



The Specialist in Electronic Component Distribution

TTI Global

Supplier Quality Manual

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Revision History

Revision	Date
Initial	June 1, 2012
A1	April 24, 2013
B1	April 29, 2016
C	October 11, 2017
D	December 31, 2024



The Specialist in Electronic Component Distribution

Contents

1	INTRODUCTION	5
1.1	About TTI, Inc.....	5
1.2	Purpose and Values Statement	5
1.3	Trade Suppliers – Subcontractors – Contracted Suppliers	6
1.4	Contract Terms and Conditions	6
1.5	Ethics	6
2	MINIMUM SUPPLIER REQUIREMENTS.....	7
2.1	Quality Management System Requirements	7
2.2	Compliance with Laws and Regulations	7
2.3	Production Release & Certified Materials.....	7
2.3.1	PPAP – Production Part Approval Process	7
2.3.2	IMDS International Material Data System.....	7
2.3.3	FAI First Article Inspection.....	7
2.3.4	Test Data.....	8
2.3.5	Certificate of Conformance	8
2.3.6	Product Warranty.....	9
2.4	Business Processing Requirements.....	9
2.4.1	EDI	9
2.4.2	Order Acknowledgment	10
2.4.3	Exceptions	10
2.4.4	Flow Down.....	10
2.4.5	Drop Shipment Requests.....	10
2.4.6	Orders for Custom Product	10
2.4.7	Orders with Supplier Quotation Reference	11
2.5	Product Identification and Traceability: Labeling & Packing Slips	11
2.5.1	TTI’s Labeling Requirements	11
2.5.2	Date Codes	11
2.5.3	Records.....	11
2.6	Shipping Requirements	12



The Specialist in Electronic Component Distribution

2.6.1	Packing Lists.....	12
2.6.2	Packing List – C of Cs’	12
2.6.3	Commercial Invoice	12
2.6.4	Shipping Web Portal.....	13
2.7	Packaging Requirements	14
2.7.1	Box Guidelines	14
2.7.2	Pallets	15
2.8	Preservation of Product.....	16
2.8.1	Shelf-Life Restrictions	16
2.8.2	Moisture Sensitivity.....	16
2.8.3	ESD Requirements	17
2.8.4	Foreign Object Debris/ Damage (FOD).....	17
2.8.5	Provision of Handling Information.....	17
2.9	Control & Processing of Nonconforming Material.....	17
2.10	Corrective and Preventive Action and RMA of Defective Material	17
2.11	GIDEP’s, Quality Alerts & Recalls	18
2.11.1	Data Necessary in the Notification	18
2.11.2	Customer Facing Communication.....	18
2.11.3	Supplier Direction to TTI.....	18
2.11.4	GIDEP Alerts	18
2.12	Records (P.O.’s, Test Reports, Material Certs, CAR’s, training records, etc.)	18
2.13	Calibration Control	18
2.14	Supplier Excellence Program	19
2.14.1	Supplier Excellence Award Criteria.....	19
2.14.2	Dock to Stock Program	19
2.14.3	On Site Supplier Visits	19
2.15	Product Changes, Obsolescence and QPL Notifications	20
3	SPECIFIC REQUIREMENTS	20
3.1	Government Industry Data Exchange Program (GIDEP).....	20
3.2	Counterfeit Parts Prevention	20



The Specialist in Electronic Component Distribution

3.3	Product Safety and Composition Regulations	21
3.3.1	Conflict Minerals	21
3.3.2	ROHS / REACH Compliance.....	21
3.3.3	Mercury Contamination	21
3.3.4	SDS Compliance.....	21
3.3.5	Hazmat	21
3.3.6	Lithium Batteries	22
3.3.7	CE & UKCA Marking.....	22
3.3.8	Persistent Organic Pollutant (POP).....	22
3.3.9	Substances of Concern In articles as such or in complex objects (Products) (SCIP)	22
3.3.10	Radio Equipment Directive (RED)	22
3.3.11	PFAS - Per- and Polyfluoroalkyl Substances (PFAS)	22
3.3.12	Toxic Substances Control Act (TSCA)	23
3.4	Social Responsibility	23
3.5	Trade Compliance.....	23
3.5.1	ITAR - International Traffic in Arms Regulations	23
3.5.2	USMCA – United States-Mexico-Canada Agreement	24
3.5.3	HTS - Harmonized Tariff Schedule	24
3.5.4	ECCN - Export Control Classification Number.....	24
3.5.5	COO - Country of Origin	24
3.5.6	C TPAT & AEO	24
3.6	Additional Legal Compliance	25
APPENDIX A	26
APPENDIX B – Packing organized by Part Number	34
APPENDIX C	35
Acknowledgement Page	37



The Specialist in Electronic Component Distribution

1 INTRODUCTION

There are three major sections defining TTI's Supplier Quality Requirements.

- **SECTION 1** – This section identifies ***key information and requirements*** applicable on all TTI purchase orders.
- **SECTION 2** This section includes ***minimum Supplier Quality requirements*** necessary for all deliverable products and services procured by TTI and common to international quality standards.
- **SECTION 3** This section includes ***specific requirements*** common to the electronic component industry today.

1.1 About TTI, Inc.

TTI, Inc. is global authorized specialty distributor of interconnect, passive, electromechanical components, and discrete semiconductors and the distributor of choice for electronics manufacturers worldwide from the TTIINC.com website. Global headquarters are in Fort Worth, Texas, with continental headquarters located in Munich, Germany; and Singapore. We are recognized as the industry's leader in inventory, service, and quality and provide a broad array of supply chain services to our customer base. TTI employs approximately 4,000 people with more than 100 locations throughout the Americas, Europe and Asia. TTI strives to be the distributor of choice for both customers and suppliers worldwide.

1.2 Purpose and Values Statement

TTI exists to accomplish three major goals:

- Be the most preferred electronics distributor for our customers and suppliers, delivering the right parts exactly on time.
- Exceed our internal and external customer requirements through continuous improvement.
- Provide a home for hardworking, dedicated, knowledgeable, and ethical people who believe in this Company and this philosophy.



The Specialist in Electronic Component Distribution

1.3 Trade Suppliers – Subcontractors – Contracted Suppliers

Trade Suppliers (Suppliers) are those manufacturers whose products TTI distributes to our joint customers. They are managed by the TTI Corporate Product organization. TTI Corporate Product & Executive Staff are responsible to start TTI processes to add a Supplier to TTI's line card.

Supplier performance is monitored on a regular basis through TTI's Supplier Excellence Program. The Supplier Excellence Program measures the Supplier's performance in the areas of delivery, functional and administrative quality, business systems, operational capabilities, material content compliance and support. Suppliers receive regular communication concerning their performance.

TTI believes in a strong partnership between Supplier and TTI to foster the enhanced well-being for each entity. We do not see ourselves as merely your customer, but as your partner in design, supply chain services, and execution.

Subcontractors are those companies that provide additional value-added services such as packaging (tape & reel), lead-forming, or other custom solutions for components to meet our customer's needs. Their performance is monitored separately with focus on service and schedule conformity.

Contracted Suppliers provide services such as freight, auditing, consulting, etc. and are managed through individual departments and are maintained on a separate approval list.

1.4 Contract Terms and Conditions

Contract Terms and Conditions are established and mutually agreed upon with each Supplier and TTI at the time of addition as a Supplier. These contracts are typically referred to as "Authorized Distribution Agreements". The "Authorized Distribution Agreement" Terms and Conditions take precedence over this Supplier Quality Manual in the event of a conflict. Contracts with Subcontractors and Contracted Suppliers are negotiated separately through the contracting TTI departments.

1.5 Ethics

Central to TTI's values are fair treatment, mutual respect and ethical behavior. As such, we partner with those Suppliers who operate with honor and uphold TTI's values. Suppliers are to abide by the terms of TTI's Supplier Code of Conduct as a condition of doing business with TTI. The Supplier Code of Conduct can be found on the TTI website.

<https://www.tti.com/content/ttiinc/en/about/sustainability/governance-and-ethics.html>

Further, our Suppliers and their employees must be aware of their contribution to compliance and product safety and of the importance of ethical behavior. Our mutual customers in high reliability industries need to ensure that the individual employees throughout their supply chain understand how their specific job or activity contributes to making a compliant, safe product. While they may not know that the part will end up on an airplane, in a missile or in a medical accessory, each person needs to understand how their step in the process helps produce a good and reliable part. That includes ensuring that each part is treated



The Specialist in Electronic Component Distribution

properly with careful in-process and shipment handling and packaging, including Electrostatic Discharge (ESD) or Moisture Sensitivity Level (MSL) protection as necessary, and that all steps are performed properly before signing off on them.

2 MINIMUM SUPPLIER REQUIREMENTS

2.1 Quality Management System Requirements

TTI's expectation for all Suppliers is to have an established Quality Management System (QMS) that is documented, implemented, maintained, and continually improved. The Supplier's QMS must be appropriate for the type of product/ service being delivered to TTI. Suppliers shall have a third-party certification (e.g., AS9100, ISO9001, IATF16949) for its QMS. Suppliers are obliged to inform TTI if certification is lost or does not exist at one of the manufacturing points. It is recommended that Subcontractors and Contracted Suppliers have an appropriate certification in line with their business model and if not certified, provide data as needed in support of process validations.

2.2 Compliance with Laws and Regulations

Suppliers shall ensure that all components and any materials supplied to TTI comply with all **Applicable Laws and Regulations**, and that they are of satisfactory quality and free from defects.

2.3 Production Release & Certified Materials

2.3.1 PPAP – Production Part Approval Process

Customers, primarily in the transportation industry, use PPAP's as part of their part qualification process. TTI's PPAP coordinator will identify the appropriate PPAP submission level for the part and coordinate the requests to the Supplier on behalf of our mutual customer. PPAP's should be provided within **30 days** of the request.

2.3.2 IMDS International Material Data System

Customers, primarily in the transportation industry, use IMDS to receive information on material composition, weight, recycled content, and recyclability. TTI's IMDS coordinator will request this information on behalf of our mutual customers. Typically, it is provided by the Supplier granting the end customer access to the data in IMDS. IMDS access should be granted within **5 days** of the request.

Suppliers must also fulfill the requirements of the "EU End-of-life Vehicle Directive" and the GADSL (Global Automotive Declarable Substance List).

2.3.3 FAI First Article Inspection

A First Article Inspection Report ("FAIR") is formal detailed documentation that proves a part has been manufactured to the required specifications. It is a common requirement in the aerospace



The Specialist in Electronic Component Distribution

and defense industry and is far more detailed than a certificate of conformance. First Article Inspection requires that all dimensions of a part be checked; and that all materials, special processes, functional testing, and sub-tiers used meet the customer's required standards.

TTI will request a quotation for a FAIR. The Supplier shall review all end customer requirements at time of quote and take exception to or provide TTI with additional information and the required cost and lead time. TTI will then purchase the FAIR via a purchase order. Unless the RFQ requested that the FAIR be provided on a customer's form, all FAIR's shall be provided on the latest revision of AS9102 forms.

- All dimensions (except reference dimensions), characteristics, specifications (as noted on the design record) are to be listed along with the corresponding measurement.
- All dimensions must be verified with calibrated measurement equipment that is in calibration at the time of the measurement.
- Objective evidence shall be provided that all materials used conform to customer's requirements.
- FAIR documents shall be shipped to TTI along with the components
 - In some cases, TTI may also request an electronic copy
 - If the FAIR contains CUI/CTI, ITAR/EAR controlled documents, follow the appropriate delivery method of paperwork to TTI
- All documents must be legible.
- Unless otherwise directed by TTI Purchasing, all FAIR's are to be performed to the **end customer's drawing** at the required revision level.
- Upon end customer rejection, corrections shall be made promptly.

2.3.4 Test Data

When Test Data has been requested by the TTI purchase order or is an element of a drawing or specification requirement, the Supplier and/or Subcontractor **shall ship the data in a separate envelope with the parts**. If a shipment contains multiple date codes, test data must include all date codes supplied to TTI in that shipment. The data may be delivered in electronic format (CD, DVD, flash drive, etc.), but it **shall be delivered physically** to TTI with the parts. A notation shall be made on the packing list or the box indicating "Test Data" is included within. Test data must be legible.

2.3.5 Certificate of Conformance

Supplier, and Subcontractors for special processes, shall prepare a Certificate of Conformance (C of C) asserting that the items contained with the shipment are in total compliance with all applicable requirements of the P.O. If there are exceptions, Supplier shall request pre-approval to ship parts. This pre-approval should be requested at the time of order receipt. The Supplier shall annotate the exceptions, (e.g., variances, Software Quality Assurance reports, Engineering Change Authorizations, etc.). All manufacturer CoC's must be signed and dated.

2.3.5.1 Blanket Certificate of Conformance (C of C)

To reduce the cost of business for both parties, the Supplier shall provide to TTI on an annual basis, Blanket C of C's which TTI then provides to the mutual end customer as assurance of the



The Specialist in Electronic Component Distribution

material's conformance to specification. TTI requires two forms of this blanket C of C. To ensure the locations and signatures are current, TTI requests an update of each Blanket C of C annually.

2.3.5.1.1 **8A Certificate**

This is a Certificate of Compliance statement from the Supplier which TTI may include in all shipments of their product to our mutual end customers. The details of the parts it covers are on the packing slip TTI provides with the 8A certificate and the shipment.

2.3.5.1.2 **8R Certificate**

This is a Certificate of Compliance statement from the Supplier which TTI may include in all shipments of their product to our mutual end customers. This certificate has fields which TTI's system populates from the warehouse control system. It includes date and lot codes and other part specific information from the supplier labels.

2.3.5.2 **Alternate C of C Provision**

In the event Supplier does not provide a Blanket C of C, the Supplier shall include a copy of the C of C outside the Supplier's shipping container, on the packing slip with each shipment.

2.3.6 **Product Warranty**

Supplier shall warranty the product for a minimum period of 24 months from the date TTI ships the product to the customer.

2.4 **Business Processing Requirements**

2.4.1 **EDI/API**

TTI's preferred means of communicating purchase order requirements and receiving invoices is via ANSI Electronic Data Interchange (EDI) or EDIFACT. The following EDI transactions or equivalent API transactions are important to improving the efficiency of doing business together:

Process	ANSI	EDIFACT
Price File	832	PRICAT
Quote / Offer	840	QUOTES
Purchase Order	850	ORDERS
Order Acknowledgment	855	ORDRSP
Order Change	860	ORDCHG
POS / Sales Report	867	SLSVRT
Invoice	810	INVOICE
Advanced Ship Notice / Dispatch Advice	856	DESADV
Ship and Debit	844	ORDCHG
Ship and Debit Acknowledgement	849	ORDRSP
Inventory (inbound & outbound)	846	INVRPT

TTI expects these transactions to be initiated during the Supplier on-boarding process and any that cannot be accomplished at that time to be part of our ongoing mutual business plans.



The Specialist in Electronic Component Distribution

2.4.2 **Order Acknowledgment**

TTI expects Suppliers to acknowledge orders as accurately and as timely as possible. Suppliers shall advise the planned ship date for the order line items **within 5 business days** of receipt of the order (or less). The preferred method for acknowledgment communication is EDI. However, TTI will accept email, portal posting, or other means of order acknowledgment if agreed upon in advance by TTI. In the event a recommit date is necessary, communication should be made to TTI as soon as it is known that a previous commitment is not obtainable. In expedite situations; Suppliers **shall not** disclose shipment dates of TTI Purchase Orders to end customers without approval from TTI.

In some cases, TTI will place orders subject to the U.S. Government's **Defense Priorities and Allocations System (DPAS)**. All U.S. companies are subject to this regulation (15 CFR 700). DPAS prioritizes national defense-related contracts/orders throughout the U.S. supply chain in order to support national defense and emergency preparedness. In these cases, TTI will provide a specific delivery date to the Supplier. Suppliers have specific time limits to acknowledge their ability to meet the requested date or advise a date they can meet. If Suppliers advise TTI within the 5 days above, these limits will be met.

2.4.3 **Exceptions**

Any exception to the TTI purchase order must be communicated to the Corporate Product group within the goal established in 2.4.2.

2.4.4 **Flow Down**

TTI will provide Suppliers and Sub-Contractors the Purchase Order requirements necessary to satisfy end customer requests. It is expected that each Supplier will flow down necessary requirements to their suppliers. Typically, these requirements are presented to the Supplier in a preceding RFQ. Contact the TTI buyer for any flow down definitions or documentation questions prior to quote submission or order acceptance.

2.4.5 **Drop Shipment Requests**

Because TTI feels its value to the Supplier includes stocking and preparing shipments to our mutual end customers, TTI does not utilize drop shipments as a routine business practice. However, there are times when a customer's critical situation requires material be moved directly from the TTI Supplier to a TTI customer, bypassing a TTI warehouse. When this occurs, TTI Corporate Product will communicate the request to the Supplier either by placing a Purchase Order with specific instructions outlining the customer's needs or contacting the Supplier to make such arrangements for existing orders.

In Drop Shipments, the Supplier is acting on behalf of TTI. Internal TTI procedures simplify the transaction so that the remaining requirements are minimized. Suppliers shall inspect the parts prior to shipment to ensure that the correct part is provided in the specified packaging and at the quantity listed on the packing list. Supplier shall also confirm that the part is to specification and that any special requirements such as date code restrictions are met.

2.4.6 **Orders for Custom Product**

Because end customers value the services offered by TTI, they often place orders for parts to their own design for which the Supplier is qualified to build. In those cases, Suppliers shall accept



The Specialist in Electronic Component Distribution

orders for these parts under the end customer's part number. This helps to avoid errors when an order is placed to an internal Supplier part number that may not include all the requirements of the end customer's part. Suppliers shall not make any changes to such parts without TTI and end customer approval.

2.4.7 **Orders with Supplier Quotation Reference**

Some TTI purchase orders will contain reference to a Supplier's Quotation. (NOTE: A similar Quotation process may also be applicable for subcontractors). When the quotation is noted on the TTI purchase order, all elements of the quotation are included by said reference. For example, if the quotation includes a specific packaging configuration, special cost or ship and debit, or compliance to an end customer's quality clause, then the Supplier shall fulfill the order in compliance to the elements of its quotation. A separate, specific reference on the purchase order to the individual aspects of the quotation is **not required**. It is to be understood that **reference to the Supplier quotation is reference to each and every aspect noted within it**. This simplifies the transaction for both parties.

2.5 **Product Identification and Traceability: Labeling & Packing Slips**

2.5.1 **TTI's Labeling Requirements**

Because of the enhanced traceability and efficiency in order receiving, stocking and outbound processing, TTI requires its suppliers to conform to our labeling requirements.

Refer to Appendix A - TTI Global labeling and packaging specifications

TTI's labeling specification is based on the industry standard ECIA Guidelines (ECIA.org). As of this publication the link below can be used to find the ECIA labeling guidelines.

https://store accuristech.com/ecia/standards/ecia-eigp-114?product_id=2584808

2.5.2 **Date Codes**

2.5.2.1 **Format**

Date Codes shall be in the basic 4-digit format of (YYWW).

2.5.2.2 **Multiple Date Codes**

Containers with multiple date codes within must be identified with all date codes listed on the label prepared to TTI's standard. If there is not enough room to list all the date codes, then the field **shall** be left **blank** or use the word "**mixed**". In these cases, all date codes are to be listed on one of the labels on the container (factory label, typically).

2.5.2.3 **Date Codes – Packing Lists**

Date Codes shall be listed on the packing slips provided to TTI with the shipment and transmitted with Advanced Ship Notices (ASN's)

2.5.3 **Records**

Records of material shipped to TTI shall be maintained for a period of 10 years and shall include TTI PO# and date/lot code.



The Specialist in Electronic Component Distribution

2.6 Shipping Requirements

Suppliers (and Subcontractors using parcel/LTL carriers) are expected to follow the specific Routing Guidelines provided to them by TTI. The Routing Guidelines identify carriers, weights, and in some cases, packaging types to be used. The TTI product buyer may communicate exceptions to shipment of a specific product based on urgency of an order.

Suppliers shall provide the following items to be located on the **outside of the container** in a sealed pouch, for each separate shipment:

2.6.1 Packing Lists

Each packing list shall include a packing list number with a Unique Shipment ID that may be tied back to the EDI 810 Invoice for payment purposes. The specific items necessary on the packing list are in the following Shipping Document Data Element Table. For palletized shipments, a packing list is required for **each pallet**.

2.6.2 Packing List – C of Cs'

When a generic Certificate of Conformance (C of C) is not provided to TTI for the calendar year, a C of C statement shall be included on the packing list. Specific Data elements required on the C of C are listed in the following Shipping Document Data Element Table.

2.6.3 Commercial Invoice

When a Commercial Invoice is necessary for the shipment, it shall include the data elements listed in the following Shipping Document Data Element Table.

(continued next page)



The Specialist in Electronic Component Distribution

Shipping Document Data Element Table

Data Element	Packing List	Certificate of Conformance	Commercial Invoice
Supplier Name	X	X	X
Supplier Address	X	X	X
Packing List Number	X	O	X
Invoice Number			X
Date of Shipment	X	X	X
Description of material	X		X
Date of shipment	X	X	X
TTI PO number	X	X	X
TTI part number	X	X	X
Quantity Shipped	X	X	X
Number of packages	X		
Quantity shipped	X	X	X
Gross weight, Net weight by tariff code	O		X
Date code/ Lot code	X	X	
Country of Origin (COO)	X	X	X
Dimension of Individual Packaging	X		
Consignee Name and Address	X		X
Unit Price			X
Total Price			X
Currency			X
Master Air Waybill (MAWB) & House Air Waybill (HAWB),	X		X
Harmonized Customs Classification Number	X		X
Delivery terms (INCOTERMS)			X

X = Required O = Optional

2.6.4 Shipping Web Portal

All Supplier shipments over 300 lbs. originating in the U.S. for shipment to TTI North America shall be logged into the TTI 3PL Supplier Web portal assuring proper mode and carrier selection. Unique Supplier account and log in information will be provided for each Supplier location shipping to TTI.



The Specialist in Electronic Component Distribution

2.7 Packaging Requirements

To automate the receiving process, Suppliers should follow the rule: **1 box = 1 Part number**. If possible, each box should contain only 1 Date Code.

Refer to **Appendix B - TTI SPECIFICATION FOR PART NUMBER SORTED PACKING**

TTI is committed to protecting the natural environment in the regions where it does business. TTI expects Suppliers to employ the same principles of socio-economically responsible behavior. Therefore, all packaging materials for the protection and transportation of goods supplied to TTI must be made of recycled or fully recyclable material.

Items shall be packaged and/or crated to provide protection against damage while in transit and in storage. Additionally, TTI prefers the use of either a plain box or a specific Supplier trademark container, and no use of pass-through 3rd party containers. Wood packaging materials such as pallets, crates, boxes and dunnage used to ship imported articles must be compliant with ISPM 15 standards and certified accordingly with an IPPC logo.

Refer to **Appendix C - Packaging Requirements for shipments into/within EU/EMEA countries**

2.7.1 Box Guidelines

Because TTI needs to break down palletized shipments to fulfill its role as a Supplier’s distributor, boxes must be sturdy enough to withstand stand-alone parcel shipment to our mutual end customer. Lighter weight boxes that are sufficient when palletized are often insufficient when shipped alone. As such, TTI requires boxes to meet the following Box Strength Guidelines to ensure sufficient protection for the material.

Single Wall Corrugated Fiberboard			
Maximum Weight of Box and Contents (lbs./kg)	Size Limit of Box length, Width, and Depth (inches/cm)	Minimum Bursting Test (lbs. per sq. inch/kg per sq. cm)	Minimum Edge Crush test (ECT) (lbs. per inch/kg per cm width)
30 / 13.6	75 / 190.5	200 / 14.1	32 / 5.7
40 / 18.1	75 / 190.5	200 / 14.1	40 / 7.1
50 / 22.7	85 / 215.9	250 / 17.6	44 / 7.9
65 / 29.5	95 / 241.3	275 / 19.3	55 / 9.8
80 / 36.3	105 / 266.7	350 / 24.6	N/A

Double Wall Corrugated Fiberboard			
Maximum Weight of Box and Contents (lbs./kg)	Size Limit of Box length, Width, and Depth (inches/cm)	Minimum Bursting Test (lbs. per sq. inch/kg per sq. cm)	Minimum Edge Crush test (ECT) (lbs. per inch/kg per cm width)
60 / 27.2	85 / 215.9	200 / 14.1	48 / 8.6
80 / 36.3	95 / 241.3	275 / 17.6	51 / 9.0
100 / 45.4	105 / 266.7	350 / 24.6	61 / 10.9
120 / 54.4	110 / 279.4	400 / 28.1	71 / 12.7
140 / 63.5	115 / 292.1	500 / 35.2	82 / 14.6
150 / 68.0	120 / 304.8	600 / 42.2	N/A



The Specialist in Electronic Component Distribution

Reference International Safe Transit Association's ISTA 3A Testing Services - Parcel Delivery System Shipment and ISTA 3B Testing Services for less than Truckload.

You can know the Edge Crush and Bursting Test Ratings by looking for certificates like these on your boxes:



When customer specific packaging is not required, it is the sole responsibility of the Supplier to control the packaging to ensure the quality of the fabricated article is maintained and that damage, deterioration, and loss in transit are prevented.

- Fragile articles need separation from each other, and from the corners, sides, top, and bottom of the box. Each item should be surrounded by at least two inches (5.08 cm) of cushioning and be placed at least two inches (5.08 cm) away from the walls of the box. This prevents product damage and protects contents from shock and vibration, which can pass from the outside of the box to the contents.
- Please use proper cushioning material, combined with a strong outer container, to protect packaged shipments. Make sure to use enough cushioning material to ensure that the contents do not move when container is shaken. Acceptable cushioning materials are air encapsulated plastic (small and large cell bubble sheeting), Inflatable packaging (air bags), Engineered foam enclosures, foam in place/foam in bag, corrugated liners and inserts, and crumpled craft paper.
- Inner packaging should be robust enough to maintain integrity of products and to withstand the rigors of shipping the box separately as an external package. This includes turning the box upside down, and potential for the box coming open or material spilling from package. The inner box needs to be substantial enough to stand by itself without the stability of other inner boxes. The containers should be closed with two-inch-wide Pressure sensitive plastic tape or nylon reinforced filament tape.

2.7.2 Pallets

When shipment on a pallet is warranted, the use of gaylord boxes is recommended as they provide good protection for the inner packages within during transit. If a pallet is built from individual boxes, it should be arranged to ensure no individual boxes may be crushed, even if a pallet is stacked on top. Pallets should not exceed 4 feet (1.2 Meters) in height and **shall use corner braces and shrink wrap**.



The Specialist in Electronic Component Distribution

2.8 Preservation of Product

Proper Preservation of Product ensures that Suppliers have control of identification, handling, storage, packaging, and protection of products procured by TTI.

2.8.1 Shelf-Life Restrictions

Supplier and Subcontractors (where applicable) shall identify each item, package or container with the manufacture date, expiration date, batch, lot or process control number, and any special handling conditions. This information shall also be included on all shipping documents, labels, and certifications.

- To ensure TTI may plan appropriately for proper storage and review, Suppliers shall provide **a list of part numbers** subject to shelf life to TTI on a **yearly basis**.
- TTI may refuse to accept material with less than **80%** of its intended shelf life remaining at the time of receipt unless prior authorization has been obtained from the product buyer and agreed upon shelf life is stated on the Purchase Order.

2.8.2 Moisture Sensitivity

Moisture sensitive components or assemblies shall be packaged to protect against moisture and shall be clearly identified as a moisture sensitive item.

- A moisture sensitivity (humidity indicator) card and a desiccant, as necessary, shall be included with the material.
- A label with the moisture sensitivity level shall be on the outside of the package and inner container.
- The bag should not be completely evacuated since this will reduce the effectiveness of the desiccant and possibly damage the contents. Proper evacuation is demonstrated below. All marking and packaging shall conform to JEDEC Standard JSTD 020 and JSTD 033.

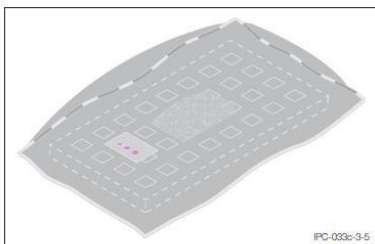


Figure 3-5 MBB with No Evacuation (Example)

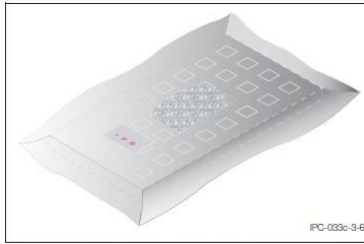


Figure 3-6 MBB with Recommended Light Air Evacuation (Example)



Figure 3-7 MBB with Too Much (Full) Evacuation (Example)

2.8.2.1 Non-Moisture Sensitive Parts

Parts that are not moisture sensitive shall not be packaged in moisture sensitive bags nor contain a humidity indicator card or desiccant as this confuses downstream users of the material as regards proper handling and causes unwarranted end customer rejections.



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2.8.3 ESD Requirements

Parts that are susceptible to damage due to electrostatic discharge must be packaged in static shielding materials as a primary package with external marking specifying ESD sensitive material. ESD components or assemblies received that are not in ESD protective material will be subject to return to the Supplier or Subcontractor. Refer to the ANSI / ESD Association standard (*ANSI ESD - S20.20*) or JEDEC J-STD-033 for the development of an ESD Control Program.

2.8.4 Foreign Object Debris/ Damage (FOD)

To preclude introduction of foreign objects into any deliverable item, Suppliers and Subcontractors shall practice good housekeeping and maintain and comply with a documented Foreign Object Debris/ Damage (FOD) prevention program. This program shall follow NAS 412 or AS9146 as a guide. Suppliers and subcontractors shall employ appropriate housekeeping practices to assure timely and complete removal of all residue/ debris generated during manufacturing operations or tasks. Suppliers and Subcontractors shall determine if sensitive areas that have a high probability for introduction of foreign objects should have special controls in place for the manufacturing environment.

2.8.5 Provision of Handling Information

Price files or other files listing part numbers to TTI for purchase shall advise if a specific part requires special handling. Parts shall be noted as ESD, MSL including level, Shelf-life length (start date and duration or end date). TTI uses this information to develop our part masters and communicate proper handling throughout the organization.

2.9 Control & Processing of Nonconforming Material

Suppliers and Subcontractors shall implement and maintain a documented quality system that provides for identification, segregation, documentation, and disposition of nonconforming material. Suppliers and subcontractors shall ensure effective corrective and preventive action is taken to prevent, minimize, or eliminate non-conformances. Supplier and Subcontractor quality management system shall ensure that nonconforming material is not used for production purposes or is dispositioned to prevent its unintended release or use.

2.10 Corrective and Preventive Action and RMA of Defective Material

When a quality problem is discovered and a Corrective Action Request is issued, a formalized written response is required from the Supplier. The 8D (8 discipline) methodology is the recommended format for the written response. Containment of the problem (through D3) is expected within 24 hours and corrective action (through D5) is expected within 10 working days after returning samples for analysis (or after acknowledging receipt of the complaint). An additional 5 working days is factored into the due date to allow time for sample transit. Final submission of the 8D shall include objective evidence that the correction was both implemented and effective (D6 - Verification) as well as consideration and application of the correction across other products which might experience the same defect (D7 – Preventive Action).



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When the defect is confirmed, an RMA for the defective parts both from the customer return and any impacted TTI inventory shall be provided within three business days of TTI's request.

2.11 Government Industry Data Exchange Program (GIDEP) Quality Alerts & Recalls

Supplier shall maintain a notification system in the event defective material is produced and subsequently escapes the Supplier's facility. In order to quarantine TTI inventory, address inventory in route, and alert customers, TTI will need specific information.

2.11.1 Data Necessary in the Notification

- Impacted Part Numbers
- Beginning Date Code
- Ending Date Code
- Lot Number(s) if applicable
- Date & Quantity shipped
- TTI PO #
- Serial Number(s) if applicable

2.11.2 Customer Facing Communication

Supplier shall supply a formal letter on its letterhead that is designed to be presented to our mutual customers that clearly communicates the reason the recall notification or quality alert is required. Data specific to TTI should not be in this letter.

2.11.3 Supplier Direction to TTI

The Supplier shall advise TTI specifically as to what is expected of TTI in terms of quarantine, shipment hold, and customer notification.

2.11.4 GIDEP Alerts

GIDEP alerts are NOT sufficient direction to TTI, are NOT acceptable in lieu of a Quality Alert or Recall announcement, nor are they an acceptable document to be shared with end customers. Separate communication is expected in each case. Further, TTI is to be notified IN ADVANCE of a pending GIDEP release which will necessitate customer communication and/or recall.

2.12 Records (P.O.'s, Test Reports, Material Certs, CAR's, training records, etc.)

Supplier and Subcontractor records shall be maintained for a minimum of ten (10) years unless authorized and documented on the Purchase Order or Contract. Records include results and certifications of the inspection and tests performed in the course of procurement, manufacturing, testing, processing, inspecting, preserving, packaging and shipping product(s) on the purchase order.

2.13 Calibration Control

Suppliers and Subcontractors are responsible for the calibration accuracy, validation, and maintenance of equipment, tooling, or gauges utilized by the Supplier to produce, inspect, or test articles to be



The Specialist in Electronic Component Distribution

delivered under TTI Purchase Orders. The Supplier's Calibration System shall be in accordance with the requirements of **ISO 17025, ISO 10012, and/or ANSI Z540-1**.

2.14 Supplier Excellence Program

2.14.1 Supplier Excellence Award Criteria

At present, the following criteria are used to evaluate Suppliers and identify opportunities to reduce the total cost of acquisition through efficient business practices. Suppliers with good scores, particularly in the Quality and On-Time metrics are easier to do business with. This results in increased stocking and design activity by TTI. Detailed information about the Supplier Excellence Award Criteria can be obtained from TTI Product Operations.

Quality Measurements

- **Delivery**
 - Performance to Original Dock date
 - Performance to Recommitted Dock date
- **Quality**
 - Receiving Acceptance - correct parts, quantity, labels, and paperwork
 - Customer Acceptance due to factory defects
 - Corrective Action Response Time

Operations and Business Systems Support

- EDI – Electronic Data Interchange
- Labeling
- Contractual Terms

Field Sales and Management Support

NOTE: Supplier's performance is monitored and presented to TTI's Total Quality Management (TQM) Forum meetings. Suppliers with severe and/or repeat issues may require documented action plans with the possibility of reduction in services up to removal from the approved suppliers listing.

2.14.2 Dock to Stock Program

Suppliers that consistently meet pre-established minimum quality levels will be considered for TTI's Dock to Stock Program. Suppliers with product on the Dock to Stock program benefit from a less stringent TTI receiving inspection process. This improves throughput and costs for both parties.

2.14.3 On Site Supplier Visits

TTI reserves the right to conduct surveys, audits and surveillance of our Supplier's and subcontractor's facilities, or those of Supplier's sub tier suppliers with prior coordination. This will help to determine the capability to comply and verify continuing compliance with the requirements of TTI purchase orders and contracts. These visits may be performed by TTI personnel, TTI customers, or regulatory authorities and include applicable areas of facilities and



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documented information, at any level of the supply chain. This is in accords with AS/EN9100D section 8.4.3.

2.15 Product Changes, Obsolescence and QPL Notifications

TTI understands that Suppliers reserve the right to move or add manufacturing facilities, make product changes, or to obsolete parts from time to time. However, TTI expects major and minor changes and plant moves or additions to be communicated to TTI's Corporate Product Managers and TTI's PCN Mailbox: pcnmail@ttiinc.com.

TTI's expectation is that our Suppliers follow JEDEC standards J-STD-048 and J-STD-046 for PCN communication requirements with the exception that 6-month prior notice is preferred. Changes are defined as any change in design, process, fabrication, or materials that may affect fit, form or function, as well as any changes to product location, manufacturing location, key management positions, or any other changes that may affect product quality or quality systems. Suppliers shall also notify TTI of any change in qualification (QPL) status including addition or loss of QPL or product holds as a result of test status, or of any change in environmental compliance status (REACH, RoHS, etc.)

3 SPECIFIC REQUIREMENTS

3.1 Government Industry Data Exchange Program (GIDEP)

TTI supports its Suppliers through distribution of their products into many aerospace & defense (mil/aero) customers. GIDEP is an important tool and contractual requirement for this customer base. If the Supplier is eligible for GIDEP membership, TTI expects the Supplier to be an active member.

3.2 Counterfeit Parts Prevention

Suppliers and subcontractors shall establish and maintain a Counterfeit Parts Prevention and Control Plan ("CPPCP") using SAE's **AS5553** as a guide. TTI understands that as a distributor, counterfeit risk is limited. However, we all have risk in returned product and the Supplier may have risk in purchased subcomponents. The plan must cover at a minimum:

1. Training of appropriate personnel
2. A process to inspect & test
3. A process to abolish counterfeit part proliferation (quarantine, control of scrap, control of packaging materials, etc.)
4. A process to maintain traceability
5. Requirements to purchase from original manufacturers or their authorized distributors
6. Report and quarantine of counterfeit and suspect counterfeit parts
7. Method to determine if parts are counterfeit
8. System to detect & avoid counterfeits
9. Flow-down of anti-counterfeit requirements
10. Process to keep continually informed of advances in counterfeit technology and mitigation
11. Process to screen GIDEP (if eligible) for counterfeit reports
12. Plans to address the obsolescence of parts used in your furnished product



The Specialist in Electronic Component Distribution

3.3 Product Safety and Composition Regulations

TTI expects all Suppliers to formally communicate the status of the environmental and product safety requirements of their products and to provide formal documentation that TTI requires to share this information with our mutual customers. This includes, but is not limited to, the following topics:

3.3.1 Conflict Minerals

TTI expects all Suppliers to communicate formally the status of their products regarding the Conflict Minerals portion of the U.S. Dodd Frank act and the EU Conflict Minerals Regulation. Suppliers shall provide information by filling out the latest template of a CMRT released by the Responsible Minerals Initiative. TTI expects all Suppliers to provide their CMRT with the understanding it will be shared with our joint customers. In the event products do not meet conflict mineral guidelines, TTI expects a letter on file from the Supplier detailing the parts/products which do not comply. If changes occur, then the Supplier shall provide a notification letter detailing the change. TTI will maintain letters on file for the benefit of our mutual customers.

3.3.2 ROHS / REACH Compliance

TTI supports the initiative that it is best to eliminate use of hazardous materials, i.e. lead (Pb) based products and other heavy metals in the distribution pipeline. TTI also understands that some applications are best served containing these materials. TTI expects Suppliers that manufacture these types of products, provide formal documentation detailing what these products are, and what they contain as TTI needs to pass this information on to our mutual customers. TTI expects Suppliers to be aware of the legal obligations that apply to them and to register products that contain chemicals subject to the EU REACH-Regulation [(EC) No 1907/2006] to ECHA's SCIP database. Suppliers shall provide TTI with information on the RoHS and REACH status for all supplied products.

3.3.3 Mercury Contamination

By certification of conformance, Suppliers certify that the material furnished to TTI has not been in direct contact with mercury or any of its compounds nor with any mercury containing device employing only a single boundary of containment.

3.3.4 SDS Compliance

Safety Data Sheets (SDS) should be available for all "Chemicals and Materials". These materials need to be labeled and noted as such. Federal and local laws need to be supported and followed. It is preferred that SDS information is shipped with any products that are subject to such control.

3.3.5 Hazmat

Suppliers and Subcontractors MUST Advise TTI and get approval before shipping any hazardous material.

Packaging and transportation of hazardous materials must comply with all applicable government regulation and requirements, including but not limited to those in US Code of Federal Regulation 49 CFR Parts 171-180 available at:

https://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title49/49cfrv2_02.tpl



The Specialist in Electronic Component Distribution

3.3.6 **Lithium Batteries**

IATA Dangerous Goods Regulations for lithium batteries and other potentially explosive items contained within the parameters of a Supplier product are complex and ever changing. Please refer to the Guidance Document in the link below for a full explanation of the requirements relating to transport of lithium batteries by air, including what needs to be annotated on the outside of the container carrying the product and any special documents that must be provided. Special rules and regulations regarding the shipping of these types of products from supplier to TTI shall be followed. Please consult with TTI's Manager of Transportation prior to shipping this type of product.

<http://www.iata.org/whatwedo/cargo/dgr/Pages/lithium-batteries.aspx>

3.3.7 **CE & UKCA Marking**

Suppliers of products to the EU or UK shall ensure the conformity with EU and UK regulations regarding safety, health protection, and environmental protection by marking the products with the CE and/or UKCA-marking. Marked products indicate that an appropriate conformity assessment procedure has been successfully completed.

3.3.8 **Persistent Organic Pollutant (POP)**

Directive (EU) 2019/1021 prohibits placing products that contain certain, specified pollutants on the EU market. Unless Supplier's products are covered by an exemption, Suppliers shall ensure that products provided to the EU do not contain chemicals that are prohibited by this directive.

3.3.9 **Substances of Concern In articles as such or in complex objects (Products) (SCIP)**

The European Chemicals Agency (ECHA) maintains the database of products containing substances of very high concern (SVHCs) on the EU's REACH Candidate List. This database supports the EU's waste and recycling efforts. Companies supplying articles SVHCs on the Candidate List in a concentration above 0.1% weight by weight (w/w) on the EU market must submit information on these articles to ECHA via the SCIP database. TTI expects suppliers to perform this activity for any products sold in the EU market.

3.3.10 **Radio Equipment Directive (RED)**

This EU directive establishes a regulatory framework by setting essential requirements for safety and health, electromagnetic compatibility, and the efficient use of the radio spectrum in the EU. TTI expects Suppliers of component covered by this directive to be compliant with EU directive 2014/53/EU. More can be learned about this directive at:

https://single-market-economy.ec.europa.eu/sectors/electrical-and-electronic-engineering-industries-eei/radio-equipment-directive-red_en

3.3.11 **PFAS - Per- and Polyfluoroalkyl Substances (PFAS)**

These substances are commonly known as forever chemicals as they do not break down and many have been found to cause serious health problems. The US Environmental Protection Agency (EPA) and other governmental agencies across the globe have specific requirements regarding the use and reporting of PFAS chemicals. TTI expects all Suppliers to be complaint to PFAS regulations in their jurisdictions. For more information about PFAS, see:

<https://www.epa.gov/pfas/pfas-explained>



The Specialist in Electronic Component Distribution

3.3.12 Toxic Substances Control Act (TSCA)

The Toxic Substances Control Act of 1976 provides the U.S. Environmental Protection Agency with the authority to require reporting, record-keeping and testing requirements, and restrictions relating to chemical substances and/or mixtures. TSCA addresses the production, importation, use, and disposal of specific chemicals including polychlorinated biphenyls (PCBs), asbestos, radon and lead-based paint. TTI expects all Suppliers of products in and into the United States to be complaint to TSCA regulations. **For more information about TSCA, see:**

<https://www.epa.gov/laws-regulations/summary-toxic-substances-control-act>

3.4 Social Responsibility

TTI is committed to environmental stewardship and social responsibility. We ask that all Suppliers use the guidance of ISO 14001 to ensure their environmental processes include conserving energy, water, reducing waste, and preventing pollution by evaluating operations, establishing goals, and acting to ensure that they and their supply chain are as effective and efficient as possible. Additionally, Suppliers and Subcontractors are to be in full compliance with corporate sustainability due diligence directives, SEC requirements and all applicable City, State and Federal laws.

TTI pledges to ensure that employees, customers, and Suppliers are treated with respect and dignity; working conditions are safe; business is conducted ethically, legally, and responsibly. As such, we recommend that Suppliers, Subcontractors, and those in their supply chain, adhere and acknowledge TTI's Supplier Code of Conduct and use the RBA Code of Conduct as a model for their processes with reference to the guidelines of the ISO 26000 on Social Responsibility. Neither Suppliers nor Subcontractors shall engage in any human rights violations like forced labor, modern slavery, or human trafficking nor employ workers below the legal working age in the countries in which the worker is employed. This is in addition to anti-corruption practices, responsible social practices, and responsible information systems management.

Supplier and Subcontractors are expected to complete surveys and questionnaires received from TTI or a subsidiary of TTI.

3.5 Trade Compliance

TTI is dedicated to being fully compliant with all applicable government and regulatory agency rules and regulations governing the sale and shipment of our products in the markets where we conduct business. Some of the below are areas in which you will be asked to provide specifics to TTI. The Trade Compliance group email address is TradeCompliance@ttiinc.com.

3.5.1 ITAR - International Traffic in Arms Regulations

As a U.S. based company supporting many defense programs, TTI is bound by laws restricting trade of specific components. TTI expects Suppliers to identify and timely inform TTI of all products meeting the definition of "defense articles" as that term is defined in 22 CFR § 120.31 [Federal Register :: International Traffic in Arms Regulations: Consolidation and Restructuring of Purposes and Definitions](#) of the U.S. International Traffic in Arms Regulations. In addition, TTI



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expects Suppliers who engage in the business of manufacturing or exporting defense articles in the U.S. or furnishing defense services to be registered and to keep their registration current with the US Department of State. TTI requires evidence of registration in the form of an acknowledgement letter from DDTC, and Suppliers should advise the names of their employees authorized to receive ITAR technical data (US citizens or permanent residents).

3.5.2 **USMCA – United States-Mexico-Canada Agreement**

In order to maximize the benefits provided by USMCA, TTI requires Suppliers to determine if the goods they produce in a USMCA country qualify for preferential treatment under the USMCA rules of origin. A USMCA certificate of origin evidencing the eligibility of the goods is required at the part level so that TTI and our customers can claim available tariff benefits.

3.5.3 **HTS - Harmonized Tariff Schedule**

In order to comply with the import and export requirements of international trade, TTI requires our suppliers advise the classification of goods according to the Harmonized Tariff Schedule, at the full 10 digit level. Any changes of classification must also be communicated to TTI.

3.5.4 **ECCN - Export Control Classification Number**

TTI expects Suppliers to determine the export jurisdiction of the commodities sold to TTI and advise the ECCN number applicable to products that are subject to the Export Administration Regulations, Bureau of Industry and Security, including CCATS number if available.

3.5.5 **COO - Country of Origin**

Country of Origin is a fundamental requirement of trade compliance needed to both import and export goods, and to determine applicability to special duty or trade preference programs, admissibility, rates of duty, antidumping, etc. TTI expects our Suppliers to accurately and timely inform us of the origin of the goods we purchase, and to proactively advise when the origin of a particular product changes.

3.5.6 **CTPAT & AEO**

The Customs Trade Partnership Against Terrorism (C TPAT) is a voluntary U.S government business initiative designed to build cooperative relationships that strengthen and improve overall international supply chain and U.S. border security. TTI fully supports and promotes this initiative and is a registered member of the C TPAT initiative. As such, TTI is mandated by the requirements of C TPAT to ensure that its business partners also be C TPAT certified and/or adopt and implement supply chain security practices that meet or exceed the requirements of the C TPAT program. TTI requires its Suppliers to accept an SVI monitoring request or complete a supply chain security questionnaire.

In the EU, companies participating in a framework to strengthen supply chain security pursue certification as an Authorized Economic Operator (AEO) and hold specific certification for supply chain security and safety (AEOF or AEOS). Suppliers in the EU shipping to TTI should be AEO certified. More information about AEO can be found at:

https://taxation-customs.ec.europa.eu/customs-4/aEO-authorised-economic-operator_en



The Specialist in Electronic Component Distribution

3.6 Additional Legal Compliance

Suppliers shall ensure to only place products on the respective market that are compliant with all applicable laws. Suppliers shall also take care that the packaging is compliant with all applicable laws of the respective market. The term law is to be interpreted broadly. It includes all provisions issued by a state, a competent authority, or other established national or supranational bodies.

If selling into the EU, Non-EU Suppliers shall appoint an authorized legal representative in the EU. The representative shall comply with the applicable provisions of this Supplier Quality Manual, especially with the provisions of section 3. Suppliers shall provide the name and contact details of their EU Legal Representative to TTI along with evidence of the EU Legal Representative's appointment and agreement to act in this capacity for them in respect of the components and any materials supplied.

[Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment \(europa.eu\)](#)



The Specialist in Electronic Component Distribution

APPENDIX A

TTI Global Labeling and Packing Slip Specifications

The following TTI Labeling and Packing Slip Specification are based on the ECIA Guidelines for 2D Barcode Labeling Specification for Product Package and Shipments in the Electronics Industry (EIGP 114.00 Rev. June 2012).

The following general requirements apply:

- 1D Barcodes based on Code 128 are preferred. Code 39 is acceptable.
- 2D Barcodes based on Data Matrix ECC-200 are preferred. Code PDF417 (Stacked Linear) is acceptable.

Labeling

Shipping Label (Outer Container) Field Description and Use

Field Name	Data Identifier	Level	P/S Only	Specific Requirements
Customer PO	K	1D, 2D, HR		TTI Assigned Purchase Order Number
Customer PO Line	4K	1D, 2D, HR		TTI Assigned Purchase Order Line Number
Customer Part (if applicable)	P	1D, 2D, HR		TTI Part Number as listed on the PO
Manufacturer Part Number	1P	1D, 2D, HR		
Packing Slip or Delivery Note Number	11K	1D, 2D, HR		Unique identification number assigned by the supplier that allows traceability for receipt
Quantity	Q	1D, 2D, HR		Total line item quantity contained in shipment.
Date Code	10D	1D, 2D, HR		Acceptable d/c format is YYWW **See Mixed Lot Attributes**
Trace Code/Lot Code	1T	1D, 2D, HR		Lot or trace number where applicable. **See Mixed Lot Attributes**
Country of Origin	4L	1D, 2D, HR		Taken from ISO 3166 **See Mixed Lot Attributes**
Shipping Date	6D	1D, 2D, HR		Doc generation date
Pos of Total Pos/Box count	13Q	HR	Y	
ECCN		HR	Y	
Weight	7Q	HR	Y	
Luminosity		HR when appl.		
Reel ID (if appl. for lighting)		HR when appl.		
Moisture Sensitive Level		HR when appl.		Only required if MSL > 1 per J-STD-075
Moisture barrier bag seal date		HR when appl.		Only required if MSL > 1 per J-STD-075



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Shipping Label (Outer Container) Example



From: [Ship From Address] XXXXXXXXXXXXXXXXXXXXXXXXXXXX YYYYYYYYYYYYYYYYYYYYYYYYYYYY ZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZ		To: [Ship To Address] XXXXXXXXXXXXXXXXXXXXXXXXXXXX YYYYYYYYYYYYYYYYYYYYYYYYYYYY ZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZ	
(11K) Packing Slip: 123456789 		(6D) Ship Date: YYYYMMDD 	
(K) Customer PO: 1234567 		(4K) Cust. PO Line: 12 	
(P) Customer Part: ABCDEFGHIJKLMNO 		(4L) CoO: US 	
(1P) Mfg. Part: ABCDEFGHIJKLMNO 		(1T) Lot Code: 123456789 	
(Q) Quantity: 1234567 			
(10D) Date Code: YYWW 			
Package Count: Box 1 of 1	Package Weight: XX Lbs YY kg	MSL: 1 MSL Seal Date: MM/DD/YY	

Note: Label sample is for illustrative purposes only.
Label size and data arrangement shall be determined by the manufacturer



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Shipping Label (Outer Container) Mixed Load Example

From: [Ship From Address] XXXXXXXXXXXXXXXXXXXXXXXXXXXX YYYYYYYYYYYYYYYYYYYYYYYYYYYY ZZZZZZZZZZZZZZZZZZZZZZZZZZZZ	To: [Ship To Address] XXXXXXXXXXXXXXXXXXXXXXXXXXXX YYYYYYYYYYYYYYYYYYYYYYYYYYYY ZZZZZZZZZZZZZZZZZZZZZZZZZZZZ
(11K) Packing Slip: 123456789 	(6D) Ship Date: YYYYMMDD 
MIXED LOAD	
Package Count: Box 1 of 1	Package Weight: XX Lbs YY kg

Note: Label sample is for illustrative purposes only.
Label size and data arrangement shall be determined by the manufacturer



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Unit Pack Label (Product Package Label) Field Description and Use

Field Name	Data Identifier	Level	Specific Requirements
Customer Part Number (if applicable)	P	HR, 1D, 2D	TTI Part Number as listed on the PO
Manufacturer Part Number	1P	HR, 1D, 2D	
Date Code	10D	HR, 1D, 2D	Acceptable d/c format is YYWW **See Mixed Lot Attributes**
Quantity	Q	HR, 1D, 2D	Quantity contained within the unit pack
Lot/Trace Code	1T	HR, 1D, 2D	Lot or trace number where applicable. **See Mixed Lot Attributes**
Country of Origin	4L	HR, 1D, 2D	Taken from ISO 3166 **See Mixed Lot Attributes**
ROHS/CC	E	HR	Refer to J-Std-609, JEITA STD ET-7001
Moisture Sensitive Level		HR when appl.	Only required if MSL>1 per J-STD-075
Moisture barrier bag seal date		HR when appl.	Only required if MSL>1 per J-STD-075

Unit Pack Label (Product Package Label) Example

(P) Customer Part: ABCDEFGHIJKLMNO 	(4L) CoO: US
(1P) Mfg. Part: ABCDEFGHIJKLMNO 	
(Q) Quantity: 1234567 	
(10D) Date Code: YYWW 	
(1T) Lot Code: 123456789 	(E) ROHS: e4
	MSL: 1 MSL Seal Date: MM/DD/YY

Note: Label sample is for illustrative purposes only.
Label size and data arrangement shall be determined by the manufacturer



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Company ABC Packing Slip

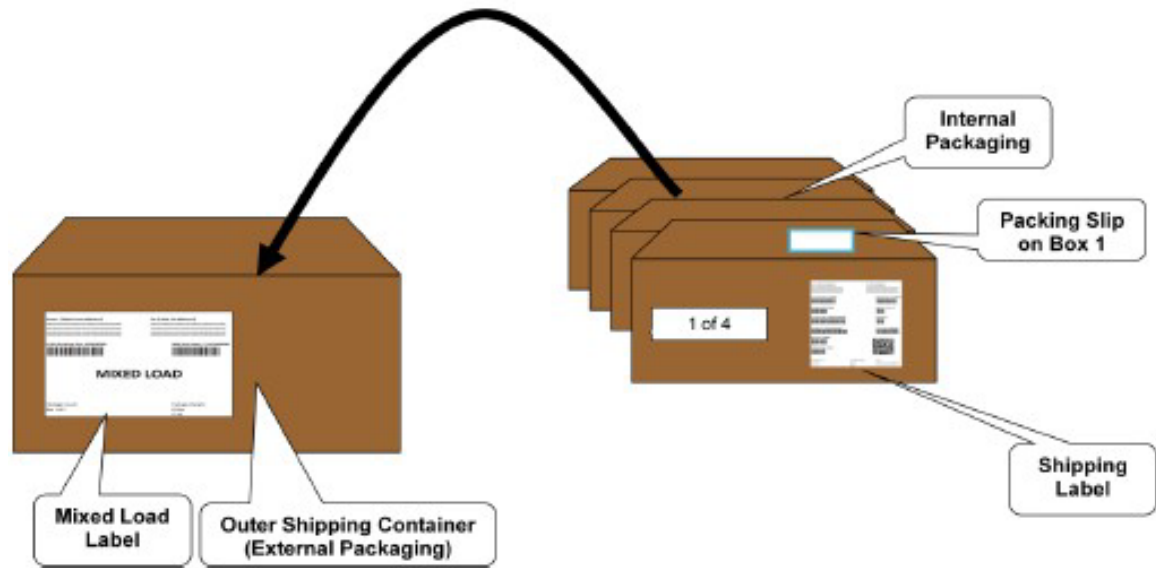
Ship From: ABCDEFGHIJKLMNOPQRSTUVWXYZ ABCDEFGHIJKLMNOPQRSTUVWXYZ ABCDEFGHIJKLMNOPQRSTUVWXYZ		Ship To: ABCDEFGHIJKLMNOPQRSTUVWXYZ ABCDEFGHIJKLMNOPQRSTUVWXYZ ABCDEFGHIJKLMNOPQRSTUVWXYZ	
(K) Customer PO: 1234567 	(11K) Packing Slip: 123456789 	(6D) Ship Date: YYYYMMDD 	
(P) Customer Part: ABCDEFGHIJKLMNO 	(Q) Quantity: 1234567 	(4K) Cust. PO Line: 12 	(10D) Date Code: YYWW
(4L) CoO: US 	(1T) Lot Code: 123456789 		
(P) Customer Part: ABCDEFGHIJKLMNO 	(Q) Quantity: 1234567 	(4K) Cust. PO Line: 12 	(10D) Date Code: YYWW
(4L) CoO: US 	(1T) Lot Code: 123456789 		
(P) Customer Part: ABCDEFGHIJKLMNO 	(Q) Quantity: 1234567 	(4K) Cust. PO Line: 12 	(10D) Date Code: YYWW
(4L) CoO: US 	(1T) Lot Code: 123456789 		
Mfg CofC with Signature			



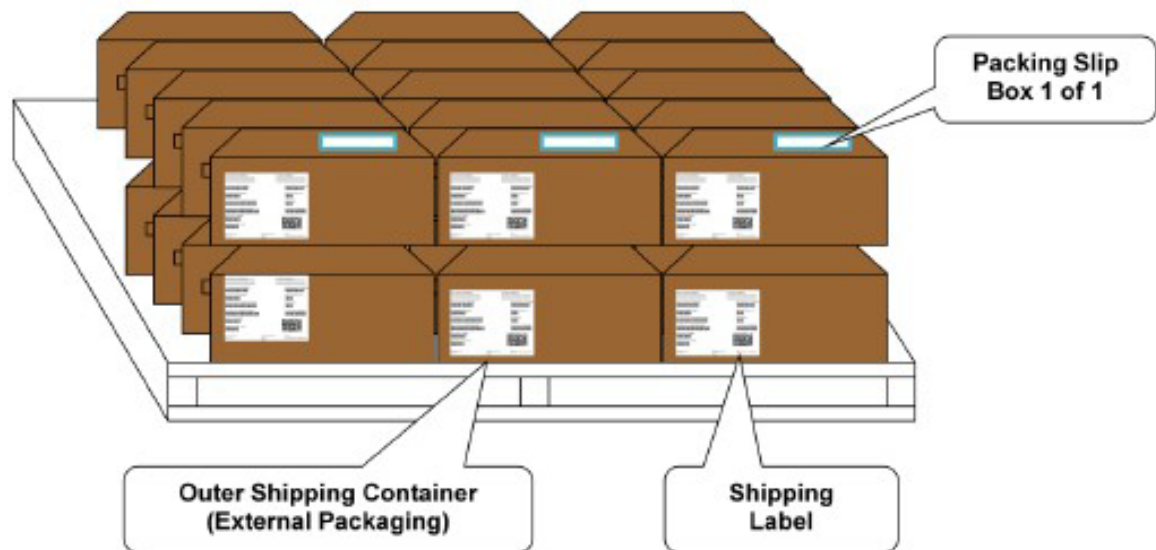
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Labeling & Packing Slip Placement

Consolidated Shipments



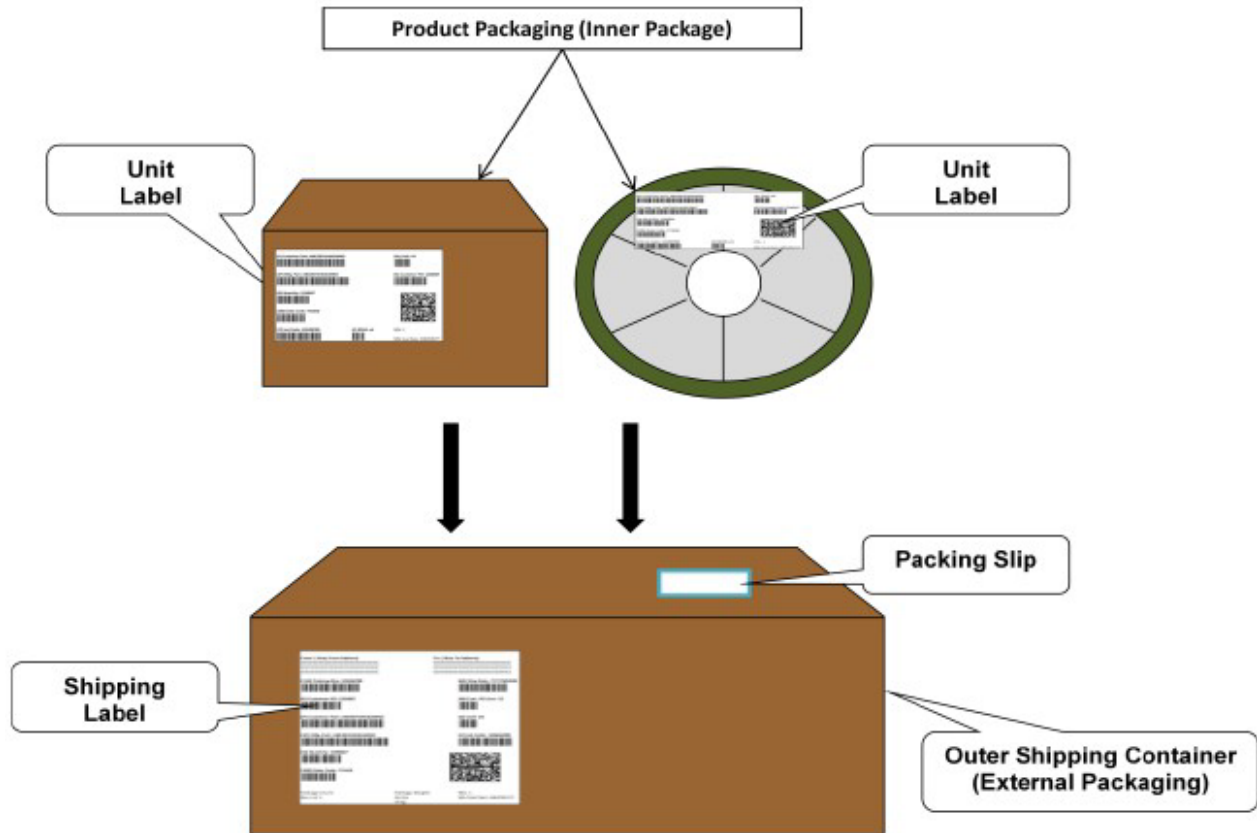
Individual Box Shipments





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Product/Unit Labeling



Mixed Lot Attribute Labeling and Barcoding

If more than one attribute is contained within a shipment or package, the following requirements apply:

Date Code:

- 1.) Preferred Method: When one date code is not possible on a commercial line item, we require all date codes to be listed in human readable, 1D, and 2D. Oldest first, using a repeatable section.
- 2.) Minimum Requirement: When one date code is not possible on a commercial line item, put the word "MIXED" or "MULTI" in the field or leave the field completely blank. Indicate on the packing slip that multiple date codes are present in this shipment.



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Lot Code:

- 1.) Preferred Method: When one lot code is not possible on a commercial line item, we require all lot codes to be listed in human readable, 1D, and 2D. Oldest first, using a repeatable section.
- 2.) Minimum Requirement: When one lot code is not possible on a commercial line item, put the word MIXED or MULTI in the field or leave the field completely blank. Indicate on the packing slip that multiple lot codes are present in this shipment.

Country of Origin:

- 1.) Preferred Method: When one country of origin is not possible on a commercial line item, we require all country of origin codes to be listed in human readable, 1D, and 2D. Largest quantity first, using a repeatable section.
- 2.) Minimum Requirement: When one country of origin code is not possible on a commercial line item, put the word MIXED or MULTI in the field or leave the field completely blank. Indicate on the packing slip that multiple countries of origin are present in this shipment.

Data Element Syntax for 2D Symbols

The encoding shall be as described in ISO/IEC 15434, using "Format 06", using Data Identifiers. The first seven characters shall be " $] > R_S 06 G_S$ ". For Data Identifier messages the last 2 characters, " $R_S E_{OT}$ ", are fixed (Format Trailer) for this application. When data elements are combined within a two dimensional symbol, the " G_S " (ASCII/ISO 646 Decimal "29", Hex "1D") character and the appropriate Data Identifier shall be used to identify each of the combined fields.

Data Format example/concatenation of 2D codes

$] > R_S 06 G_S 11K0033317 G_S 123456789,LM393DR,2500,14, R_S E_{OT}$

Barcode Content	Meaning
$] > R_S 06 G_S$	Header (DM ECC200 using data identifiers and group separator)
11K0033317	Sample Package ID
G_S	Group Separator
123456789,LM393DR,2500,14,	String of custom records
$R_S E_{OT}$	Trailer (End of Text)



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APPENDIX B – Packing organized by Part Number

TTI Specification for Part-Number-Sorted Packing



Unit pack :

For example a reel with a “unit-pack-label” on it
(See also *TTI Labeling Specification for Unit Pack Label*)

Level 1 packing sorted by part-number into Intermediate Container



Multiple unit packs of the same part-number are packed into an intermediate container (or bag etc.).
Such intermediate container is labeled with an outer-carton-label (*)

(See also *TTI Labeling Specification for Outer Container Label*)

Level 2 packing sorted by part-number into Outer Container or on Pallet



Multiple unit packs or intermediate cartons of the same part-number are packed into an outer and bigger container or on a pallet.
Such bigger /outer container or pallet is labeled with an outer-carton-label (*)

(See also *TTI Labeling Specification for Outer Container Label*)

(*) : One Outer-Carton-Label is to be only for one Supplier Packing List-Number and one TTI Purchase Order Line-Number.
Due to this rule, multiple Outer-Carton-Labels may apply on one container (or pallet).



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APPENDIX C

TTI Packing requirement for shipments into/within EU / EMEA Countries

With respect to the ordered Products, including the whole package & all enclosed items delivered together with the products, also of 3rd parties, Supplier warrants and agrees that it complies with all applicable laws, regulations, codes, rules, or ordinances, including but not limited to all applicable marking / labelling, registration, information and information obligations, governing the manufacture, import, sales and use of the Products in the EU / EMEA countries, including but not limited to all applicable laws in the EU / EMEA countries and all national laws in the EU member states and EMEA countries based on substance regulations, waste regulations, and all other applicable EU / EMEA countries regulations and directives.

The member states of the EU have passed the EU Framework Directive 2018/852 on the labelling of packaging. You can find this EU directive here:

<https://eur-lex.europa.eu/legal-content/DE/TXT/?uri=CELEX%3A32018L0852>

Therefore, it will be the obligation to communicate the material of all packaging elements, which you supply to us or which contain/protect the products you supply to us, using the alphanumeric coding of the material according to European Decision 129/97. As an example (but not limited to): cartons, bags, separators, stretch film, polystyrene, bubble wrap, adhesive tape, pallets, etc.



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This information is commonly represented in the form of a triangle with three arrows and the material code of the packaging. Below you find the Alphanumeric code list:

Material	Abbreviations	Numbering
Plastic		
Polyethylene terephthalate	PET	1
High density polyethylene	HDPE	2
Polyvinyl chloride	PVC	3
Low density polyethylene	LDPE	4
Polypropylene	PP	5
Polystyrene	PS	6
Paper and fibreboard		
Corrugated fibreboard	PAP	20
Non-corrugated fibreboard	PAP	21
Paper	PAP	22
Metals		
Steel	FE	40
Aluminium	ALU	41
Wood Materials		
Wood	FOR	50
Cork	FOR	51
Textile		
Cotton	TEX	60
Jute	TEX	61
Glass		
Colourless glass	GL	70
Green glass	GL	71
Brown glass	GL	72
Composites		
Paper and fibreboard/miscellaneous metals	*	80
Paper and fibreboard/plastic	*	81
Paper and fibreboard/aluminium	*	82
Paper and fibreboard/tinplate	*	83
Paper and fibreboard/plastic/aluminium	*	84
Paper and fibreboard/plastic/aluminium/tinplate	*	85
Plastic/aluminium	*	90
Plastic/tinplate	*	91
Plastic/ miscellaneous metals	*	92
Glass/plastic	*	95
Glass/aluminium	*	96
Glass/tinplate	*	97
Glass/miscellaneous metals	*	98



*Composites : C plus abbreviation corresponding to the predominant material (C/).



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Acknowledgement Page

Date: _____

Supplier Name: _____

Location: _____

Supplier Signature: _____

I _____ (please type or write representatives name),
acknowledge that _____ (please insert Company Name) has
received and understand the contents of TTI's Supplier Quality Requirements Manual. As feedback, I have
documented any exceptions that are relevant or unobtainable in relation to being a supplier to TTI below.

If exceptions are taken to any paragraph, please explain in detail how your company manages this topic
or why it is not applicable.

Exceptions: _____

