


PROC GENERAL PKG LBL AND HNDL SPEC
 (Supersedes 999000271 and 999000692)

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NOTE: ANY PACKAGING SPECIFICATION REFERENCED IN AN AXCELIS DRAWING, REQUEST FOR QUOTATION OR PURCHASE ORDER WILL TAKE PRECEDENCE OVER THIS DOCUMENT.

Exception: Bar Code Labels must be included per this procedure unless referenced specification specifically prohibits the addition of a label

NOTE: AXCELIS SUPPLIERS ARE ULTIMATELY RESPONSIBLE FOR ADEQUATE PACKAGING TO PREVENT DELIVERY OF DAMAGED PARTS.

1.0 PURPOSE

- 1.1 To establish packaging requirements for all components shipped to and from Axcelis
- 1.2 To ensure packaging economy, efficiency, and uniformity
- 1.3 To support receipt, storage, inventory, transfer and issue of material
- 1.4 To ensure optimum part life, utility and performance through prevention of deterioration or damage
- 1.5 To ensure minimum marking for safe and effective identification, handling, shipment and storage

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- 1.6 Enable use of automated material handling methods and equipment
- 1.7 To designate the use of packaging that yields the lowest overall cost to Axcelis with the following considerations:
 - 1.7.1 Minimization of materials, methods of preservation, and documentation
 - 1.7.2 Accomplishment with optimum amount of automated operations
 - 1.7.3 Minimum weight and cube
 - 1.7.4 Use of modular containers
 - 1.7.5 Utilization of the latest materials, methods, and techniques
 - 1.7.6 Reuse, recycle or disposal of packaging materials

2.0 SCOPE

- 2.1 This document encompasses unit packaging, exterior shipping containers, over-pack, palletization, unitization of loads and related subject matter.
- 2.2 Suppliers and Axcelis shipping personnel are referred to collectively as shippers.

3.0 PACKAGING DEFINITION

- 3.1 Packaging is defined as the enclosure of products, items or other packages in bags, boxes, or other container forms to perform one or more of the following basic functions: containment, protection, communication, identification, and utility.
- 3.2 The package protects the product from the environmental conditions including but not limited to moisture, temperature extremes, mechanical shocks and vibration.
- 3.3 Packages should protect products against the following hazards until the items are placed into use:
 - 3.3.1 Damage due to force and exposure
 - 3.3.2 Pilferage
 - 3.3.3 Spillage
 - 3.3.4 Temperatures between -54C (-65F) and 70C (158F)
- 3.4 Tag, Tagged- A means of adding item information via a “tag”, (not an adhesive label) usually a small paper or plastic material that is loosely attached (via plastic wire tie, nylon string or stainless steel wire) to an item that should not have labels directly attached or inscriptions directly applied.
- 3.5 Last Inner-most Layer of packaging (reference: bar code labels): Usually the layer of plastic, protective packaging closest to the item. The intent is for the bar code label to be visible and readable (scannable) at the individual part level whenever possible.
 - 3.5.1 Examples:
 - 3.5.1.1. An item that is double bagged in clear poly bags- the inner most bag is the inner-most layer of packaging
 - 3.5.1.2. Clean room fiber wraps underneath a clear poly bag—the poly bag is the inner most layer
 - 3.5.1.3. A cardboard box packaging a commercial electrical component is the inner most layer
 - 3.5.1.4. A part that is vacuum packed to a piece of kraft board and bagged- the kraft board layer is the inner-most layer
 - 3.5.1.5. A frame or other large weldment can be tagged with the label
 - 3.5.1.6. A printed Circuit Board that is in an ESD bag and a Kraft Corrugated Box- the box is to be considered the inner-most layer of packaging

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3.5.1.7. Heavy/bulky items that are wrapped/bagged and individually crated or palleted, apply bar code label to innermost visible/scannable layer AND the outside of the crate
Examples:

- Magnets
- Large Power supplies/transformers
- Frames
- Large purchased assemblies– modules, EFEMs, loaders

4.0 SPECIFICATION REVISION

- 4.1 Revisions to this specification may feature new packing concepts, new requirements and cost reductions.
- 4.2 Any revision to this document should result in a change notification to shippers.
- 4.3 Shippers should routinely check the Axcelis online Supplier Portal for the current revision.

5.0 RESPONSIBILITY

- 5.1 Axcelis:
- 5.1.1 To specify packaging requirements
 - 5.1.2 To provide timely notice of revisions
- 5.2 Shipper:
- 5.2.1 To ensure that material arrives safely, accurately and cost effectively
 - 5.2.2 To correctly and consistently package, label, and ship according to Axcelis specifications
 - 5.2.3 To obtain Axcelis approval before implementing changes
 - 5.2.4 To comply with all applicable laws and regulations

6.0 GENERAL GUIDELINES – Minimum Expectations

- 6.1 Handling and Cleanliness
- 6.1.1 **NOTE:** Axcelis products function in ultra high purity processes and must adhere to strict industry mandated cleanliness protocol. Parts must be as clean as possible when delivered (free of dust, dirt, sodium, oil, and contaminants). Follow proper handling and cleanliness guidelines for all parts.
 - 6.1.2 Use Isopropyl alcohol (semiconductor grade or a 50/50 mix of IPS and DI water) and lint free wipes to thoroughly remove all contamination.
 - 6.1.3 **Wear cleanroom gloves** (lint and powder free) to prevent contamination from finger oils.
 - 6.1.4 Package in materials that are non-particle generating and free of all oils.
 - 6.1.5 Double bag each part.
 - 6.1.5.1. Use a clear outer bag with no label.
 - 6.1.5.2. Label the inner bag so that it is clearly visible through the outer bag.
 - 6.1.6 Parts delivered directly to Axcelis production:
 - 6.1.6.1. Deliver large parts and assemblies on clean plastic pallets.
 - 6.1.6.2. Contain in plastic corrugated boxes whenever possible.
 - 6.1.6.3. Wrap in clear plastic parts that are too large for boxes.
- 6.2 Individual Packaging
- 6.2.1 Package and mark each part separately except as noted in section 13 Specific Requirements or according to drawing specifications.

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6.2.2 All parts supplied to Axcelis must have an **additional** (to any other labeling requirements) label (See Appendix B for label sample) applied on to the “inner most layer of packaging”. If a bar code label is covered by a poly bag or wrap , the bag/wrap must be clear. The intent of this bar code label is primarily to enable the “part put away” and “part picking” processes. Axcelis needs for the bar code to be accessible (readable via a scanner) during these processes.

- “Part put away” is the process that commences after we have formally received an item on our receiving dock. It involves putting the item into stores at the correct location. Depending on the size and type of part, some de-packaging may occur.
- “Part picking” is the process that retrieves a part from stores, and prepares it for delivery to it’s next destination (frequently our ultra-clean production area). Any material that is not packaged in a clean room compliant manner is de-packaged.

At present, the bar code will not be needed after these processes are complete.

This label contains the following minimum information **and** a QR (Quick Response) code that contains the Axcelis Part Number only.

- Axcelis Part Number
- Axcelis Part Description
- Axcelis Purchase Order Number
- Axcelis Line Number

6.2.2.1. If it is for some reason impossible to view/scan the bar code label on the innermost layer of packaging, the default is to apply the label to the innermost visible/scannable layer of the individual part packaging.

6.2.2.2. Certain commercially available items may be purchased as individual units but have historically been received (and packaged) in quantity. Examples of this include nuts, bolts, screws, washers, small electrical components, etc. These should be labeled at the innermost layer of packaging (that is viewable/scannable) which may be at a quantity >1 if that is historical precedent for the item.

6.3 Ocean Transit

6.3.1 Package to withstand the harsh environment of containerized ocean transit.

6.3.1.1. Use water resistant materials.

6.3.1.2. Vacuum seal parts in clear plastic bags inside outer packaging.

6.4 ESD Handling and Packaging

6.4.1 Implement an ESD control program equivalent to that called out in Axcelis BLD Electrostatic Discharge Control WI, Procedure 999001188

6.4.1.1. Take necessary precautions to prevent damage to electrical components and assemblies by means of electro-static discharge (ESD).

6.4.1.2. During manufacturing and packaging, maintain adequate ESD controls which should include but not be limited to ESD controlled workstations and wrist straps.

6.4.2 Comply with ESD standards when selecting packaging materials.

6.4.2.1. Use anti-static bags.

6.4.2.2. Mark with the standard ESD symbol. See Appendix B for examples.

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- 6.4.3 Refer to the documents referenced in Appendix A or on the applicable drawing for additional details regarding handling and packaging of certain parts such as Printed Circuit Boards.
- 6.5 Hazardous Materials
 - 6.5.1 Refer to TITLE 49 Code of Federal Regulations, which incorporates Department of Transportation Regulation for the Transportation of Explosives and other Hazardous Articles by all modes.
 - 6.5.2 Package International Shipments in accordance with the International Air Transport Associations Dangerous Goods Regulation (IATA) and the International Maritime Organization Dangerous Goods Code (IMDG) codes.
 - 6.5.3 Include MSDS documentation with all hazardous material. Provide copies for each unitized container in cases of bulk pack.
 - 6.5.4 Package dangerous goods under Federal Motor Carrier Safety Administration CFR 49 Part 173 – Shippers – General Requirements for Shipping and Packaging, as well as applicable other sections contained in Subchapter C., IATA, and IMDG regulations and accept liability for shipment.
 - 6.5.5 Pack, mark, label, describe and certify hazardous materials in strict accordance with Department of Transportation regulations. Axcelis will not accept material without the signed form certifying compliance when applicable.
 - 6.5.6 Do not ship non-compatible hazardous materials together.
- 6.6 Testing.
 - 6.6.1 Follow the guidelines outlined in International Safe Transit Association (ISTA) Pre-Shipment Test Procedures, ASTM D-4196 Performance Testing of shipping Containers and Systems, and / or National Motor Freight Classification Item 180 - Performance Testing of shipping Containers (Less than Truckload) LTL, common carrier environment.

7.0 MATERIALS

- 7.1 Quarantined and Restricted Materials
 - 7.1.1 **NOTE: Select reusable, recyclable, or biodegradable packaging materials whenever possible.**
 - 7.1.2 Do not use loose fill packaging for dunnage, void fill, or cushioning. Loose fill is defined as “peanuts”, “popcorn”, shredded paper, etc.
 - 7.1.3 Restricted use materials:
 - 7.1.3.1 Do not use injected foam packaging unless isolated by an anti-static polyfilm liner.
 - 7.1.3.2 Do not use pink anti-static bubble wrap in contact with painted or plated parts as this material reacts with most paints. Always use a non-reactive buffer material.
- 7.2 Wood
 - 7.2.1 Use only heat-treated wood for pallets, crates and supports.
 - 7.2.2 Use wood packaging stamped with an IPPC (HT) heat-treated and ROHS approved marking that is clearly visible.

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- 7.2.3 Use lumber employed as blocking and bracing material with moisture content that does not exceed 19 percent nor weigh less than 12 percent of its oven dry weight at the time of fabrication. Shrinkage is objectionable because it allows movement of the item and the item may actually break loose. Moisture in lumber is objectionable because it is apt to evaporate into the pack, thus raising the humidity of the pack and causing corrosion of metals or decay of organic materials.
 - 7.2.4 Never place lumber, plywood, or other hygroscopic materials in direct contact with critical metal surfaces since such materials tend to absorb and retain moisture next to the surfaces, finally causing corrosion. Install a water-vapor proof barrier between any critical metal surfaces and hygroscopic packing materials. Install a waterproof or moisture-resistant barrier between all metal surfaces and hygroscopic materials.
 - 7.2.5 Use a pallet, whose size can be handled by a conventional pallet jack or forklift and of adequate size such that usage does not compromise or damage the pallet. When shipping multiple units or packages on one pallet, shrink-wrap all units into place entirely covering exposed surfaces. Nail or staple in a pattern that ensures safe use of the pallet and prevents breakage or limited performance.
 - 7.2.6 Provide a minimum of two skids for any packed box that exceeds 100 pounds in gross weight or that exceeds 48 inches by 24 inches in length and width, unless otherwise specified.
- 7.3 Kraft Corrugated Container
- 7.3.1 For all assemblies, use a minimum box bursting test rating of 275 pounds per square inch (PSI) for single wall, 350 PSI for double, and 1100 PSI for triple wall.
 - 7.3.2 Use air bags for odd shaped parts that interfere with the use of fitted foam inserts
 - 7.3.3 Locate the center of gravity closest to the center of the box when seated top facing up.
 - 7.3.4 Securely close boxes, drawing together the inner and outer flaps of slotted style boxes as closely as possible. Do not allow the flaps to project over the side or end edges. Apply adhesive or metal stitches to prevent lifting of free edges and corners of outer flaps on assembled boxes.
 - 7.3.5 Use corrosion resistant staples when assembling boxes.
 - 7.3.6 Tape all open edges of flaps and openings to prevent the entry of moisture when boxes will be shipped with no outer pack.
- 7.4 Poly Bags
- 7.4.1 Use bags that are at least 1.5 mil thick, clear, anti-stat and water resistant. Close by heat-seal, zip lock, or plastic tape. Never use staples to close bags.
- 7.5 Instapak / Foam in Place Systems
- 7.5.1 When using foam in place, first line the box with sheeting material so the foam can be completely and easily removed from the box (this allows for recycling of the corrugated container).
 - 7.5.2 **IMPORTANT:** Do not allow foam in place and/or any of its associated chemicals to come in contact with any sealed product.
- 7.6 Fabricated Foams
- 7.6.1 Use EPE (Expanded Polyethylene), EPS (Expanded Polystyrene), EPP (Expanded Polypropylene) or other closed cell foam that is non dust producing, protects the part and does not degrade from service by losing resiliency or by breaking down and causing dust.

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- 7.6.2 Use foam to control movement, to prevent damage caused by vibration, to protect fragile or delicate components, to prevent rupture of barriers and outer containers and to prevent abrasion of highly finished surfaces.
- 7.6.3 Use cushioning to absorb the energy resulting from impact shock. Choose foam that protects the part by distributing forces over a large area, lowering the stress concentration on any one point

8.0 LABELING AND MARKING

- 8.1 **IMPORTANT: DO NOT APPLY LABELING TO PARTS. APPLY LABELING TO PACKAGING MATERIALS ONLY.**
- 8.2 Mark fabricated parts according to Axcelis Marking Specification 8600780
 - 8.2.1 Bag and tag any fabricated part which is not marked with the Axcelis part number due to size constraints.
 - 8.2.2 Do not mark or label the supplier's name, address or phone number on unitized packing which shall remain with the part.
- 8.3 Label packages with the following information:
 - 8.3.1 Part Number
 - 8.3.2 Revision
 - 8.3.3 Supplier I.D. Number
 - 8.3.4 Date Manufactured (Week, Year)
 - 8.3.5 Serial Number (if applicable)
 - 8.3.6 Country of Origin: for code see http://en.wikipedia.org/wiki/ISO_3166-1
- 8.4 Use an ink jet or thermal printer to print labeling and printed material which must remain with the part. Do not use a printer equipped with a toner cartridge which creates particles not compatible with a clean room environment.
- 8.5 Mark the country of origin on the inner bag and on the outer packaging for Customs purposes. Mark USA as country of origin when appropriate.
- 8.6 **FRAGILE PARTS:** add a label indicating "FRAGILE" to the highest level of individual packaging.

9.0 CRATES

- 9.1 Load the crate so that the center of gravity is closest to the bottom when crate is seated top facing up. Locate the center of gravity of the loaded crate as closely as possible with the geometrical center (center of balance).
- 9.2 Provide a minimum of 6 inches of protection (on all sides, top and bottom) between any assembly and the outside shipping container. (Reference Appendix C for size constraints)
- 9.3 Sheathe the crate so that it is not open to the environment.
- 9.4 Assemble the crate using weather resistant steel Phillips head screws so that it is easy to open for inspection and reseal. Do not secure panels using nails and/or lag bolts.
- 9.5 Block, brace, anchor or otherwise immobilize items which do not completely fill the shipping container in the following situations:
 - 9.5.1 To secure items or components so that they will not shift within a container
 - 9.5.2 To make irregular shaped items fit a regular container
 - 9.5.3 To distribute the weight of irregular items over all edges and faces of the container
 - 9.5.4 To protect projecting parts from damage
 - 9.5.5 To prevent projecting parts from damaging the container
 - 9.5.6 To provide space for spare parts

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- 9.5.7 To reinforce weak portions or mountings.
- 9.6 Provide additional material to prevent damage due to relative motion between the surfaces of the item with the surfaces of blocking and bracing.
- 9.7 Use cushioning materials and devices to damp forces.
- 9.8 Secure loose additional parts to prevent damage to them or the assembly by movement during shipment.
- 9.9 Secure moving external parts or projecting parts that might become damaged by shock or vibration encountered in shipment by means of blocking, bracing, tie downs, disassembly etc.
- 9.10 Apply “shock watch” and/or “tip-n-tell” transportation indicators to the outside of the container for assemblies that are susceptible to damage from excessive shock or from being tilted or laid on their sides.
- 9.11 Segregate different part numbers inside crate by using a mix of box & bag within larger box(es) OR just segregate different part numbers using bag OR box within larger box(es) that are nested inside crate for bulk part(s) shipments. Packing slip must be properly adhered to every bag &/or box inside the larger box(es). Note that larger box(es) must have a slip outlining parts & QTY’s that are nested inside. (Reference Figure 1)



Figure 1

- 9.12 Ensure that each crate housing multiple boxes / parts have a self-adhering (moisture proof) packing list slip on it which outlines all the part numbers and QTY’s that are inside the crate.

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9.13 Desiccant or moisture absorbent individual packets must be used as required inside the boxes nested within the crate for moisture protection.

10.0 STANDARD & CUSTOM PALLETS FOR LARGE MODULES

- 10.1 Pallet must extend at least 2” to 6” from the base of the component (i.e., Pallet has a larger footprint than the component) on all four sides.
- 10.2 Component must be secured to the pallet in 4 ways: 2 straps in one direction, 2 in the other.
- 10.3 Blocks should be used where appropriate to constrain or fixture the components and prevent shifting on or from the pallet. The pallet itself must also not shift.
- 10.4 Plywood deck boards cannot be used uniformly as the bottom-most layer to not destroy bottom deck boards when end users may maneuver pallets using pallet jacks.
- 10.5 Top deck plywood boards on pallet must be uniformly assembled with no excessive gaps or partitions in between each board to properly support and distribute product loading.
- 10.6 Pallets should not contain any failing elements such as snapped or deteriorated wood members.
- 10.7 Pallets with nonconforming dimensions are unacceptable (squareness and flatness)
- 10.8 Component weight must be visible from all four sides, for enclosed pallets
- 10.9 If possible, pallets should identify the center of gravity and center the fork positions underneath it
- 10.10 Large modules must be uniformly wrapped with at minimum plastic wrap to safeguard against natural elements.
- 10.11 No nails can be protruding from the actual wood pallet which can damage, abrade, or scrape product the pallet is transporting.

11.0 UNIT OF MEASURE / KITS

- 11.1 Package together in one container multiple pieces that are constituted to equal one part or kit. Clearly label the container according to Axcelis Marking Specification, Procedure 8600780 Class 5.
- 11.2 When packaging parts of an assembly together is impractical, clearly label and number separate containers indicating division of the assembly.
- 11.3 Include BOM Audit checklist, packaged with each kit and include one copy with the Shipping/Receiving paperwork.
- 11.4 Skidded stainless and/or (but not limited to) leaded kit panels must have self-adhering laminated printed labels that stick out of each panel so Axcelis material handling can identify each panel PN without the need to lift, shuffle or sort through kit panels. (see figure 2)



Figure 2

12.0 REUSABLE PACKING REQUIREMENTS

- 12.1 Employ reusable packaging that is easy to open and reseal to avoid damage to the components and the packaging itself.
- 12.2 Arrange blocking and cushioning so that it is easily removable, replaceable and adequate to protect the contents and the reusable containers.

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- 12.3 Clearly mark reusable packaging on the top and at least one side of the container with the Axcelis part number and the following information: "PACKAGING TO BE RETURNED TO (VENDOR NAME), DO NOT DESTROY".
- 12.4 Upon re-use of packaging, assure all labels from previous use that are not applicable to re-use have been removed

13.0 OVER PACK

- 13.1 Dust seal with tape over pack to be used in transportation of items to Axcelis to keep material dry and contaminant free.
- 13.2 Choose packaging materials and arrange the contents of over pack within the shipping container so as to provide the following advantages:
 - 13.2.1 Maximum protection to its contents and the container
 - 13.2.2 Low tare weight
 - 13.2.3 Smallest practical cube
 - 13.2.4 Convenient handling
 - 13.2.5 Suitability for palletization
- 13.3 Completely fill the container or secure the contents with suitable clearance.

14.0 SPECIFIC REQUIREMENTS

- 14.1 Graphite Parts
 - 14.1.1 Refer to Axcelis Specification For Graphite Components, document 8800451.
- 14.2 O-Rings, SEALS, GASKETS
 - 14.2.1 Refer to Axcelis O-Ring Handling Specification, document 880000425.
 - 14.2.2 Refer to SAE ARP5316 Storage of Aerospace Elastomeric Seals and Seal Assemblies which include Elastomer Element prior to Hardware Assembly.**
- 14.3 Quartz / Ceramics Parts
 - 14.3.1 **IMPORTANT: Wear clean room gloves.**
 - 14.3.2 Follow packaging instructions when specified on the drawing.
 - 14.3.3 **Parts are fragile** – see requirements in 13.11
 - 14.3.4 Design packaging to protect the part when the package is opened and the part is removed.
 - 14.3.5 Bag and label the box to be clean room compatible. Place in a second box for shipping.
- 14.4 ESD Sensitive Parts
 - 14.4.1 Treat all electronic components and assemblies as ESD sensitive regardless of the part's actual level of Sensitivity.
 - 14.4.2 Label each part with a size appropriate ESD Caution label.
 - 14.4.3 Use static dissipative material closest to the ESD sensitive device.
 - 14.4.4 Surround the item with conductive material to provide an electrostatic shield (faraday cage).
 - 14.4.5 Package so that leads do not become entangled and damaged.
- 14.5 ESD Sensitive Assemblies.
 - 14.5.1 Package in static safe packaging entire assemblies which contain parts that are susceptible to static damage. When not feasible, shield all exposed areas from potential static energy.
- 14.6 Printed Circuit Boards
 - 14.6.1 Refer to Axcelis PCB Packaging Specification Procedure, Document 999001199.
 - 14.6.2 IMPORTANT: Prevent carton bulging.**

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14.7 Silicon Coated Parts

14.7.1 **IMPORTANT:** Wear vinyl clean room gloves.

14.7.2 Refer to Axcelis Procedure for Handling, Marking, Labeling and Packaging of all Silicon Coated Parts, document 8607889.

14.7.3 Minimize organic and particulate contamination during metal forming, Silicon coating, handling, packaging and transportation.

14.8 Refractory Metal Parts

14.8.1 Refer to Axcelis Eng Info Spec For Refractory Metal Components, procedure 880000068.

14.9 Mechanical and Sheet Metal Parts

14.9.1 Clean each part so that it is free from dirt, grime, fingerprints, dust, oils, etc.

14.9.2 **Note:** Add a protective layer of self adhering poly to protect the surface of any part that has a Mirror 8 or Super 8 finish.

14.9.3 When necessary to prevent damage, wrap each part with closed cell foam ensuring full coverage around the entire part.

14.9.4 Place each part in a 1.5 mil thick (minimum) polyethylene bag and label the bag per Axcelis Marking Specification, Procedure 8600780 Class 5.

14.9.5 Place each bagged and labeled part in a clear unlabeled outer bag.

14.9.6 To protect the part from damage during transit, add additional bubble wrap and or boxing. Label the outside of the packaging per Axcelis Marking Specification, Procedure 8600780 Class 5.

14.9.7 Crate larger mechanical and sheet metal parts when needed to protect from damage during transit.

14.9.8 Skidded stainless and leaded panels should be limited to a single PN per skid (except for kits).

14.10 General Mechanical Components: Nuts, Bolts, Screws, Washers, ETC. (i.e. Bulk Packaging)

14.10.1 Remove paper wrap, foam wrap and paper tags

14.10.2 Place quantities not exceeding 50 parts into 1.5-mil (minimum) clear polyethylene bags

14.10.3 After removing excess air, ensure that each bag is sealed.

14.10.4 Label each bag according to Axcelis Marking Specification, Procedure 8600780 Class 5.

14.10.5 Place the bagged parts in a sealed and labeled corrugated shipper (Kraft or equivalent).

14.11 Fragile Parts: Depending on the shape/size of the part and available packaging material (bubble wrap, corrugated plastic, corrugated box) there are two ways to package the part:

14.11.1 The bagged part must be shrink wrapped over a piece of corrugated plastic. The mounted part will then be placed in a bubble wrap bag.

14.11.2 The bagged part must be in bubble wrap or closed cell foam and then placed into a corrugated plastic box.

14.12 Delicate finish:

14.12.1 Features and surfaces such as O-Ring grooves and contact surfaces are considered a delicate finish and should be covered with removable cleanroom compatible film such as Axcelis part number 920000611, or equivalent.

PROCEDURE

APPENDIX A: REFERENCES

Index of other documents governing packaging of particular commodity types:

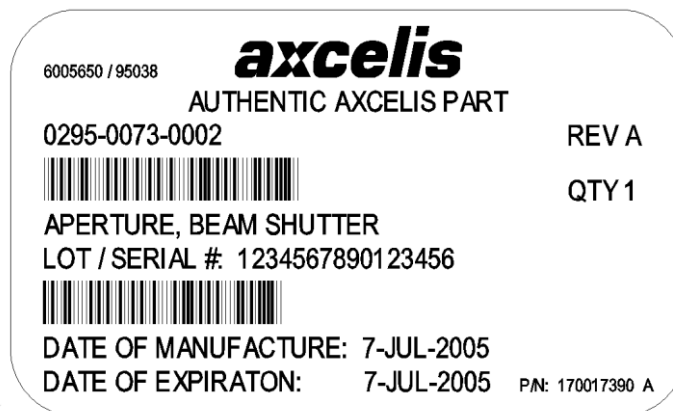
Axcelis Document Number	DESCRIPTION
8600619	Packaging Doors Procedure
8600780	Marking Specification Procedure
8601872	PED Packaging Specification
8601880	PED/Disk Serialization Specification
8606869	Magnet Packaging
8607889	Packaging of Si Coated Parts
8800434	Labeling Procedure for Tested PCB's
8800451	Specifications for graphite vacuum components
8800461	Procedure for PCB Serial Numbers
9004942	Label, Integrity seal, "NEW"
9004634	Label, Integrity seal, "UNTESTED"
999001199	PCB Packaging Procedure
880000068	Specification for Refractory Metal Components
880000425	O-Ring Marking and Packaging and Storage Specification
8800484	Specification for Aluminum Vacuum Components
8800459	Spec For Aluminum Oxide Vacuum Components

PROCEDURE

APPENDIX B: ELECTRO STATIC DISCHARGE (ESD) LABELS



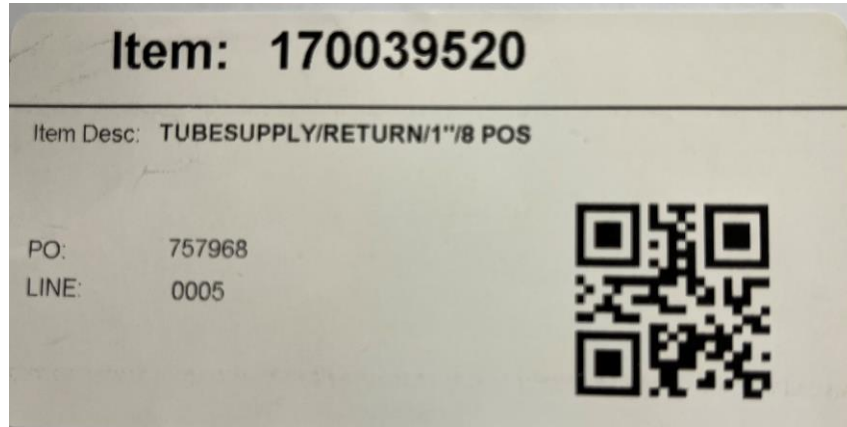
Axcelis Supplier Label Spec
Label Size approx: 5" x 3"



P/N 170017390 / 0634901: Label, Shipping, Clean Room

PROCEDURE

Sample Bar Code Label is 4"x 2", Supplier can use any size label as long as it is legible and scannable by a bar code scanner



APPENDIX C SHIPPING CONTAINERS

Shipment Mode	Transport Vehicle Type	Try to Make Package Dimensions Modular to:			Comments
		Length	Width	Height	
Air	“Narrow Body” Aircraft, Lower Deck or “Belly” Positions (B707, B727, B737, DC8, DC9)	Varies	Varies	Varies	*Belly positions are used for manually handled loose cartons and luggage.
	“Narrow Body” Aircraft, Upper Main Deck Positions (B707, B727, B737, DC8, DC9)	118” 101”	84”	76” to 82 “ Design for 80”	Height limitation varies depending on the specific airplane and how it was configured for cargo
	“Wide Body” Aircraft, Lower Deck or “Belly” Positions (B747, B767, DC10, MD11)	118”	92” 84”	63”	Items sized for lower deck “belly” positions will result in lower costs and increased flight availability globally.
	“Wide Body” Aircraft, Upper Main Deck Positions (B747, B767, DC10, MD11)	118”	92” 84”	94” or 118” B747 cargo only	Wide body, upper deck positions are not available to all destinations.
Ocean	Standard Inter modal Dry Containers Nominal 20’, 40’, and 45’	233” 472”	92”	89”	Aluminum dry containers are lined with plywood. Steel containers are not.

PROCEDURE

	“High Cube” Intermodal Dry Container (Nominal 40’, and 45’ only)	472” 533”	92”	101”	Available on special request
Surface	Typical North American Trucks Nominal 28’, 40’, 45’, 48’, 53’)	Nominal length less 8”	96”	104”	Heights up to 110” are available
	Typical European Trucks Nominal 6m, 8m, 12m, 14m, and 16m	Nominal length less 8”	96”	90”	Soft sided is typical
	Typical Asian Trucks Nominal 3m, 6m, and 9m	Nominal length less 8”	84” 96”	86” 96”	Soft sided is typical