5.1.

Power Bank (power pack, mobile battery, etc.). These are portable devices designed to be able to charge consumer devices such as mobile phones and tablets. For the purposes of this guidance document and the IATA Dangerous Goods Regulations, power banks are to be classified as batteries and must be assigned to UN 3480, lithium ion batteries, or UN 3090, lithium metal batteries, as applicable. For carriage by passengers, power banks are considered spare batteries and must be individually protected from short-circuit and carried in carry-on baggage only.

Rated capacity means the capacity, in ampere-hours or milliampere-hours, of a cell or battery as measured by subjecting it to a load, temperature and voltage cut-off point specified by the manufacturer.

Note:

The following IEC standards provide guidance and methodology for determining the rated capacity:

(1) IEC 61960 (First Edition 2003-12): Secondary cells and batteries containing alkaline or other non-acid electrolytes -Secondary lithium cells and batteries for portable applications;

(2) IEC 62133 (First Edition 2002-10): Secondary cells and batteries containing alkaline or other non-acid electrolytes -Safety requirements for portable sealed secondary cells, and for batteries made from them, for use in portable applications;

(3) IEC 62660-1 (First Edition 2011-01): Secondary lithium-ion cells for the propulsion of electric road vehicles-Part1: Performance testing.

State of Origin, the country (State) in the territory of which the consignment is to first be loaded on an aircraft.

State of the Operator, the country (State) in which the operator's principal place of business is located or, if there is no such place of business, the operator's permanent residence.

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Watt-hour Rating, expressed in Watt-hours (Wh), the Watt-hour rating of a lithium cell or battery is calculated by multiplying the rated capacity in ampere-hours by the nominal voltage.

Classification (DGR 3.9.2.6)

Lithium batteries are classified in Class 9 – Miscellaneous dangerous goods as:

- UN 3090, **Lithium metal batteries**; or
- UN 3480, **Lithium ion batteries**

or, if inside a piece of equipment or packed separately with a piece of equipment to power that equipment as:

- UN 3091, **Lithium metal batteries contained in equipment**; or
- UN 3091, **Lithium metal batteries packed with equipment**; and
- UN 3481, **Lithium ion batteries contained in equipment**; or
- UN 3481, **Lithium ion batteries packed with equipment**.

Lithium battery test summary –manufacturers and subsequent distributors of cells or batteries and equipment powered by cells and batteries manufactured after 30 June 2003 must make available the test summary as specified in the UN Manual of Tests and Criteria, Revision 6 and amend. 1, Part III, sub-section 38.3, paragraph 38.3.5.

Note:

The requirement is for the manufacturer and subsequent distributors to make this test summary available. There are numerous ways this can be achieved, such as by listing the applicable summary document on the company website. There is no expectation for the shipper/distributor to provide paper copies with each consignment containing lithium batteries. The supply chain are encouraged to make use of technology to facilitate the availability of the test summary.

The following table provides details of the information required in the test summary:

Lithium cell or battery test summary in accordance with sub-section 38.3 of Manual of Tests and Criteria

The following information shall be provided in this test summary:

- (a) Name of cell, battery, or product manufacturer, as applicable.
- (b) Cell, battery, or product manufacturer's contact information to include address, phone number, email address and website for more information.
- (c) Name of the test laboratory to include address, phone number, email address and website for more information.
- (d) A unique test report identification number.
- (e) Date of test report.
- (f) Description of cell or battery to include at a minimum:
 - (i) Lithium ion or lithium metal cell or battery.
 - (ii) Mass.
 - (iii) Watt-hour rating, or lithium content.
 - (iv) Physical description of the cell/battery; and
 - (v) Model numbers.
- (g) List of tests conducted and results (i.e., pass/fail);
- (h) Reference to assembled battery testing requirements, if applicable (i.e. 38.3.3 (f) and 38.3.3 (g));
- (i) Reference to the revised edition of the Manual of Tests and Criteria used and to amendments thereto, if any; and

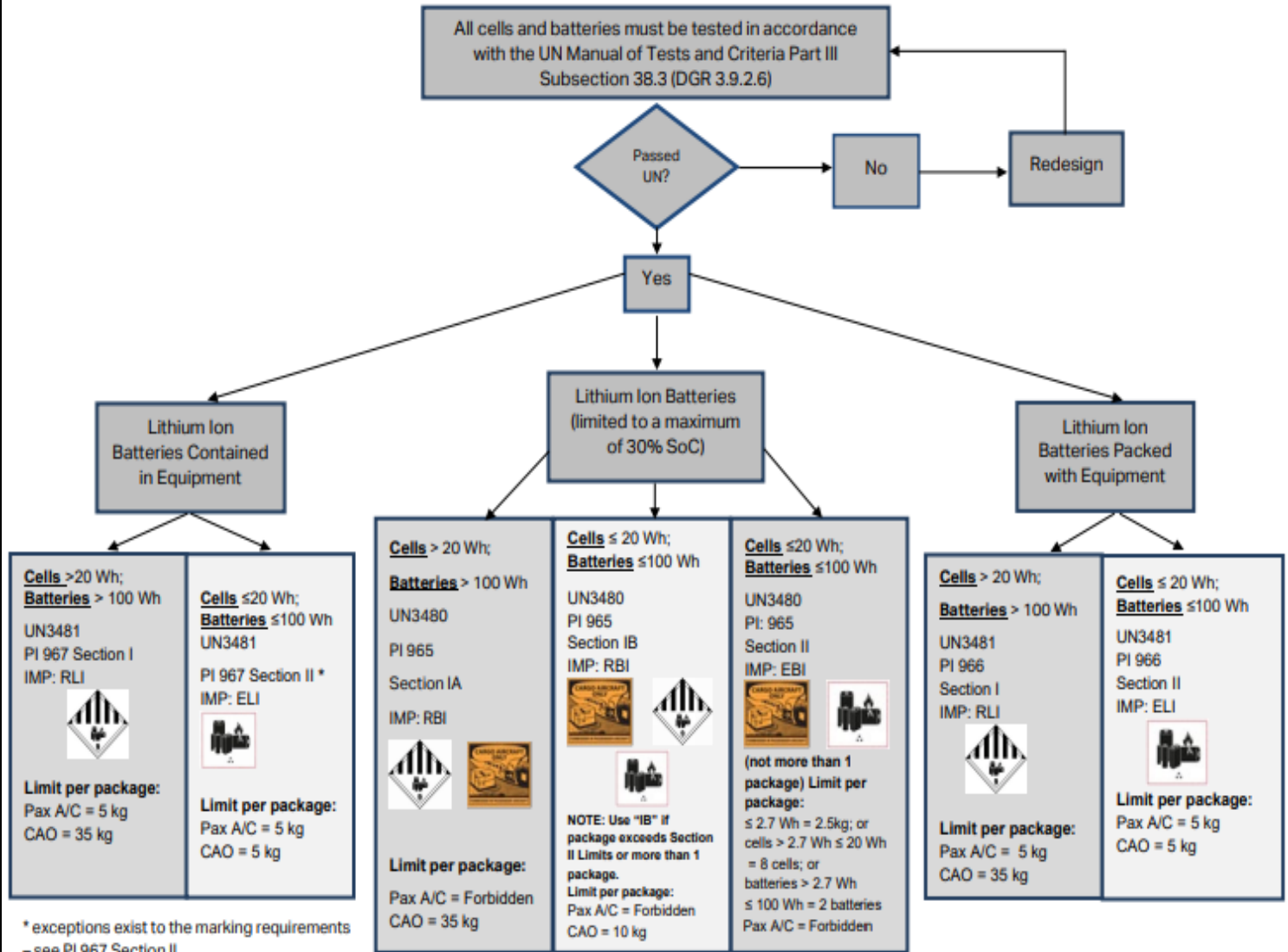
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(j) Signature with name and title of signatory as an indication of the validity of information provided.

Further information on the test summary and FAQ's is available in Part 4 of this guidance document. The following (2) classification flowcharts are intended to provide guidance on the classification for lithium ion and lithium metal batteries.

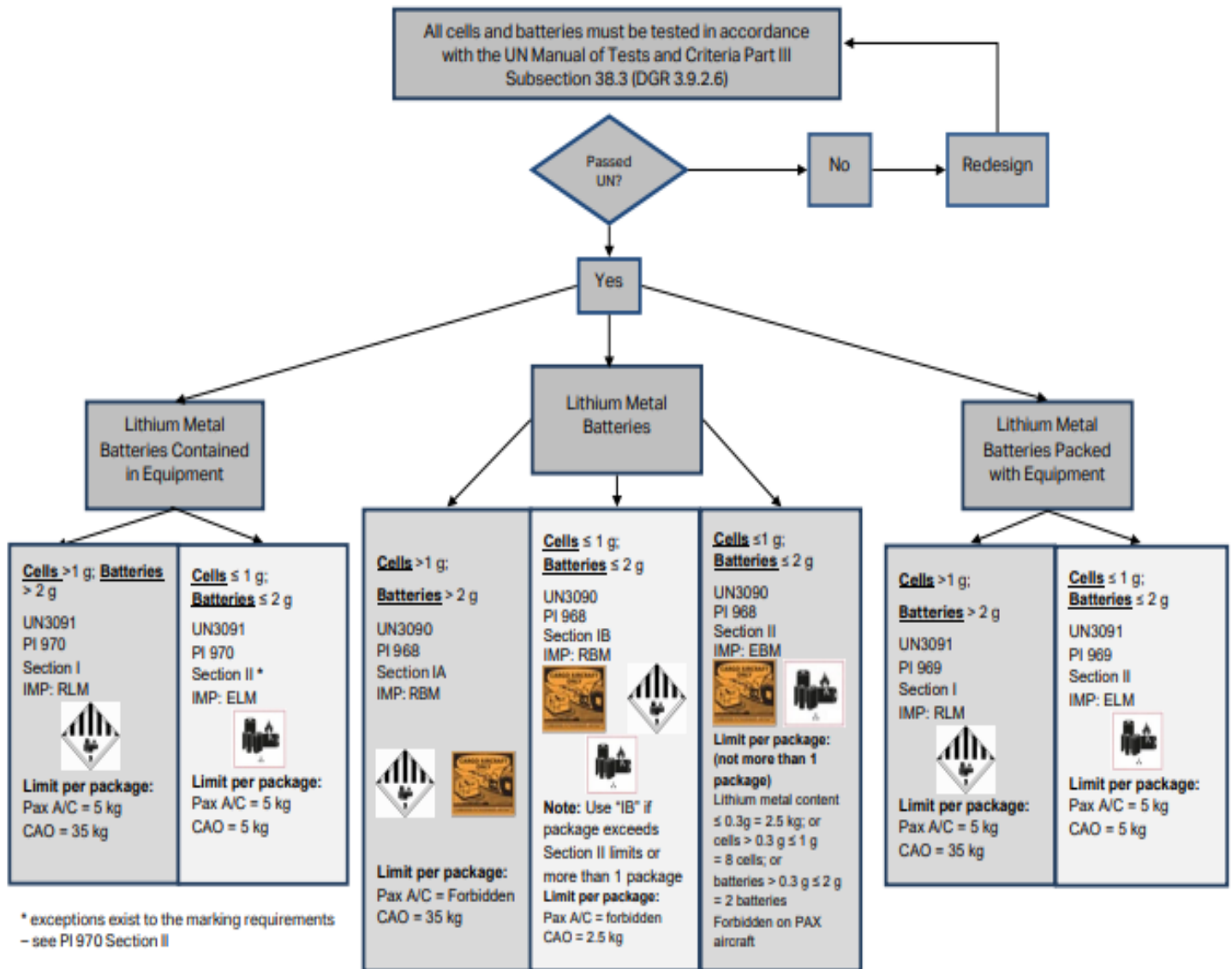
Classification Flowchart – Lithium Ion Batteries

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Classification Flowchart – Lithium Metal Batteries



PROHIBITIONS

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Lithium ion batteries

All lithium ion cells and batteries shipped by themselves (UN 3480) are forbidden for transport as cargo on passenger aircraft. All packages prepared in accordance with Packing Instruction 965, Section IA, IB and II, must bear a Cargo Aircraft Only label, in addition to other required marks and/or labels.

Lithium metal batteries

All lithium metal cells and batteries shipped by themselves (UN 3090) are forbidden for transport as cargo on passenger aircraft. All packages prepared in accordance with Packing Instruction 968, Section IA, IB and II, must bear a Cargo Aircraft Only label, in addition to other required marks and/or labels.

Restrictions

Lithium ion batteries

All lithium ion cells and batteries (UN 3480 only) must be shipped at a state of charge (SoC) not exceeding 30% of their rated capacity. Cells and/or batteries at a SoC of greater than 30% may only be shipped with the approval of the State of Origin and the State of the Operator under the written conditions established by those authorities, see Special Provision A331.

Packing Restrictions

PI 965 & PI 968 Section IA & IB

UN 3090, lithium metal batteries prepared in accordance with Section IA or Section IB of PI 968 and UN 3480, lithium ion batteries prepared in accordance with Section IA or Section IB of PI 965 must not be packed in the same outer packaging with dangerous goods classified in Class 1 (explosives) other than Division 1.4S, Division 2.1 (flammable gases), Class 3 (flammable liquids), Division 4.1 (flammable solids) or Division 5.1 (oxidizers). Packages containing cells or batteries must not be placed in an overpack with packages containing dangerous goods classified in Class 1 other than Division 1.4S, Division 2.1, Class 3, Division 4.1 or Division 5.1.

PI 965 & PI 968 Section II

Cells and batteries must not be packed in the same outer packaging with other dangerous goods. Shippers are restricted to offering one package per consignment. Packages and overpacks must be offered to the operator separately from other cargo and must not be loaded into a unit load device before being offered to the operator.

Frequently Asked Questions

Part 1 – Questions Related to Definitions

A. What are the various types of lithium batteries?

Lithium batteries fall into two broad classifications; lithium metal batteries and lithium ion batteries. Lithium metal batteries are generally non-rechargeable and contain metallic lithium. Lithium ion batteries contain lithium which is only present in an ionic form in the electrolyte and are rechargeable.

Within these two broad classifications there are many different chemistries. For example within lithium ion batteries there are lithium polymer, lithium iron phosphate (LiFePO₄), lithium air to name a few.

B. What is the difference between a lithium cell and a lithium battery?

A lithium cell is a single encased electrochemical unit consisting of one positive and one negative electrode that exhibits a voltage differential across the two terminals. A lithium battery is two or more cells electrically connected. A single cell battery is considered a cell and not a battery for the purposes of the limitations set out in the DGR.

Note:

Units that are commonly referred to as “battery packs” or “power banks” having the primary function of providing a source of power to another piece of equipment are for the purposes of these Regulations treated as batteries. This includes uninterruptible power supply (UPS) fitted with lithium

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ion batteries. Refer to the section on Definitions for complete details.

C. How are component cells connected to form a battery?

Cells in batteries may be connected in parallel, in series, or in a combination of the two. When cells are connected in series, the voltage of the battery increases but the capacity in ampere-hours (Ah) does not change. By contrast, when cells are connected in parallel the capacity in ampere-hours of the battery (Ah) increases but the voltage stays the same.

D. How do I determine the watt-hour rating for a particular lithium ion battery?

The Watt-hour (Wh) rating is a measure by which lithium ion batteries are regulated. Section I lithium ion batteries manufactured after 31 December 2011 and Section IB and Section II lithium ion batteries manufactured after 1 January 2009 are required to be marked with the Watt-hour rating on the outside case.

You can also arrive at the number of Watt-hours your battery provides if you know the battery's nominal voltage (V) and capacity in ampere-hours (Ah):

$$\text{Ah} \times \text{V} = \text{Wh}$$

Note:

If only the milliampere-hours (mAh) are marked on the battery then divide that number by 1000 to get ampere-hours (Ah) (i.e. 4400 mAh / 1000 = 4.4. Ah).

Most lithium ion batteries marketed to consumers are below 100 Watt-hours. If you are unsure of the Watt-hour rating of your lithium ion battery, contact the manufacturer.

E. What is a button cell battery?

A button cell battery is a round small cell where the overall height is less than the diameter. Button cells are often referred to as "coin" cells.

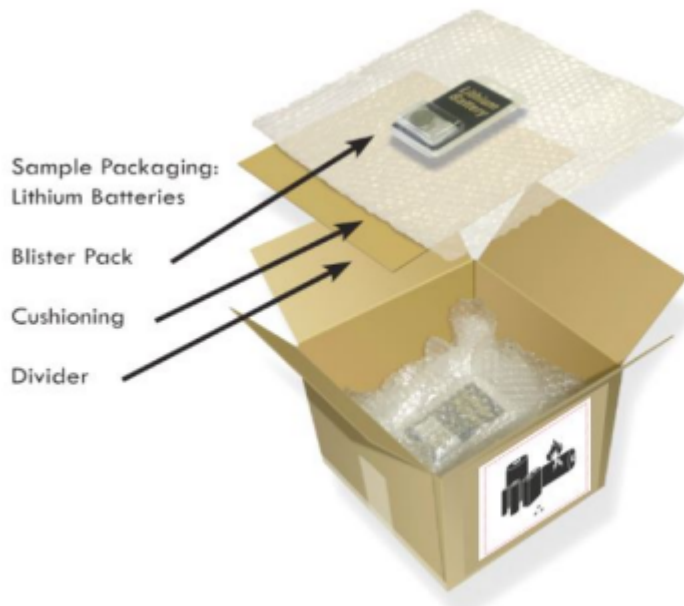
IATA Lithium Battery Guidance Document – 2021

Part 2 – Questions related to Packaging and Transport Provisions

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A. How do I safely package lithium batteries for transport?

One of the major risks associated with the transport of batteries and battery-powered equipment is short-circuit of the battery as a result of the battery terminals coming into contact with other batteries, metal objects, or conductive surfaces. Packaged batteries or cells must be separated in a way to prevent short circuits and damage to terminals. They must be packed in a strong rigid outer packaging unless when contained in equipment, the battery is afforded equivalent protection by the equipment in which it is contained. Sample packaging meeting these requirements is shown below:



B. How can batteries be effectively protected against short circuit?

Methods to protect against short circuit include, but are not limited to, the following methods:

- Packing each battery or each battery-powered device when practicable, in fully enclosed inner packagings made of non-conductive material (such as a plastic bag);
- Separating or packing batteries in a manner to prevent contact with other batteries, devices or conductive materials (e.g. metal) in the packagings; and
- Ensuring exposed terminals or connectors are protected with non-conductive caps, nonconductive tape, or by other appropriate means.

If not impact resistant, the outer packaging must not be used as the sole means of protecting the battery terminals from damage or short-circuiting. Batteries should be securely cushioned and packed to prevent shifting which could loosen terminal caps or reorient the terminals to produce short circuits.

Terminal protection methods include but are not limited to the following:

- Securely attaching covers of sufficient strength to protect the terminals;
- Packaging the battery in a rigid plastic packaging; and
- Constructing the battery with terminals that are recessed or otherwise protected so that the terminals will not be subjected to damage if the package is dropped.

C. I'm shipping using Section II of the packing instructions, what constitutes "adequate

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instruction”?

Shippers of lithium batteries prepared in accordance with Section II of the lithium battery packing instructions are not subject to the formal dangerous goods training requirements set out in DGR 1.5, however, persons preparing such shipments must be provided with “adequate instruction” as described in DGR 1.6.

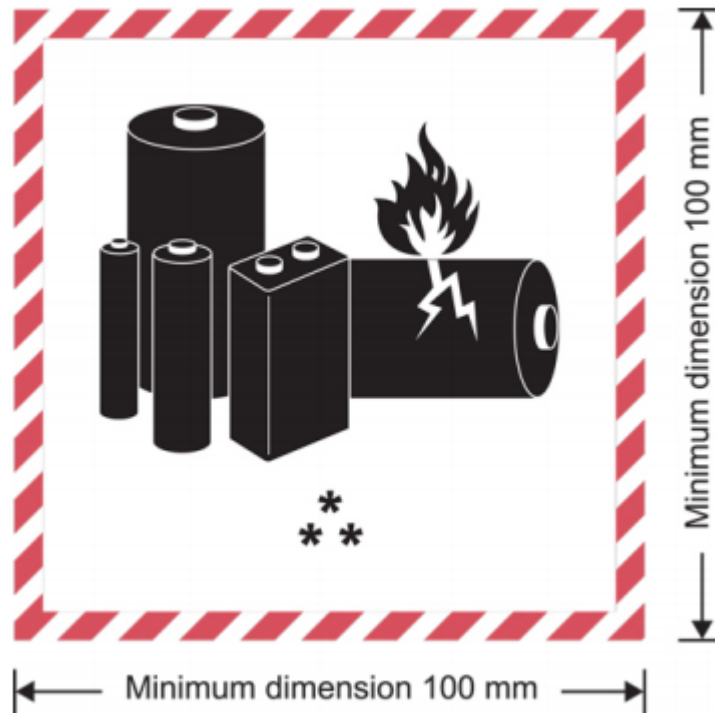
The following is offered as a starting point for an employer on what could be considered as being adequate instruction:

1. The employer must identify the different configurations of lithium batteries that they ship, i.e. lithium batteries and/or lithium batteries packed with equipment and/or lithium batteries contained in equipment; lithium metal batteries and/or lithium ion batteries.
2. The employer must document the procedures that apply to the configurations and battery types that they ship as determined in 1, above.
3. The procedures should be written up as a clear work instruction or other information that is available to all employees responsible for the preparation of lithium battery shipments.
4. All employees that are involved in the process of preparing lithium battery shipments must be taken through the procedure to ensure that they understand and can demonstrate the correct application of documented procedures for the packing, labelling, marking and documentations requirements, as applicable to their job function.
5. A record must be maintained that identifies each applicable employee and the date(s) that this instruction was provided.
6. Employees should be given periodic refresher, or at least demonstrate that they remain “adequately” instructed on how to perform the task. This should be done at least every two years or whenever the procedure is revised, or regulations are changed, whichever is sooner.
7. Companies that are involved in reverse logistics, i.e. arranging for returns of lithium batteries, lithium batteries packed with equipment or lithium batteries contained in equipment must develop a clear instruction for consumers on the process to be followed for returning products. This instruction must include packaging materials and lithium battery marks, as necessary. The instruction must also include the transport method and mode of transport that must be followed; this must include a clear statement on applicable prohibitions.

D. What does the lithium battery mark look like and when is it required?

The lithium battery mark is required as specified in the additional requirements of Section II of Packing Instructions 965, 966, 967, 968, 969 and 970. It is also required as specified in the additional requirements of Section IB of Packing Instructions 965 and 968 in addition to the Class 9 lithium battery hazard label and Cargo Aircraft Only label. The mark is as shown in Figure 7.1.C of the IATA Dangerous Goods Regulations. The border of the mark must have red diagonal hatchings with a minimum width of 5mm. The symbol (group of batteries, one damaged and emitting flame, above the UN number for lithium ion or lithium metal batteries or cells) must be black on white or suitable contrasting background. The lithium battery mark may be printed directly on the outer packaging provided that there is sufficient contrast between the elements of the lithium battery mark and the colour of the packaging material. The mark must be in the form of a rectangle or a square with minimum dimensions of 100 mm x 100 mm. If the size of the package so requires, the dimensions/line thickness may be reduced to not less than 100 mm wide x 70 mm high.

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* Place for UN number(s), i.e. UN 3090, UN 3091, UN 3480 and/or UN 3481, as applicable. The UN number(s) indicated on the mark should be at least 12 mm high.

** Place for telephone number

Note:

The telephone number should be of a person knowledgeable about the shipment but is not intended to be for the purposes of obtaining immediate emergency response guidance and is therefore not required to be monitored at all times that the package is in transit. It is acceptable for the number to be monitored during the company's normal business hours in order to provide product-specific information relative to the shipment. However, it also is acceptable to use an emergency response, 24-hour phone number on the lithium battery mark.

ΔE. If I have smaller packages, can I use a smaller lithium battery mark?

Where the packages are of dimensions such that they cannot bear the full-size lithium battery mark, the mark dimensions may be reduced to 100 mm wide × 70 mm high. The design specifications remain otherwise the same.

Where any face of a package is large enough to bear the full-size lithium battery mark, the full-size mark must be used.

F. When is a lithium battery mark not required on the package?

A lithium battery mark must not be affixed to packages prepared in accordance with Section IA of Packing Instructions 965 and 968 and Section I of Packing Instructions 966, 967, 969 and 970. A lithium battery mark is not required for packages prepared in accordance with Section II of PI 967 or PI 970 containing only button cell batteries installed in equipment (including circuit boards) or consignments of two packages or less where each package contains no more than four cells, or two batteries installed in equipment.

Note:

The Air Waybill is required to contain the statements "Lithium [ion or metal] batteries in compliance with Section II of PI9XX" when the lithium battery mark is affixed to the package(s).

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G. Section II in Packing Instructions 967 and 970 states that “the lithium battery mark is not required on consignments of two packages or less where each package contains no more than four cells, or two batteries installed in equipment.” What is the intent of this provision?

This provision is to require, where there are more than two packages in the consignment, that each package bears the lithium battery mark, and therefore the air waybill has the compliance statement e.g. “Lithium [ion or metal] batteries in compliance with Section II of PI 9xx [67 or 70]”.

The provision continues to allow for small consignments of one or two packages containing no more than four cells or two batteries installed in equipment per package to move without the lithium battery mark and therefore without the compliance statement on the air waybill.

Note:

A consignment is one or more packages of dangerous goods accepted by an operator (airline) from one shipper at one time and at one address, receipted for in one lot and moving to one consignee at one destination address.

H. I have an MP3 player that contains one single-cell lithium ion battery. Do I have to mark the shipping box that contains each MP3 player? What if I place five MP3 players in a shipping box? Does this require the lithium battery mark?

For packages of a single MP3 player, no lithium battery mark would be required since you can place up to 4 of these single-cell batteries in a box without applying the lithium battery mark on the outer box. In the case where 5 MP3 players are in a shipping package, a lithium battery mark on the shipping package is required.

I. Can a single lithium battery mark be used to identify that both lithium metal and lithium ion batteries are contained inside the package?

Yes. The mark may bear all applicable UN numbers, e.g. UN 3091, UN 3481, to identify that the package contains lithium metal batteries packed with or contained in equipment and lithium ion batteries packed with, or contained in equipment.

J. What are the requirements for the telephone number on the lithium battery mark?

The telephone number should be of a person knowledgeable about the shipment but is not intended to be for the purposes of obtaining immediate emergency response guidance and is therefore not required to be monitored at all times that the package is in transit. It is acceptable for the number to be monitored during the company's normal business hours in order to provide product-specific information relative to the shipment. However, it also is acceptable to use an emergency response, 24-hour phone number on the lithium battery mark.

K. Must the lithium battery mark be placed on the same face of the package with the Class 9 hazard label and/or Cargo Aircraft Only label?

No, the lithium battery mark does not have to be on the same face of the package with these labels. It may be placed on a different face. However, if the package is of sufficient size all required marks and labels should be applied to one face of the package.

L. For the purposes of the lithium battery packing instructions, what is considered the "package"?

The package is the complete product of the packing operation that satisfies the requirements of the packing instruction and in a manner ready to be presented for transport (shipper/consignee information, hazard communication, etc.). The package may contain multiple batteries or pieces of equipment provided the limitations set out in the applicable packing instruction are not exceeded. The package must be marked and labelled as required by the packing instruction. A single package may be offered for transport, or one or more packages may then be placed into an overpack for ease

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of handling or transport purposes. When an overpack is used, the package marks and labels must be duplicated on the overpack unless the marks and labels required on individual packages are visible or are not required by the packing instruction (i.e. not more than 4 cells or 2 batteries when contained in equipment and no more than two packages in the consignment).

M. Does the IATA DGR require a MSDS or SDS containing the UN test data?

No. The IATA DGR does not require a safety data sheet (SDS) when offering lithium batteries for transport.

Notes:

1. A SDS is not a transport document. A SDS is only required for the supply and use of a substance or mixture meeting the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) classification criteria. GHS does not include provisions for manufactured articles.
2. Manufacturers and subsequent distributors of lithium cells and batteries and equipment with installed lithium cells or batteries must make available a test summary that identifies that the cell and battery types have passed the applicable UN 38.3 tests, see Part 4 of this document.

N. Under Packing Instructions 966 and 969, it states that “The maximum number of batteries in each package must be the minimum number required to power the equipment, plus two spare sets. A “set” of cells or batteries is the number of individual cells or batteries that are required to power each piece of equipment”. If a package contains 4 power tools (each tool contains 1 lithium ion battery), can 2 extra lithium ion batteries be placed in the package for each piece of equipment for a total of 12 batteries?

Yes, providing you do not exceed the maximum net quantity for the relevant section of the packing instruction and the chosen aircraft type. The 12 batteries reflect two spare sets (8) for each of the 4 power tools in the outer package plus one each to power the device (4).

O. May lithium battery packages be placed in an overpack in accordance with the IATA Dangerous Goods Regulations?

Yes, but there are segregation requirements that need to be considered for certain other classes of dangerous goods. UN 3090, lithium metal batteries prepared in accordance with Section IA or Section IB of PI 968 and UN 3480, lithium ion batteries prepared in accordance with Section IA or Section IB of PI 965 are not permitted in the same outer packaging with dangerous goods classified in Class 1 other than Division 1.4S, Division 2.1, Class 3, Division 4.1 or Division 5.1. The overpack may also contain goods not subject to the Regulations provided there are no packages enclosing different substances which might react dangerously with each other. An overpack must be marked with the word “overpack” and must be labelled with the lithium battery mark (DGR Figure 7.1.C), unless the mark(s) on the package(s) inside the overpack are visible or not required by the Packing Instruction.

In addition, the word “overpack” must be marked on overpacks containing packages transported in accordance with Section I of the applicable Packing Instructions (i.e. bearing the Class 9 lithium battery hazard label).

Note:

For Section II of PI 965 and PI 968 the shipper is limited to one (1) package per consignment (shipment) and no more than one (1) package complying with the requirements of Section II may be placed in an overpack. This overpack may also contain packages of non-dangerous goods and/or packages prepared in accordance with Section IA and/or IB of PI 965 and/or PI 968 and/or packages of other dangerous goods, excluding packages containing dangerous goods classified in Class 1 other than Division 1.4S, Division 2.1, Class 3, Division 4.1 or Division 5.1.

P. Do the quantity limits shown in the lithium battery packing instructions apply to overpacks containing lithium batteries?

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The quantity limits shown in the packing instructions refer to the maximum net weight of the lithium cells or batteries that is permitted in each package. Provided each package remains within the limit specified in the packing instruction, there are no limits specified for an overpack.

Note:

For Section II of PI 965 and PI 968 the shipper is limited to one (1) package per consignment (shipment) and no more than one (1) package complying with the requirements of Section II may be placed in an overpack. This overpack may also contain packages of non-dangerous goods and/or packages prepared in accordance with Section IA and/or IB of PI 965 and/or PI 968 and/or packages of other dangerous goods, excluding packages containing dangerous goods classified in Class 1 other than Division 1.4S, Division 2.1, Class 3, Division 4.1 or Division 5.1.

Q. Packing Instructions 966 and 969 Section II include a requirement for a 1.2 metre drop test. What portion or portions of the package are subject to this test?

The completed package containing batteries as prepared for transport in accordance with the relevant packing instruction must be capable of withstanding the 1.2 m drop test. This could apply to a package solely containing batteries that is packaged in full compliance with the provisions of the packing instruction (to include the 1.2 m drop test capability requirement) and is then packed with equipment in a strong rigid outer packaging and offered for transport (see item 2N for additional information related to overpacks). Or, it could apply to a package that includes batteries properly packed in inner packaging and equipment or other non-dangerous goods that are placed in a strong rigid outer packaging. The package that includes both the inner packaging containing batteries and the equipment must comply with the packing instruction to include meeting the capability to pass the 1.2 m drop test.

ΔR. How do I transport prototype lithium cells and batteries that have not passed the UN 38.3 Tests?

Pre-production prototypes of lithium batteries or cells, when these prototypes are transported for testing, or low-production runs (i.e. annual production runs consisting of no more than 100 lithium cells and batteries) of lithium cells or batteries that have not been tested to the requirements in subsection 38.3 of the UN Manual of Tests and Criteria may be transported aboard cargo aircraft, if approved by the appropriate authorities of the State of origin and the State of the operator and the requirements in Packing Instruction 910 of the Supplement to the Technical Instructions are met (see Special Provision A88).

The appropriate authority of the State of origin should provide details of PI 910 as part of the approval process.

S. Can I ship recalled, damaged or non-conforming cells or batteries?

Lithium batteries, identified by the manufacturer as being defective for safety reasons, or that have been damaged, that have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport by air (e.g. those being returned to the manufacturer for safety reasons). This applies also to lithium cells or batteries installed inside equipment such as mobile phones, laptops or tablets where the devices are subject to recall due to the safety concerns of the lithium cell or battery installed in the device, see Special Provision A154 in the DGR.

Batteries which have some other defective feature (e.g. LEDs not showing charge, incorrect model number on label, or batteries not holding enough charge) could still be shipped by air. Also, laptops being returned may not have a defective battery, it may not meet the needs of the customer, may be defective itself (but not the battery), etc. In these situations air transport would be permitted. The battery or equipment manufacturer should be contacted to determine the appropriate shipping method.

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T. How do I protect against “inadvertent activation”?

When batteries are contained in equipment, the equipment must be packaged in a manner that prevents unintentional activation or must have an independent means of preventing unintentional activation (e.g. packaging restricts access to activation switch, switch caps or locks, recessed switches, trigger locks, temperature sensitive circuit breakers, etc.). This requirement does not apply to devices which are intentionally active in transport (RFID transmitters, watches, sensors etc.) and which are not capable of generating a quantity of heat sufficient to be dangerous to packaging or personal safety.

U. What is the maximum weight of batteries per package for fully regulated batteries contained in equipment (Section I)?

The maximum weight is 5 kg of lithium batteries per package for passenger and cargo aircraft and 35 kg of lithium batteries per package for cargo aircraft only. The net quantity shown excludes the weight of the equipment:

	Net Quantity per Package Passenger Aircraft	Net Quantity per Package Cargo Aircraft Only
Lithium Ion & Lithium Metal cells and batteries contained in equipment	5 kg	35 kg

V. Do I need to declare a gross weight or a net weight for lithium batteries (Section I)?

All lithium battery shipments, including when packed with or contained in equipment, must be declared by the net weight of lithium cells or batteries contained in the package as per the definition of “net quantity”, see page 3.

W. I have 2 kg of 2.7Wh cells and 2 batteries that meet the Section II limitations; can I place them in one package?

No. The limits found in Table 965-II and Table 968-II cannot be combined. Shippers are not permitted to ship more than one package of Section II PI 965 at one time. Therefore quantities of lithium ion cells or batteries that exceed the limit for one package must be shipped as Section IB of the applicable packing instruction.

X. I am shipping Section IB lithium [ion or metal] batteries; do I need dangerous goods training?

Yes. All the provisions of the Dangerous Goods Regulations apply to shipments of Section IB batteries except the references listed in Section IB. Therefore, dangerous goods training as indicated in Subsection 1.5 of the Dangerous Goods Regulations is required.

Y. What are the additional marking requirements for a package prepared under Section IB of Packing Instruction 965 and 968?

Because all of the requirements of the dangerous goods regulations apply other than the requirement to use UN specification packaging, each package must be marked with:

- the UN Number preceded by “UN” and the Proper Shipping Name (DGR 7.1.4.1 (a));
- the shipper and consignee address (DGR 7.1.4.1 (b));
- in addition, the net weight as required by (DGR 7.1.4.1(c)) must be marked on the package; and
- the lithium battery mark (see item 2D) in addition to the Class 9 lithium battery hazard label and Cargo Aircraft Only label.

Note:

When using an overpack, each package must be marked in accordance with the Regulations and then, when placed in an overpack, marked as required by DGR 7.1.7.

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Z. I am shipping perishable cargo with lithium battery powered temperature or data loggers; do I need to follow the Dangerous Goods Regulations?

Yes. All the applicable provisions for lithium batteries will need to be followed by the shipper of such devices, including the limitations for devices that are “active” (on) during transport.

Note:

1. The IATA *Temperature Control Regulations* (TCR) also apply to such shipments.
2. Further information on active devices in the guidance document that is posted on the IATA website – www.iata.org/pharma

AA. Do I need to include an additional document or statement to certify that my lithium ion batteries are at no more than 30% SoC?

No. For lithium ion batteries shipped in accordance with Section IA or Section IB of PI 965, which must be on a Shipper's Declaration, the Shipper's Declaration includes a certification statement “I declare that all of the applicable air transport requirements have been met.”

By signing the Shipper's Declaration the shipper is making a legal statement that all the applicable provisions of the DGR have been complied with, which includes that the lithium ion batteries are at no more than 30% SoC.

For Section II of PI 965, the provision of the compliance statement “lithium ion batteries in compliance with Section II of PI 965” on the air waybill will be taken by regulatory authorities as a legal declaration of compliance.

BB. I have lithium ion batteries packed with equipment (PI 966, Section I) where the lithium ion batteries are packed in a UN specification fibreboard (4G) box and then that box is packed with the equipment in a fibreboard outer packaging. Is this an overpack?

No, Section I of PI 966 (and also PI 969) allows two methods of having lithium batteries packed with equipment. Either:

- (a) the lithium batteries are packed into a UN specification packaging meeting Packing Group II performance standards and then packed with the equipment in an outer packaging; or
- (b) the lithium batteries and the equipment are packed into a UN specification packaging meeting Packing Group II performance standards.

In either case what is presented for transport is a “package” and not an overpack.

CC. Does the definition of “consignment” apply to the house air waybill (HAWB) or to the master air waybill (MAWB)?

The use of HAWB or MAWB has no direct relationship to what is a “consignment”. For example a MAWB may have multiple consignments where each of the consignments are from separate shippers, or are from one shipper but to separate consignees, or the MAWB may be just be a single consignment from one shipper to one consignee.

The following limitations apply to consignments:

1. a shipper is not permitted to consign more than one package of Section II, PI 965 or PI 968; and
2. a shipper is not permitted to consign more than two packages of lithium batteries contained in equipment under Section II of PI 967 and PI 970 where there are no more than 4 cells or 2 batteries in the package without the application of the lithium battery mark on the package.

The objective of these two conditions is to:

1. restrict the number of packages of just lithium batteries that are carried by air that are not subject to the dangerous goods acceptance check and that are not shown on the written information to

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the pilot-in-command. The intention here is to force shippers of multiple packages to declare these on a Shipper's Declaration for Dangerous Goods and therefore make the consignment subject to the full checks for air transport.

2. require appropriate hazard communication on packages and on the air waybill where a shipper has more than two packages of lithium batteries contained in equipment.

Notes:

1. *This does not mean that every retail "package" must bear the lithium battery mark. A shipper may place multiple retail boxes, each containing a lithium battery meeting Section II installed in equipment, into an outer packaging to form the package for air transport. There is no limit on the number of individual retail boxes that can be placed into the outer packaging, except that a "package" must not contain more than 5 kg net weight of lithium batteries. Each such package must bear the lithium battery mark and when an air waybill is used, the air waybill must show the applicable compliance statement, e.g. "lithium ion batteries in compliance with section II of PI 967".*

2. *Shippers or freight forwarders should not try to split a consignment across multiple air waybills to try to avoid the application of the lithium battery mark where there are more than two packages with lithium batteries contained in equipment under Section II in a consignment.*

DD. Can I ship 2 mobile phones in the same package with 2 power banks using the Section II provisions?

No, the power banks are classified as UN 3480, Lithium ion batteries. Under the provisions of PI965 Section II other dangerous goods are not permitted in the same outer packaging. The power banks are also not considered as "spares" for the purposes of PI 966 and Lithium ion batteries packed with equipment.

EE. What is the correct classification for hearing aids or Bluetooth® "earbuds" that are shipped in a charging case or with a charging case in the same package?

Bluetooth® earbuds or hearing aids that are shipped in or with a charging case should be classified as "UN3481, Lithium batteries packed with equipment" and packaged in accordance with PI 966. If the charging case is shipped without the earbuds, the case must be classified as "UN3480, Lithium ion batteries" and packaged in accordance with PI 965.

FF. Can a package containing an AC adaptor or charger and lithium ion batteries be classified as UN 3481, Lithium ion batteries packed with equipment?

No, for the purpose of Packing Instruction 966, "equipment" means the device or apparatus for which the lithium ion batteries will provide electrical power for its operation. When a package contains only the AC adaptor or charger and lithium ion batteries, the package must be classified as "UN 3480, Lithium ion batteries" and packaged in accordance with PI 965.

Part 3 – Questions Related to Design Type Testing Provisions

A. Where can I find requirements related to testing of battery design types?

The UN Manual of Tests and Criteria sets out specific tests that must be conducted on each lithium cell or battery design type. Each test is intended to either simulate a common transportation occurrence such as vibration or changes in altitude or to test the integrity of a cell or battery. You may obtain a copy of these testing requirements via the following website:

http://www.unece.org/trans/danger/publi/manual/manual_e.html

B. What constitutes a design change requiring renewed design type testing?

The following provisions are taken from the 7th revised edition of the UN Manual of Tests and Criteria, paragraph 38.3.2.2.

A cell or battery that differs from a tested design by:

- (a) For primary cells and batteries, a change of more than 0.1 g or 20% by mass, whichever is greater, to the cathode, to the anode, or to the electrolyte;
- (b) For rechargeable cells and batteries, a change in Watt-hours of more than 20% or an increase in

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voltage of more than 20%; or

(c) A change that would materially affect the test results.

shall be considered a new type and shall be subjected to the required tests.

Note: the type of change that might be considered to differ from a tested type, such that it might lead to a failure of any of the test results, may include, but is not limited to:

- (a) A change in the material of the anode, the cathode, the separator or the electrolyte;*
- (b) A change of protective devices, including the hardware and software;*
- (c) A change of safety design in cells or batteries, such as a venting valve;*
- (d) A change in the number of component cells;*
- (e) A change in connection mode of component cells;*
- (f) For batteries which are to be tested according to T.4 with a peak acceleration less than 150 gn, a change in the mass which could adversely impact the result of the T.4 test and lead to a failure.*

In the event that a cell or battery type does not meet one or more of the test requirements, steps shall be taken to correct the deficiency or deficiencies that caused the failure before such a cell or battery type is retested.

C. What edition of the UN Manual of Tests and Criteria must be used when testing new lithium cell or battery designs

If a newly produced lithium cell or battery design is being tested for the first time, then the edition of the UN Manual of Tests and Criteria in effect at the time that the cell or battery designs are first tested must be used. For example, a new lithium ion battery design is produced for the first time in March 2019. This battery must be tested in accordance with the provisions of the 6th revised edition and amendment 1 of the UN Manual of Tests and Criteria as this is the edition in effect, see Note under DGR 1.1.1 (1.1 of the LBSG).

Part 4 – Questions Related to the Lithium Battery Test Summary¹

A. Does the test summary apply to equipment containing lithium cells or batteries?

Yes, the test summary applies to all lithium cells and batteries, including button cells, irrespective of whether they are shipped alone or contained in equipment.

B. Can multiple batteries/manufacturers/products be listed on one report?

Yes, it is acceptable to have a single document that addresses multiple batteries / manufacturers / products, provided all required information is stated. For example, a tablet manufacturer may purchase lithium ion batteries from three different battery manufacturers. The test summary for the product will therefore list batteries and all related information (e.g. Watt-hours, test labs) from the three battery manufacturers without naming the manufacturer due to confidentiality issues.

C. Is it acceptable to list the various test houses, tests and range of revisions tested to for the UN 38.3 revision and amendments?

Yes, it is acceptable to have multiple test houses and their addresses, email information, etc. listed provided all required information is stated. The test house is not required to be aligned to a specific battery or product on the test summary when the test summary covers multiple batteries/products. It is required to have the test report number and date of test for each cell/battery/product listed on the test summary.

D. What is meant by physical description of cell or battery?

A physical description is intended to provide a check for the person requesting the test summary to know that it applies to the cell/battery/product covered by the test summary, i.e. if a cellular phone is the product being shipped, the invoice description or marketing name of the product as the physical description could be used on the test summary.

E. What does availability of report mean: “When requested?”

The test summary must be made available upon request. Any individual or entity in the supply chain

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may request the test summary, e.g. regulator, consumer, or transport provider.

F. Can the test summary provider require a requestor to obtain the document from a website?

Yes, it is acceptable for the provider to require the requestor to obtain a document electronically from a provider's website. The provider must ensure that the cell/battery/product has appropriate identifiers to align to the test summary.

G. If a manufacturer considers their suppliers, test house and battery data confidential and competitive information, how would test summary compliance be achieved?

All 10 data elements and listed subsets of information are required to be on the test summary. As indicated above, the test house information may be listed to cover a range of products.

H. If a test summary is requested by a dangerous goods enforcement agency, how quickly must the test summary be made available? For example, would a manufacturer be expected to immediately produce a test summary or provide it within a certain amount of time (e.g. 72 hours)

Due to the large volume of lithium batteries and lithium battery powered products that are shipped daily, manufacturers and distributors should not be expected to immediately provide a test summary for every product they ship. Manufacturers and distributors should be provided a reasonable amount of time to provide the required test summary.

I. Would manufacturers and distributors of battery powered vehicles (UN3171) and hybrid vehicles containing a lithium battery (UN3166) be expected to provide a test summary?

Yes. The test summary requirement applies to manufacturers and distributors of lithium cells and batteries. Therefore, a test summary must be made available for battery-powered vehicles and other vehicles containing lithium batteries.

J. Is there a mandated format for the test summary that manufacturers and distributors must follow?

No. Manufacturers and distributors may compile the information required in the test summary using any format. Below are 3 examples of a test summary:

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Example 1 of a Lithium Ion Battery Test Summary

LITHIUM CELLS OR BATTERIES TEST SUMMARY IN ACCORDANCE WITH SUB-SECTION 38.3 OF UN MANUAL OF TESTS AND CRITERIA

Revision Date:

March 27, 2017

Revision Number:

001

Product Manufacturer: Beta Bell Phone Company
123 Beta Bell Lane
Bellweather, Arizona 99999

Telephone: 800-999-4545
Email: beatabell@gmail.com
Web: www.betabell.com

Beta Bell's product lithium ion cells and batteries have been successfully tested and comply with the UN Model Regulations, Manual of Test of Criteria, Part III, subsection 38.3.

PERFORMED TESTS			RESULTS
38.3.4.1	T1	Altitude Simulation	Pass
38.3.4.2	T2	Thermal Test	Pass
38.3.4.3	T3	Vibration	Pass
38.3.4.4	T4	Shock	Pass
38.3.4.5	T5	External Short Circuit	Pass
38.3.4.6	T6	Impact / Crush	Pass
38.3.4.7	T7	Overcharge	Pass
38.3.4.8	T8	Forced Discharge	Pass

The UN38.3 tests were performed by one of the following test houses and were tested to UN Manual Test and Criteria Revision 3 Amendment 1 or subsequent revisions or amendments.

Test House A 123 Alpha Street Shanghai China E: testhousea@gmail.com T: 086-0310-04566 U: www.testhousea.com	Test House C 123 Chi Street Shanghai China E: testhouseC@gmail.com T: 086-0310-04588 U: www.testhousec.com
Test House B 123 Beta Street Shanghai China E: testhouseb@gmail.com T: 086-0310-04577 U: www.testhouseb.com	Test House D 123 Delta Street Shanghai China E: testhoused@gmail.com T: 086-0310-04599 U: www.testhoused.com

LITHIUM CELLS OF BATTERIES TEST SUMMARY IN ACCORANCE WITH SUB-SECITON 38.3 OF UN MANUAL OF TESTS AND CRITERIA

Product Test Information

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Model numbers	Physical Description	Battery weight (kg) Mass	Wh rating	Test report number	Test report date
BB12389	Li ion polymer Cell phone Alpha A	0.035	6.25	RTS123, NMD456PO98 N4569-2 BN890A	03.02.2010 03.07.2010 03.10.2010 03.15.2010
BB12450	Li ion polymer Cell Phone Beta B	0.090	6.76	TYh765-KL-09 567-908HGT	08.09.2012 09.01.2012
BB67896	Li ion polymer Cell phone Chi C	0.026	5.25	89065RT-90 NHI-kl09	07.07.2010 07.04.2010
etc					
etc					
etc					
etc					
etc					
etc					

Signature

Name, Title

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Example 2 of a Lithium Ion Battery Test Summary	
UN38.3 Lithium Battery Test Summary for GreenTech	
Tablet Model No. T54321	
1	Battery Manufacturer <i>Confidential and Proprietary GreenTech Information</i>
2	Product Manufacturer GreenTech 123 Main Street Annapolis, MD 21012 888.111.2345 contact@greentech.com ; www1.greentech.com
3	UN38.3 Test Lab Bob's Battery Test Lab 1600 Pennsylvania Ave Smithfield, VA 12345 Phone 211.789.2345 bob@testlab.org ; www.testlab.org
4	Test Report Number Liion621345
5	Date of Test Report April 1, 2017
6	Description of Cell or Battery 7.4 V, 1800 mAh, 13.32 Wh Li ion battery, Model No. P1789 Small, rectangular plastic case, 100 grams
7	UN38.3 Tests Performed and Successfully Passed T.1, T.2, T.3, T.4, T.5, AND T.7 (Note that T.6 and T.8 are not applicable to batteries.)
8	Assembled Battery Testing Requirement Non Applicable
9	Edition of UN Manual of Tests and Criteria Used Sixth Revised Edition
10	Name and Title of Signatory <i>Jason Alexander</i> Jason Alexander GreenTech Staff Engineer

Example 3 of a Lithium Metal Cell Test Summary

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LITHIUM CELLS OR BATTERIES TEST SUMMARY IN ACCORDANCE WITH SUB-SECTION 38.3 OF MANUAL OF TESTS AND CRITERIA

BATTERY TRANSPORTION INFORMATION

Name of cell, battery or product manufacturer, as applicable: Item Number : 4A23123 Item Name : Battery Alpha Prime Item Description : Lithium Metal Battery (Primary)		Cell, battery or product manufacturer's contact information to include address, phone number, email address and website for more information: Manufacturer XYZ 3480 Lithium cells Rd Lithiumville, CA 98765 United States (+1-987) 987-6543 email@xyz.com	
Name of the test laboratory to include address, phone number, email address and website for more information: Test Lab A 1919 Alpha St Testcity, IA 55555 USA (+1-333) 555-1122 email@testlab.com		A unique test report identification number: ABC12345	Date of the test report: 03-Apr-2013
Description of cell or battery to include at a minimum: Lithium ion or Lithium metal cell or battery; Mass; Watt-hour rating, or lithium content; Physical description of the cell/battery; and Model numbers: Battery used in consumer power tools Cell/battery Type : Lithium metal Cell or Battery : Cell LC or W/h rating : LC (g): >0.3 <= 1 Cell or Battery Weight : 12.00 Grams		List of tests conducted and results (i.e., pass/fail): Test T.1: Altitude Simulation : Pass Test T.2: Thermal Test : Pass Test T.3: Vibration : Pass Test T.4: Shock : Pass Test T.5: External short circuit : Pass Test T.6: Impact/Crush : Pass Test T.7: Overcharge : Not applicable Test T.8: Forced discharge : Pass Testing additional comments:	
Reference to assembled battery testing requirements, if applicable (i.e., 38.3.3(f) and 38.3.3(g)): Not applicable	Reference to the revised edition of the Manual of Tests and Criteria used and to amendments thereto, if any: Revision 5	For air transport only: Does the cell or battery comply with the 30% State of Charge? Not Applicable	
PRODUCT CLASSIFICATION FOR TRANSPORT (According to UN - DGP)			
UN Classification: UN 3090	Proper Shipping Name: Lithium metal batteries		
Signature with name and title of signatory as an indication of the validity of information provided: Wayne Purple Testing Manager		This document remains valid as long as no changes, modifications, or additions are made to the model(s) described in this document, after being transported from a Manufacturer XYZ facility. The model(s) has (have) been classified according to the applicable transport regulations and the UN Manual of Tests and Criteria as of the date of the certification. The model(s) must be packaged, labeled, and documented according to country and other international regulations for transportation.	
Date document was generated: 04-Mar-2017 11:49 am			

¹ Information in Part 4 kindly provided by PRBA – The Rechargeable Battery Association, RECHARGE the Advanced Rechargeable & Lithium Batteries Association and the Medical Device Battery Transport Council

Additional Information

Further information can be found here:

<http://www.iata.org/lithiumbatteries>

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Information for passengers can be found here:

<http://www.iata.org/dgr-guidance>

www.faa.gov/go/safecargo

You may also contact the airline of your choice or your national civil aviation authority if you have any further concerns about travelling with lithium metal or lithium ion batteries.

You can also contact the IATA Dangerous Goods Support team if you have questions or concerns which may not have been addressed in this document: dangood@iata.org.

Abbreviations, Acronyms, Symbols

The following abbreviations, acronyms and symbols are used throughout the document.

Abbreviation	Meaning
A/C	Aircraft
Li Ion (li-ion)	Lithium ion
Li batt.	Lithium battery
Pax	Passenger
Acronym	Meaning
CAO	Cargo Aircraft Only
DGD	Shipper's Declaration for Dangerous Goods
DGR	IATA Dangerous Goods Regulations
LBSG	IATA Lithium Battery Shipping Guidelines
Symbol	Meaning
≥	Equal to or greater than
≤	Equal to or less than
>	Greater than
<	Less than
□	Addition of an item
Δ	Change of an item
⊗	Deletion of an item

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Orders with US as the origin from warehouses, Supplier.

UPS GUIDELINES

UPS Weight and Size Restrictions:

- UPS has established specific weight and size limits for the packages that you send with all UPS services. The restrictions below only pertain to individual packages.
- Note: UPS PARCEL DOES NOT ACCEPT PALLETIZED OR CRATED SHIPMENTS.
 - Packages can be up to 150 lbs (70 kg)
 - Packages can be up to 165 inches (419 cm) in length and girth combined
 - Packages can be up to 108 inches (270 cm) in length
 - Packages more than 70 lbs (31.5 kg, 25 kg within the EU) require a special heavy-package label.
- The limits listed above apply to most packages and destinations, but there are some variances because of different local restrictions in some countries. Please contact UPS for more details.
- It is the responsibility of the shipper to be aware of the most current UPS weight and size restrictions. Please refer to UPS.com if you are not certain of current restriction.
- All manifested shipments must include dimensions.
- Parcel shipments valued over \$50,000 should not be shipped via UPS.
- Contact transportation@brightspeed.com