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*Revision F of this document is a complete review, and a re-arrangement of the supplier requirements. There were too many changes to individually mark them in the left border of the document.*

**1.0 PURPOSE.** This document identifies the responsibilities of suppliers to PennEngineering. It is intended to assist suppliers in identifying our expectations regarding quality matters. It is expected that our suppliers understand our commitment to delivering quality to our customers, and will partner us in implementing this commitment.

**2.0 RESPONSIBILITY.**

- 2.1 The Director of Quality of PennEngineering, with appropriate assistance from the Director of Materials, is responsible for this document.
- 2.2 Suppliers are responsible to implement measures to ensure that quality products are delivered to PennEngineering in accordance with Purchase Order requirements. Supplier shall implement measures to conform to the requirements of this document when so required by a statement on the purchase order, or as otherwise agreed by both the supplier and the Materials or Quality Department of PennEngineering.

**3.0 APPLICABILITY.**

- 3.1 The requirements of this document do not override or negate any other purchase order requirements. In the case of conflict between the requirements contained herein and any other requirement on the face of the purchase order, the requirements from the purchase order prevail.
- 3.1 This document extends to suppliers which affect the quality of fastener products of PennEngineering. Supplier categories are defined as follows:

**Category A: Subcontractors (see definition, Appendix II). Suppliers of:**

- 1. raw materials for fastener products (metals and plastics)
- 2. manufacturers of parts which will be sold as fastener product (metal, plastic, etc.)
- 3. heat treating of fastener product
- 4. plating and coatings applied to fastener product (full coverage)
- 5. coatings applied to fastener product (partial coverage)
- 6. surface finishing of fastener product
- 7. other processes on fastener products (not defined by any of the processes above)

**Category B: Indirect Suppliers (see definition, Appendix II). Suppliers of:**


- 1. raw materials for tooling and testing panels
- 2. manufacturers and suppliers of tooling and production equipment
- 3. heat treating (and other thermal processing) of tooling
- 4. plating and coatings applied to tooling
- 5. surface finishing of tooling
- 6. other processes on tooling (not defined by any of the processes above)

**Category C: Laboratories (see definition, Appendix II). Suppliers of:**

- 1. calibration services
- 2. product testing services

**Category D: Service Suppliers (see definition, Appendix II). Suppliers of:**

- 1. sorting companies
- 2. delivery services and trucking companies

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##### **5.0 General Quality Requirements – for All Suppliers (page 3)**

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- 5.2 Quality Management System Requirement.
- 5.3 Supplier Performance.
- 5.4 Nonconforming Product.
- 5.5 Right to Verify Product at Subcontractor's Premises (i.e., Source Inspection).
- 5.6 PennEngineering Supplied Material and Equipment.
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##### **6.A Quality Requirements for Subcontractors.**

- A.1 Requirements for All Subcontractors (page 6).
- A.2 Specific Requirements for Raw Material Suppliers, including Stock Plastic (page 7).
- A.3 Specific Requirements for Fastener Part Manufacturers, including Plastic Injection Molders (page 9).
- A.4 Specific Requirements for Process Sources - Heat Treating, Plating, Surface Finishing, Plastic Overmolding (i.e. Injection Molding), Thread-Locking Patches, and Other Processes. (page 11).

##### **6.B Quality Requirements for Indirect Suppliers.**

- B.1 Requirements for All Indirect Suppliers (page 13).
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- B.3 Specific Requirements for Manufacturers and Suppliers of Completed Tools and Tooling Blanks. (page 14).
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##### **6.C Quality Requirements for Laboratories (page 17).**

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- D.1 Specific Requirements for Sorting Services.
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##### **Appendices (page 18).**

- I. Packaging Requirements and Recommendations**
- II. Definitions**
- III. Referenced Documents and Referenced Forms**
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## **5.0 GENERAL QUALITY REQUIREMENTS – FOR ALL SUPPLIERS.**

### **5.1 Compliance to Government, Safety and Environmental Regulations.**

- 5.1.1 All items supplied to PennEngineering shall satisfy current applicable governmental and safety constraints on restricted, toxic and hazardous materials; as well as environmental, electrical and electromagnetic considerations applicable to the country of manufacture and sale.

Suppliers shall comply with the Federal Hazard Communication Std – CFR 1910.1200 to assure internal and external communication concerning hazardous materials.

### **5.2 Quality Management System Standard.**

- 5.2.1 PennEngineering does not require suppliers to gain formal registration to ISO 9001:2000, ISO/TS-16949 or any other QMS standard. However, we do encourage suppliers to seek registration to ISO 9001, ISO/TS16949 or other appropriate QMS standard. PennEngineering does monitor supplier QMS registrations.

#### **5.2.2 Quality Management System – Subcontractors.**

PennEngineering expects that Subcontractors will implement a Quality Management System according to ISO-9001:2000 requirements and all applicable elements of ISO/TS-16949. We evaluate our suppliers utilizing applicable sections and elements of these documents as the fundamental Quality Management System requirement.

#### **5.2.3 Quality Management System – Indirect Suppliers and Service Suppliers.**

PennEngineering expects that Indirect Suppliers will implement a Quality Management Systems according to ISO-9001:2000. We evaluate our suppliers utilizing applicable sections and elements of this document as the fundamental Quality Management System requirement.

#### **5.2.4 Quality Management System – Laboratories.**


With only a few exceptions, PennEngineering requires that calibration and testing laboratories have their Quality Management System accredited to ISO-17025 by an appropriate accreditation body.

### **5.3 Supplier Performance.**

PennEngineering measures the performance of its Subcontractors and Indirect Suppliers based on quality, on-time delivery, and responsiveness. Formal reports of supplier performance will be issued monthly. Documented plans for corrective action will be required when supplier performance measurements indicate an unacceptable level of quality or on-time delivery performance.

Suppliers are expected to deliver items with 100% on-time performance. Suppliers shall establish and implement systems to ensure that 100% on-time delivery is met.

*NOTE: Refer to Appendix I for the definition of “On-time Delivery”.*

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#### 5.4 Nonconforming Product.

5.4.1 Suppliers shall not permit parts/material which do not conform to all requirements to be shipped to PennEngineering without documented authorization. Documented authorization shall be in the form of an "Engineering Supplier Waiver/Deviation" (SWD) approved by the Engineering Department of PennEngineering. This SWD shall be referenced on the purchase order.

*In the case of an urgent delivery where a revised purchase order has not yet been received, a copy of the SWD shall be sent with each applicable shipment of parts/material, or the SWD number shall be referenced on the part/material packing slip and/or certification.*


5.4.2 PennEngineering reserves the right to reject and return all product that does not conform to purchase order requirements. Authorization to return material/items will normally be requested; if authorization is not received within an appropriate time, items will be returned without authorization.

If the supplier disputes any such claim, the following rules will govern the resolution:

- a. Raw material shall be verified by appropriate inspection and testing by an independent laboratory.
- b. The results of heat treating and other thermal processes of metals (e.g., hardness) shall be verified by the Heat Treat Department or Engineering Laboratory of PennEngineering following the referee method specified in the applicable specification. PennEngineering reserves the right to have this verified by appropriate inspection / testing by an independent laboratory.
- c. Plating, coating, and other processes that cover parts shall verified by appropriate inspection and testing by an independent laboratory.
- d. Surface finish shall be verified by the Inspection Department of PennEngineering. We reserve the right to have this verified by appropriate inspection and testing by an independent laboratory.
- e. Dimensional nonconformities shall be verified by the Inspection Department of PennEngineering. We reserve the right to have this verified by appropriate inspection by an independent laboratory.
- f. Color of plastics and similar materials shall be verified by the GE ColorXpress.

#### 5.5 Right to Verify Product at Supplier's Premises (i.e., Source Inspection).

When specified in the contract or purchase order, or as otherwise agreed, suppliers shall afford representatives from PennEngineering and/or customers of PennEngineering the right to verify at their premises that product conforms to specified requirements.

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## **5.6 PennEngineering Supplied Material and Equipment.**

- 5.6.1 Any raw material supplied by PennEngineering for use in fulfilling an order shall be segregated and identified that it is the property of PennEngineering.
- Suppliers may not use such materials for any other purpose unless authorized PennEngineering.
  - Supplier shall return any remaining raw material when the order is complete.
  - Supplier may not substitute other material for any reason.
  - If more or other material is necessary, the supplier shall contact the buyer at PennEngineering for direction.
- 5.6.2 Any equipment (machinery, tools, gages, etc.) supplied by PennEngineering for use in fulfilling an order shall be segregated and identified that it is the property of PennEngineering.
- Suppliers may not use such equipment for any other purpose unless authorized PennEngineering.
  - Inspection, Measuring and Test Equipment (IMTE) supplied by PennEngineering is calibrated; a sticker is applied to show its status. Suppliers shall return any IMTE to PennEngineering in order to keep calibrations current.
  - Supplier shall return such equipment when the order is complete, unless otherwise directed by PennEngineering.

## **5.7 Verification of Process Capability.**


PennEngineering reserves the right to visit a supplier's facility for the purpose of reviewing their processes to verify capability to meet applicable requirements, and their continued conformance to these requirements. Such requirements may include, but are not limited to the supplier's ability to:

- maintenance of an appropriate Quality Management System
- meet product/process requirements
- verify a product's conformance to specified requirements
- maintain necessary traceability
- handle product in manners to maintain identification and prevent product mixes
- deliver product within an appropriate timeframe

*NOTE: PennEngineering representatives who visit a supplier for these purposes agree to keep any details about proprietary processes confidential, and will not divulge information in any manner that is detrimental to the supplier.*

## **5.8 Records.**

- 5.8.1 Subcontractors: Except as required by ISO-9001, ISO/TS-16949, the purchase order, and other paragraphs of this document, no records are required by this document.
- 5.8.2 Indirect Suppliers: Except as required by ISO-9001, the purchase order, and other paragraphs of this document, no records are required by this document.

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## **6.A QUALITY REQUIREMENTS FOR SUBCONTRACTORS.**


### **A.1 Requirements for All Subcontractors.**

#### **A.1.1 Process FMEA's, Control Plans and PPAP.**

A.1.1.1 The subcontractor shall develop Process FMEA's and Control Plans (See Definitions in Appendix II) for all parts made and processes performed on PennEngineering product. The subcontractor shall keep these documents on file, and shall keep the information current. Subcontractor shall submit copies of these documents to PennEngineering upon request.

A.1.1.2 When and as required by PennEngineering, the subcontractor shall comply with the requirements of the Production Part Approval Process (See Definitions in Appendix II). Specifically, subcontractor shall:

- a. submit a sample of production parts and all applicable documents (e.g. FMEA, Control Plan, material/process certifications, inspection/test results, etc.).
- b. not change the process without a resubmission of the applicable documents and approval from PennEngineering.

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## **A.2 Requirements for Raw Material Suppliers and Including Stock Plastic.**

### **A.2.1 Product Identification and Traceability.**

- a. Raw material shall be traceable to the mill's original heat or lot number.
- b. Each individual quantity (coil, bundle, spool, etc) of raw material delivered to PennEngineering shall be identified by a tag or other appropriate attached marking. Information required to be included on the tag (or appropriate marking) shall include:
  - Part number/size by PEM® part number (12 or 15 digit material code)
  - Alloy designation
  - Weight
  - Heat number, lot number, or other identification which will provide traceability
  - PennEngineering purchase order number
  - Subcontractor's name

### **A.2.2 Process Control.**


- a. The subcontractor shall supply material produced in accordance with the requirements of the raw material specification identified on the purchase order, if applicable.
- b. Upon receipt of the first order for each raw material (by PennEngineering specification number), subcontractor shall submit material samples as required by the PennEngineering Quality Department for first article approval before first shipment of material. Material submitted for first article approval shall be representative of production and future shipments. Any subsequent changes to the process require re-approval of the new/revised process. Further, PennEngineering reserves the right to require a re-approval of material as deemed necessary.

### **A.2.3 Handling, Packaging and Delivery.**

Raw material from different heat/lot numbers shall be appropriately separated in order to maintain traceability. Further, raw material shipped in order to fulfill more than one purchase order shall be appropriately separated in order to maintain traceability.

### **A.2.4 Records.**

- a. All records delivered to PennEngineering shall be identified with the following in order to maintain traceability:
  - Part number/size by PEM® part number (12 or 15 digit material code)
  - Alloy designation
  - Weight shipped
  - Heat number, lot number or other identification which will provide traceability
  - PennEngineering purchase order number
  - Subcontractor's name
- b. Material certifications and test reports as required by the applicable PennEngineering raw material specifications shall be obtained by the subcontractor and maintained by the subcontractor for a period of not less than two years.

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A.2.5 Certificates and Reports.

- a. Subcontractors of carbon steel and corrosion resistant (stainless) steel. A raw material certification of actual chemical and physical analysis shall be forwarded with each shipment, and a copy forwarded to the attention of the Quality Manager, per the applicable PennEngineering raw material specification.
- b. Subcontractors of aluminum, brass, and bronze alloys. A raw material certification of typical (or actual) chemical and physical analysis shall be forwarded with each shipment, and a copy forwarded to the attention of the Quality Manager, per the applicable PennEngineering raw material specification.
- c. Subcontractors of other materials (plastics, etc.). A certificate of conformance, along with a certificate of applicable tests, is required with each shipment.
- d. All certificates and reports listed in paragraph A.2.5.a. through c. above shall include the following information:
  - PennEngineering purchase order/item number
  - Brief description of material ordered (size, type, class, etc.)
  - Applicable raw material specification and its revision, per purchase order
  - Material heat/lot number
  - Listing of all chemical and physical specification requirements, and the results of tests performed
  - Signature of an authorized subcontractor representative.

**NOTE:** *“Physical” requirements in paragraph A.2.5.a thru d. are often referred to as “mechanical” requirements in the text of PennEngineering raw material specifications. They include all of the following as applicable: ultimate tensile strength, yield strength, elongation, reduction in area, grain size, and decarburization, and may include others as defined within the raw material specification.*

A.2.6 DFAR 252.225.7014.

- a. Purchase orders may require that material be DFARs compliant. In these cases, the supplier shall supply material in accordance with DFAR 252.225-7014. Material certificate shall identify the melt source of the material.

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### **A.3 Requirements for Fastener Part Manufacturers, including Plastic Injection Molders**

#### **A.3.1 Purchasing.**


- a. Raw material purchased by the subcontractor used to manufacture parts shall conform to the requirements of the PennEngineering raw material specification or raw material requirements identified on the purchase order or on referenced documents.
- b. A raw material certification showing chemical and physical analysis shall be requested and obtained from the material supplier. Certification shall be forwarded to PennEngineering with shipment of parts.

#### **A.3.2 Product Identification and Traceability.**

- a. Subcontractor shall maintain traceability to the raw material heat/lot number from which the parts were made.
- b. Subcontractor may not mix parts made from different raw material heat/lot numbers. Each PennEngineering Work Order Number shall represent parts made from one raw material heat/lot.

#### **A.3.3 Process Control.**

- a. The subcontractor shall manufacture parts in accordance with the correct revision of the PennEngineering drawing, as identified on the purchase order.
- b. Parts shall be made from raw material in accordance with the description identified on the purchase order, drawing, or other referenced document.
- c. Unless stated otherwise on the purchase order, parts shall be manufactured according to the correct revisions of all process specifications identified on the purchase order, drawing, and other documents. This includes tapping procedures, heat treating specifications, finish specifications, and others as required.
- d. Upon receipt of the first order for each part number, subcontractor shall submit not less than 30 parts to PennEngineering for first article approval before continuing with processing. Parts submitted for first article approval shall be representative of production. Any subsequent change to the process requires re-approval of the new/revised process. Further, PennEngineering reserves the right to require a re-approval of process as deemed necessary.
- e. After the order for parts is complete, the subcontractor shall return any items belonging to PennEngineering. The subcontractor shall contact the buyer to properly complete the return.

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**A.3.4 Identification, Traceability, and Marking Requirements for Packages.**

- a. Each container (bin, box, etc.) of products delivered shall be identified on the outside to indicate the subcontractor name, PEM part number, quantity, purchase order number, and PennEngineering work order – release number.
- b. Containers shipped separately shall be clearly marked or labeled to identify number of containers. Example: Carton #1 of 4, Carton #2 of 4, etc.
- c. Each container (bin, box, etc.) of parts delivered shall contain a bin tag supplied by the PennEngineering P.I.C. Department. This tag indicates the part number, work order and release numbers giving them identification and traceability.
- d. Subcontractor shall send the applicable PennEngineering router and a copy of the applicable drawing with each shipment of parts.
- e. Subcontractor shall identify the following by recording it on the router:
  - Their raw material subcontractor, and
  - Appropriate traceability numbers for the raw material. (Appropriate traceability is defined as: **Heat number** for steel and stainless steel, **lot number** for aluminum and **lot number or subcontractor’s purchase order number** for brass.)
- f. Containers shall be labeled in accordance with the Clean Air Act of 1990.
- g. Refer to Appendix I for packaging and package label requirements.

**A.3.5 Records.**

- a. All records delivered to PennEngineering shall be identified with the following, in order to maintain traceability:
  - Purchase order number
  - Part number
  - Work order and release number
- b. Material certifications and test reports shall be obtained by the subcontractor and maintained by the subcontractor for a period of not less than two years. A copy of this certification and test report shall be sent to PennEngineering for each Work Order.


**A.3.6 Statistical Techniques.**

Dimensions that are “boxed” in the field of the part drawing indicate that those dimensions are “controlled dimensions”. Controlled dimensions (if any) shall be charted and monitored using Statistical Process Control. The Quality Assurance Department of PennEngineering may be contacted to provide assistance, if needed.

**A.3.7 Certificates and Reports.**

When the purchase order (or a referenced document) requires a Certificate of Conformance (or Compliance), such certificate shall include the following information:

- PennEngineering purchase order/item number and work order/release number,
- Brief description of part (and/or process),
- Identification of drawing number (and/or process specification) and revision,
- Subcontractor’s process lot/batch number,
- And signature of authorized subcontractor representative.

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**A.4 Requirements for Process Sources - Heat Treating, Plating, Surface Finishing, Plastic Overmolding (i.e. Injection Molding), Thread-Locking Patches, and Other Processes.**

**A.4.1 Handling and Storage of Product.**


- a. Subcontractor is responsible for the condition of PennEngineering parts while in their possession. Subcontractor shall implement methods to keep parts acceptably clean and free from substances detrimental to the parts, part surface condition, or part functionality.
- b. Subcontractor shall implement methods into their handling and production processes that eliminate the possibility of mixing work order/releases, and prevent stray parts/items from getting into PennEngineering work orders/releases.

**A.4.2 Product Identification and Traceability.**

Subcontractors of the various processes shall maintain traceability of parts in order to correlate subcontractor processing lots to the applicable PennEngineering Work Order / Release numbers. Individual PennEngineering Work Order/Releases may not be mixed.

**A.4.3 Process Control.**

- a. Subcontractor shall process parts in accordance with the applicable PennEngineering specification as identified on the purchase order.  
*Examples of specifications include HT-102 (heat treat), FIN-P20 (plating), and MLD-003 (injection molding).*
- b. If the specification references another requirement as part of the processing, subcontractor is responsible for all such requirements, unless otherwise agreed upon with the buyer.  
*Examples: Some plating processes require a baking process after the plating process. Heat Treat processes often require testing in accordance with specification HT-501.*
- c. Upon receipt of the first order for each process (by PennEngineering specification number), subcontractor shall submit a sample of processed parts to PennEngineering for first article approval before continuing with processing (quantity of parts in sample to be agreed upon by the subcontractor and the buyer). Parts submitted for first article approval shall be representative of production. Any subsequent changes to the process require re-approval of the new/revised process. Further, PennEngineering reserves the right to require a re-approval of process as deemed necessary.
- d. Subcontractor may not sub-contract any part of the processing or other requirements without prior approval of PennEngineering.
- e. Heat Treating Subcontractors shall qualify and calibrate thermal equipment in accordance with PennEngineering specification HT-007 or SAE specification AMS-2750.

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**A.4.4 Nonconforming Product – Unable to Complete the Required Process.**

Subcontractors who are unable to complete the required process due to unacceptable part conditions shall contact PennEngineering Quality Assurance for disposition. If supplier is instructed to return parts to PennEngineering, supplier shall obtain form PEF-13-006 from PennEngineering Quality Assurance. This form shall accompany the return shipment of parts (*See Appendix III, Referenced Documents*).


**A.4.5 Packaging and Delivery.**

- a. If parts are sent to subcontractor in re-usable bins (i.e., metal, plastic, fiberglass, etc.):
  - Part Identification Tags on bins as received from PennEngineering shall not be removed.
  - After processing, parts shall be returned to PennEngineering in bins with tags of the same Work Order/Release in which they were received.
  - Bins shall be securely covered to prevent mixing or loss of parts during transit. If stacked on a skid, the top bin shall be covered with appropriately fitting lids.
- b. If parts are sent to the subcontractor in corrugated boxes:
  - Part Identification Tags in boxes as received from PennEngineering shall not be discarded.
  - After processing, parts shall be returned to PennEngineering in closed corrugated boxes. Appropriate measures shall be taken to protect the parts and keep the box from bursting while in transit. See Appendix I for packaging requirements and recommendations
  - Boxes of products shall be identified on the outside using labels or other appropriate legible method to include the following information (refer to Appendix I, paragraph I for an example): the subcontractor name, PEM part number, quantity, purchase order number, and PennEngineering work order – release number.
  - Containers shipped separately shall be clearly marked or labeled to identify number of containers. Example: Carton #1 of 4, Carton #2 of 4, etc.
  - Part identification Tags shall be placed in the boxes as they were when received by the subcontractor. The router as found in one of the boxes shall be returned in box #1 of the order.
  - Refer to Appendix I for additional requirements and information.
- c. Bins or boxes of parts as returned to PennEngineering shall not weigh more than fifty (50) pounds each.

**A.4.6 Certificates and Reports.**

When the purchase order (or a referenced document) requires a Certificate of Conformance (or Compliance), such certificate shall include the following information:

- PennEngineering purchase order/item number and work order/release number,
- Brief description of process,
- Identification of PennEngineering process specification and revision,
- Identification of other process specification and revision, if required,
- Subcontractor's process lot/batch number,
- Signature of authorized subcontractor representative.

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## **6.B QUALITY REQUIREMENTS FOR INDIRECT SUPPLIERS.**

### **B.1 Requirements for All Indirect Suppliers.**

#### **B.1.1 First Article Approval and Subsequent Re-approval.**

When required (written or verbal), upon receipt of the first order for each item (by PennEngineering specification number or tool number), supplier shall submit samples for first article approval before first shipment of product. Product submitted for first article approval shall be representative of future deliveries. Number of samples required for each approval is determined by the Quality Department of PennEngineering.

Any subsequent changes to the process require re-approval of the new/revised process. Further, PennEngineering reserves the right to require a re-approval of product as deemed necessary.

### **B.2 Requirements for Tooling Raw Material Suppliers.**

#### **B.2.1 Product Identification and Traceability.**

Each individual quantity (bundle, coil, spool, etc) of raw material delivered to PennEngineering shall be identified by a tag or other appropriate attached marking. Information required to be included on the tag (or appropriate marking) shall include:

- Material Size (e.g. thickness, width, length, etc.)
- Alloy designation
- Quantity (e.g. weight, length, etc.)


#### **B.2.2 Process Control.**

The supplier shall supply material produced in accordance with the requirements of the raw material specification identified on the purchase order, if applicable.

#### **B.2.3 Records.**

All records delivered to PennEngineering shall be identified with the following in order to maintain traceability:

- Part number/size by PEM® part number (12 or 15 digit material code)
- Alloy designation
- Weight shipped
- PennEngineering purchase order number
- Supplier's name

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### **B.3 Requirements for Manufacturers and Suppliers of Completed Tools and Tooling Blanks.**

#### **B.3.1 Purchasing.**

Raw material procured by the supplier for use to manufacture tools shall conform to the requirements of the raw material specification or description identified (if any) on the purchase order, drawing, or on referenced documents. *NOTE: See PennEngineering document EWI-111 to define material type from the PennEngineering material code.*

#### **B.3.2 PennEngineering Supplied Items.**

- a. If PennEngineering provides the raw material for use, supplier may not substitute other material for any reason. If more or other material is necessary, the supplier shall contact the buyer for PennEngineering.
- b. After the order for tools is complete, the supplier shall return any items belonging to PennEngineering. Supplier shall contact the buyer to complete the return.

#### **B.3.3 Product Identification and Traceability.**

- a. Supplier shall mark tools as required by the applicable part drawing (including all required information, marking method and location) if so stated. Any exceptions shall be as stated on the applicable purchase order or in the body of the drawing, or as defined by statement "b" below.
- b. When marking of tools is not possible due to size, configuration, or possible damage to tool, it is permissible to place tools into "compact" containers in order to identify them with the required information. All information required to be marked shall be included.


#### **B.3.4 Process Control.**

- a. The supplier shall supply/manufacture tools in accordance with the correct revision of the PennEngineering drawing (if any), as identified on the purchase order.
- b. Tools shall be made from raw material in accordance with the material type if so identified on the purchase order, drawing, or other referenced document.
- c. If so stated, tools shall be supplied/manufactured according to the current revisions of all process specification identified on the purchase order, drawing, or other documents. This includes thread specifications, heat treating specifications, finish specifications, tool marking, etc.

#### **B.3.5 Handling, Packaging and Delivery.**

- a. Boxes of tools shall be identified on the outside using labels or other appropriate legible method to include the supplier name and PennEngineering purchase order number. (refer to Appendix I, paragraph I.1 for an example).
- b. If shipping tools against several purchase orders, the shipping container shall clearly identify all applicable purchase order numbers on the outside of the container.
- c. If shipping multiple tool numbers in the same shipping container, each tool number shall be the supplier shall be segregated using appropriate internal containers in order to prevent confusion when received by PennEngineering personnel. Each internal container shall be clearly identified with the applicable purchase order number and the corresponding part number/item number as listed on the purchase order.

#### **B.3.6 Records.** All records delivered to PennEngineering shall be identified with the purchase order number and the tool number in order to maintain traceability.

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**B.4 Requirements for Tooling Process Suppliers - Heat Treating/Thermal Processes, Plating/Coating, Surface Finishing, and Other Processes.**

**B.4.1 Handling and Storage of Product.**

- a. The supplier is responsible for the condition of PennEngineering parts while in their possession. Supplier shall implement methods to keep parts acceptably clean and free from substances detrimental to the parts, part surface condition, or part functionality.
- b. Supplier shall implement methods into their handling and production processes that eliminate the possibility of mixing work order/releases, and prevent stray parts/items from getting into PennEngineering work orders/releases.

**B.4.2 Product Identification and Traceability.**


Suppliers of the various processes shall maintain traceability of parts in order to correlate supplier processing lots to the applicable PennEngineering Work Order/Release numbers. Individual PennEngineering Work Order/Releases may not be mixed.

**B.4.3 Process Control.**

- a. Supplier shall process items in accordance with the applicable PennEngineering specification or other description as identified on the purchase order.  
*Examples of specifications include HT-652 (heat treat), and FIN-X36 (plating).*
- b. If the specification references another requirement as a part of the processing, supplier is responsible for all such requirements, unless otherwise agreed upon with the buyer.  
*Examples: Some plating processes require a baking process after the plating process. Heat Treat processes often require testing in accordance with specification HT-501.*
- c. Supplier may not sub-contract any part of the processing or other requirements without prior approval of PennEngineering.
- d. Thermal Process Suppliers shall qualify and calibrate thermal equipment in accordance with PennEngineering specification HT-007 or SAE specification AMS-2750.

**B.4.4 Nonconforming Product – Unable to Complete the Required Process.**

Subcontractors who are unable to complete the required process due to unacceptable tool conditions shall contact PennEngineering Quality Assurance for disposition. If supplier is instructed to return tools to PennEngineering, supplier shall obtain form PEF-13-006 from PennEngineering Quality Assurance. This form shall accompany the return shipment of tools (See Appendix III, Referenced Documents).

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**B.4.5 Handling, Packaging and Delivery.**

- a. If parts are sent to subcontractor in re-usable bins (i.e., metal, plastic, fiberglass, etc):
  - Identification Tags on bins as received from PennEngineering shall not be removed.
  - After processing, items shall be returned to PennEngineering in bins with tags of the same Work Order/Release in which they were received.
- b. If items are sent to the supplier in corrugated boxes:
  - If received, Identification Tags from PennEngineering shall not be discarded.
  - After processing, items shall be returned to PennEngineering in closed corrugated boxes. Appropriate measure shall be taken to protect the items and keep the box from bursting while in transit. See Appendix I for requirements and other information.
  - Boxes of products shall be identified on the outside using labels or other appropriate legible method to include the following information (refer to Appendix I, paragraph I for an example): the supplier name, PEM tool number, quantity, purchase order number.
  - Containers shipped separately shall be clearly marked or labeled to identify number of containers. Example: Carton #1 of 4, Carton #2 of 4, etc.
  - If received with shipment, Part identification Tags shall be placed in the boxes and the router shall be returned in box #1 of the order.
- c. Bins or boxes of items as returned to PennEngineering shall not weigh more than fifty (50) pounds each.

**B.4.6 Certificates and Reports.**

When the purchase order (or a referenced document) requires a Certificate of Conformance (or Compliance), such certificate shall include the following information:

- PennEngineering purchase order/item number and work order/release number,
- Brief description of process,
- Identification of process specification and revision,
- Supplier's process lot/batch number,
- Signature of authorized supplier representative.

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**6.C QUALITY REQUIREMENTS FOR LABORATORIES.**

**C.1 Requirements for All Laboratories.**

C.1.1 Laboratories shall meet the QMS standard requirement per paragraph 5.2.4 of this document.

C.1.2 Laboratories shall perform the service (calibration or testing) in accordance with purchase order requirements.

*No further requirements are defined at this time.*

**6.D QUALITY REQUIREMENTS FOR SERVICE SUPPLIERS.**

**D.1 Requirements for Sorting Services.**

D.1.1 Suppliers who provide sorting services shall meet the same requirements as Process Source subcontractors as defined in paragraph A.4 of this document.


D.1.2 Sorting suppliers shall perform the sorting service in accordance with purchase order requirements.

*No further requirements are defined at this time.*

**D.2 Requirements for Delivery Services and Trucking Companies.**

D.2.1 Suppliers who provide delivery services shall perform the service in accordance with purchase order or contract requirements.

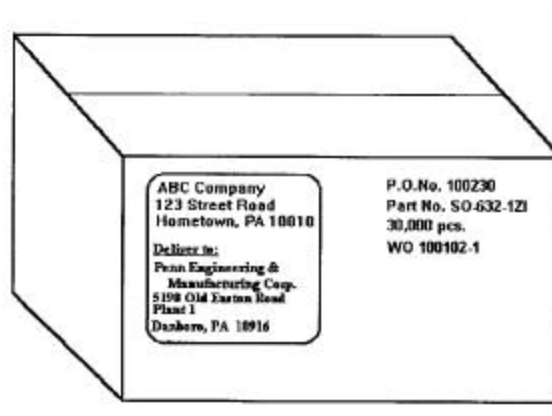
*No further requirements are defined at this time.*

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## Appendix I

### General Packaging Requirements and Recommendations

#### I.1 Illustration for Identification of Packages.




#### I.2 Packing and Container Requirements.

- a. Suppliers shall package product using appropriate manners to prevent breakage of product or package during shipment. *(See recommendations in paragraph I.3 below).*
- b. Each container of parts sent to PennEngineering shall not weigh more than fifty (50) pounds.
- c. Subcontractor shall not place more than one part number in the same shipping container. Further, subcontractor shall not place parts for more than one purchase order or parts made from more than one heat/lot of raw material in the same shipping container.  
*Paragraph b. applies to all suppliers performing manufacturing or other processes on PennEngineering fastener products. Paragraph b. does not apply to tooling suppliers.*
- d. Partially filled containers shall be filled to the top with bubble pack or other appropriate filler to prevent crushing or breaking of container during transit.

#### I.3 Packing and Container Recommendations.


- a. Containers should be double-wall flute corrugated fiberboard, 275 lb. test and of uniform size. Each container should be lined with a 4 mil double poly liners, which should be tie-wrap or twist-wrap secured. This practice has proven to help prevent breakage of boxes during transit.
- b. Each container should be appropriately closed (with pressure sensitive tape, glue, etc; staples should be avoided) and then sealed with reinforced tape.
- c. Shipments of six (6) containers or more should be placed on a skid, and securely banded onto the skid. Banding should be in two directions.
- d. If determined to be appropriate, supplier may band containers in two directions using polypropylene banding or polyglots tape (1/2 inch wide or larger).

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## Appendix II

### Definitions.

- II.1 Supplier – Source which provides items or services as required.
- II.2 Supplier Categories:
  - (A) Subcontractor. Sources of items and processes that directly fulfill PennEngineering fastener product requirements.
  - (B) Indirect Supplier. Suppliers of items or processes that help PennEngineering fulfill its product requirements, but do not fulfill requirements themselves. *Most are tooling suppliers and those who perform processes on tooling, or supply test panel material.*
  - (C) Laboratories. Calibration Sources and Testing Laboratories
  - (D) Service Supplier. Suppliers of items or processes that help PennEngineering fulfill its non-product related requirements. *Examples of this type of supplier include organizations providing sorting processes, packaging materials, trucking/delivery services.*
- II.3 Independent Laboratory – For purposes of this procedure, is a laboratory that is accredited to the requirements of ISO17025 by A2LA, NVLAP or other recognized agency. The Quality Department of PennEngineering will chose the laboratory to be used.
- II.4 RFQ – Request for Quotation. A communication received by a subcontractor which requests pricing and delivery information regarding a product, material, service, etc. intended to be purchased by PennEngineering.
- II.5 Product – As defined for this document, product shall refer to the material, parts, etc. supplied, or the process performed, to fulfill purchase order requirements.
- II.6 “appropriate” – As used in this document, indicates where the absence of such would adversely affect the quality of product.
- II.7 Purchase Order – Document or data issued to a subcontractor identifying items or services to be purchased.
- II.8 Tooling – For purposes of this document, tooling relates to those tools described by a drawing created by or for PennEngineering, or by other description making the tool unique to PennEngineering. It does not apply to production machine parts (i.e. gears, collets, drive shafts, etc.) or standard supplier catalog items (i.e. a commercially available stocked item such as a standard size drill or tap).
- II.9 On-time Delivery – Items are considered “on-time” when they are received at PennEngineering no later than the requested date as stated on the purchase order. Allowable tolerance for early delivery is determined by PennEngineering management and is based on supplier type and location.
- II.10 Control Plan – Written description of the systems for controlling processes. See APQP Reference Manual
- II.11 FMEA – Failure Mode and Effects Analysis. See FMEA Reference Manual
- II.12 PPAP – Production Part Approval Process. See PPAP Reference Manual

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### Appendix III

#### Referenced Documents

##### PennEngineering Specifications and Other Documents


PFQ-7.0	Product Realization
EWI-111	Raw Material Part Number and Specifications
HT-007	Thermal Process Equipment, Qualification Requirements
HT-501	Rockwell Hardness Testing Methods

##### PennEngineering Forms

Form PFF-06-002	Supplier Questionnaire and Quality Commitment
Form PEF-13-006	"Supplier Process is Not Complete!" form (orange colored)

##### Industry Standards and Other Documents

AMS-2750	Pyrometry
ISO-9001:2000	Quality Management System – Requirements
ISO-17025	General Requirements for the Competence of Testing and Calibration Laboratories
ISO/TS-16949:2002	Quality Management System – Particular Requirements for the Application of ISO-9001:2000 for Automotive Production...
APQP	(Reference Manual) Advanced Product Quality Planning and Control Plan
FMEA	(Reference Manual) Potential Failure Mode and Effects Analysis
PPAP	(Reference Manual) Production Part Approval Process

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**Appendix IV**

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