



Ceradyne, Inc.

a 3M company

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1.0 PURPOSE

This document establishes the general requirements and special product assurance requirements for all supplies ordered under the Purchase Order, of which this Form is part, to assure that such supplies conform to the required levels of quality. It is noted that supplies purchased on this order are intended for use in applications, such as Aerospace, that require a high level of quality and reliability.

2.0 APPLICABILITY

- 2.1 General Requirements.** Unless expressly excluded on the Purchase Order, the General Requirements defined in Section (4) apply to all orders.
- 2.2 Special Product Assurance Requirements.** The special product assurance requirements defined in Section (5) apply only when specifically called out by the appropriate clause number on the Purchase Order.
- 2.3 Reference Documents.** Other specifications and documents, either Industry or Government, are considered part of the General Purchase Order Requirements when such specifications are defined on the Purchase Order or referenced on drawings or specifications applicable to the Purchase Order. Unless otherwise specified, the revision in effect on the date of the Purchase Order shall apply.

3.0 DEFINITIONS

- 3.1 Purchase Order.** Means the order, subcontract or written agreement with the Seller (supplier), in which the general and special requirements of this document are incorporated by reference.
- 3.2 Product Procurement Clause.** Means the clause(s) describing the general and special requirements (conditions) of purchase as listed in this document.
- 3.3 Supplies.** Means the items, products, articles, materials, parts, assemblies, sub-assemblies, systems, equipment, data, work or services to be furnished by the seller under the Purchase Order to the Buyer.
- 3.4 Seller.** Means the legal party (firm, vendor, supplier or sub-contractor), which is the contracting party with the Buyer with respect to the Purchase Order.
- 3.5 Buyer.** Means Ceradyne, Inc. acting by and through its authorized representatives issuing and administering the Purchase Order.
- 3.6 Special Process.** A method controlled by a contractually required specification where: When a product undergoes a physical, chemical or metallurgical transformation or inspection, conformance to the specification cannot be readily verified by normal inspection methods - or - The quality of the product depends on use of specific equipment operated in a specific manner, under controlled conditions, by trained personnel with instructions, procedures and standards.

4.0 GENERAL REQUIREMENTS



- 4.1 Prohibited Practices.** The following acts or practices are typical of those prohibited:
- 4.1.1 Unauthorized Repairs.** Repairs on parts damaged or found to be faulty during fabrication process, are prohibited unless specifically authorized by Buyer via a valid purchase order.
- 4.1.2 Unauthorized Processing.** Seller shall not change, add, or delete any process, material or procedure without prior Buyer written approval if such process, material or procedure was originally subject to approval by the Buyer.
- 4.1.3 Change to Quality Procedure or Process.** Seller shall not change or delete any quality control procedure or process that is subject to specific approval by Buyer without prior approval of Buyer in writing.
- 4.1.4 Improper Re-submittal.** Supplies rejected by the Buyer and subsequently re-submitted to the Buyer shall be clearly and properly identified as resubmitted supplies. Seller's shipping document shall contain a statement that supplies are either "replacement" or "reworked" supplies and shall refer to Buyers' rejection document number.
- 4.1.5 Unauthorized Submittal of Production Parts.** When the Purchase Order requires Buyer acceptance of First Article prior to delivery Seller shall not submit articles from a production run prior to Buyer's approval of First Article unless authorized by Buyer in writing.
- 4.1.6 Notification of Facility Change** Seller shall not relocate any production, manufacturing and/or processing facilities, or transfer work between Seller's facilities, during performance of the Purchase Order, without promptly notifying Buyer. In addition the Buyer must be notified and afforded the opportunity to review the potential impact and address any concerns regarding a proposed facility change.
- 4.1.7 No Counterfeit Goods.** All Goods delivered pursuant to each Order will comply with and are subject to the anti-counterfeiting terms and conditions listed under "Counterfeit Goods" at 3M.com/supplierregspecs
- 4.2 Responsibility for Conformance.** Neither audit, surveillance, inspection and/or tests made by the Buyer nor his representative at either the Seller's or Buyer's facility, nor the Seller's compliance with all applicable Product Assurance Requirements shall relieve the Seller of the responsibility to furnish supplies which conform to the requirements of the Purchase Order.
- 4.2.1 Flow down Of Key Characteristics.** Seller shall ensure that all applicable requirements of this Purchase order including key characteristics are flowed down to all sub suppliers as required.
- 4.2.2 Nonconformity.** The Seller shall request authorization from the Buyer if the Seller discovers nonconformity and wishes to continue to process or ship non-conforming product. No further work or shipments shall be made until authorization is received or denied by the Buyers Authorized Representative.



4.3 Documentation

- 4.3.1 Certifications/Documents.** Seller shall furnish all certifications and/or documents required by the Purchase Order whether specified directly on the Purchase Order or specified by reference to the clauses herein.
- 4.3.2 Sub-Tier Certifications/Documents.** Seller is responsible for obtaining, identifying and furnishing certifications/documents from his (sub-tier) suppliers when such certifications/documents are required by the Purchase Order.
- 4.3.3 Packing List.** Seller must supply appropriate Packing List with every shipment when it arrives at Ceradyne.
- 4.3.4 Material Acceptance.** The Buyer may refuse to accept supplies delivered under the Purchase Order if the Seller fails to submit the certifications/documents, Packing List, test data or reports required by the Purchase Order and/or the requirements specified herein.
- 4.3.5 Quality Records.** The seller shall establish and maintain quality records to provide evidence of conformity to requirements and of the effective operation of the quality management system. Records shall remain legible, readily identifiable and retrievable. Records shall be stored and protected for a minimum of 10 years. Copies of all applicable specifications, documents and quality records shall be available for review by Buyer and its customers and regulatory authorities during the retention period unless supplier restricts documents and records due to a need to protect proprietary processes.
- 4.3.6 Multiple deliveries** may be scheduled on a Purchase Order. If any or all of the deliveries under this PO are to be supplied by a single Master Manufacturing Lot (MML) and delivered in smaller than MML quantities, all the required certifications and reports for the MML are to be delivered with the first shipment. The C of C for the first shipment must include the MML as part of the certification. If the supplier chooses not to provide all the certifications with each subsequent shipment from that MML, they shall include on the C of C (1) a reference to the MML, and (2) a notation that the required certifications and reports were sent with a previous shipment. No additional support documentation is required for these subsequent deliveries from a previously documented MML.

- 4.4 Certificate of Conformance.** The Seller shall place on (or on a separate document attached to) his packing sheet/shipper covering each shipment of articles, a certificate of conformance worded substantially as follows and bearing in ink the signature and title of Seller's responsible representative:

"This is to certify that all items delivered on this packing sheet/shipper # _____ under Purchase Order # _____ conform to all applicable drawing, specification or purchase order requirements. (The document shall list the Ceradyne part number and



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revision, applicable drawing number and revision, process specification numbers and revision, and product serial numbers.) Objective evidence to support this certificate of conformance is on file and shall be made available to the Buyer for review upon request.” Should the Ceradyne drawing call out a nationally accepted standard part i.e.: Mil-spec XXXX, or a manufacturers part number, the supplier may provide a Certificate of Conformance to that standard or part number in lieu of certifying to the Ceradyne part number.

- 4.5 Material Certifications.** For each lot of material supplied on this order, the Seller shall furnish a certified material test report showing the material description, including as applicable, the material name or designation, alloy, type, grade or condition, the producers name, the lot or heat number and the material specification and revision to which the material complies, and in addition, for:
- 4.5.1 Ferrous Materials** - Show the actual values of chemical and physical properties obtained from the lot or heat versus values required by the applicable material specifications.
- 4.5.2 Non-Ferrous Materials** - Show the typical or range of values of the chemical and physical properties of the material and a statement that the material conforms to the requirements of the applicable material specification.
- 4.6 Lot Sampling.** Ceradyne reserves the right to use ANSI/ASQC Z1.4, C=0, or an equivalent sampling plan for the acceptance or rejection of supplies. In addition, generally accepted Statistical Process Control (SPC) rules will apply.
- 4.7 Corrective Action Requests.** When a quality problem exists, the Buyer may request corrective action from the Seller. Such requests require timely responses. The corrective action received from the supplier shall have the following analysis: 1) Problem description, 2) Containment of further defects, 3) Root Cause, 4) Permanent Corrective Action, 5) Verification, and 6) Acceptance by Ceradyne.
- 4.8 Access to Facilities.** The Buyer may, upon discussion with supplier, provide authorized representative(s) or, at the customer's request designate customer representatives whose function shall be to survey Seller's operations, assist the Seller in resolution of Quality problems, and witness at any stage (subject to proprietary considerations) the manufacture, processing, test or inspection of items being manufactured for Buyer and its Customers or other regulatory agencies and the Government if the items are intended for Government end use. Customer inspection may be to verify conforming product, however, such inspection and confirmation if any, does not grant acceptance by Buyer. The scope of the Seller's operations, as well as the volume of work being performed for the Buyer, will determine in part the need for surveillance by Buyer's authorized representative(s). Copies of all applicable specifications, documents and records as well as assistance and access to all places at reasonable times may be made available by



- Seller to such authorized representative(s). Buyer will comply with such security procedures, hours of operation, safety requirements, and restriction of access to supplier and their subcontractors' facilities due to a need to protect proprietary processes as are specified by supplier
- 4.9 Control of Special Processes.** All Special Processes shall be performed by process suppliers approved for the process by the Buyer or by Buyer's customer.
- 4.10 Quality System per ISO 9001-2008.** The Seller's quality system shall meet the requirements of ISO 9001-2008- "Inspection System Requirements." Suppliers are encouraged to obtain certification of their quality system by a nationally recognized institution.
- 4.11 Calibration.** The Seller shall implement and maintain a system for control and use of inspection equipment in accordance with a nationally accepted calibration standard. All inspection equipment shall be calibrated against certified standards, which have known valid relationships to national standards.
- 4.12 Sampling Plans.** Sampling plans shall be in accordance with generally accepted SPC rules (AIAG) or according to ANSI Z1.4 with C=0.
- 4.13 Traceability.** Traceability shall be maintained from receipt of raw material through finished product. Records and material must be identified by lot number, material type, specification, applicable revision or date of issue, serial number, etc., as required to maintain traceability. Records shall be maintained on file subject to examination by Ceradyne unless Supplier restricts documents and records due to a need to protect proprietary processes.
- 4.14 Part Identification Requirements.** Per CPP-455: Supplier shall assure that all items are legibly identified in compliance with drawing requirements. Identification requirements may include any or all of the following: (a) Part number and revision level (b) Manufacturer's identification, (c) Lot or date code, (d) Serial number, (e) Quantity, and (f) shelf life as applicable.
- 4.14.1** Items too small to be individually marked shall be packaged in suitable containers identified with the requirements stated above.
- 4.14.2** Raw material shall be identified as above and/or meet recognized industry standardized color code requirements.
- 4.14.3** Materials supplied by Ceradyne, Inc. shall also be identified upon return with the information supplied on the Purchase Order.
- 4.14.3** Unless otherwise specified in the Purchase Order, shipments that include multiple production lots are acceptable. In such instances, the individual lots must be packaged separately, and identified by lot number.
- 4.15 Limited Shelf Life Materials.** Seller shall show on each container of materials having a limited or specified shelf life (both Sellers' in-plant containers and containers in which material is delivered to Buyer) the cure or manufacture date, expiration date, lot or batch number and special storage and handling conditions applicable to the contents: this information shall be in addition to



the normal identification requirements of name, part or code number, specification number, type, size, quantity, etc. Special handling and/or preservation conditions shall be recorded on certifications and shipping documents covering the material as delivered to buyer.

When delivered, a minimum of 75% of the shelf life shall be remaining.

- 4.16 Age Control.** Unless otherwise specified on the Purchase Order or reference documents, age control of rubber goods shall conform to the requirements of MIL-HDBK-695. The Seller shall have an effective system of age control of items for which acceptability is limited by the age of the item. The system must include a method of identifying the age of such items and provisions for the rotation of stock.
- 4.17 Ceradyne Furnished Material.** Strict accountability of material furnished on this order must be maintained. The Seller shall place on or attach to his packing sheet covering each shipment of articles, a statement certifying that (a) the articles were manufactured from material furnished by Ceradyne; (b) from material of lot number(s) identified on the material or shipper; and (c) no material substitution was made. In the event that more than one lot of material is furnished, the Seller shall maintain individual material lot integrity.
- 4.18 Non-Destructive Test Reports.** As specified on the Purchase Order or specification, the Seller shall furnish with each shipment one (1) copy of the certified test report for all NDT test (penetrate, magnetic particle, radiographic, ultrasonic) performed. The report shall be issued by the organization actually performing the tests, include a complete description of the test (test name, specification, type, method, acceptance criteria and the certified technician who performed and/or evaluated the test(s) and shall be signed by a responsible official of the issuing organization. All items subjected to NDT tests shall be identified with the appropriate NDT stamp. When applicable, radiographic reports shall be accompanied by a shooting sketch and the exposed film. When parts are serialized or identified with lot or batch numbers, such identification shall appear on the test reports and exposed film.
- 4.19 Supplier Inspection Reports.** Seller shall submit to the buyer's receiving inspection department documents showing data representing results of seller's inspection/test results, including actual dimension or value for each specified characteristic.
- 4.20 Process Certifications.** For all processes required by the Purchase Order and performed by the Seller or by his sub-tier suppliers, the Seller shall furnish the original and/or copy certification/test report issued by the Seller or his sub-tier supplier that actually performed the process. The certification/ test report shall include a complete description of the process performed (name, applicable process specification, type, class, grade, etc.), the quantity and



description (part number, name) of its items processed and when applicable a statement that the process was performed by certified operator(s). The following criteria shall be used to define original certification/test reports:

- Certifications/documents that have been written in ink, typed or typed carbon copies, signed by a responsible official of the issuing organization in ink.
- Computer prepared certifications/documents that have been signed by a responsible official of the issuing organization in ink.
- Reproduced copies of certifications/documents that have been attested and notarized in ink as true copies of the original certifications/documents.

NOTE: Generally most special process suppliers will provide extra copies of certifications/test reports that meet the above requirements. It is the Seller's responsibility to assure that sufficient copies of such certifications are obtained and available.

4.21 Certified Conforming Aluminum. The supplier shall certify that the aluminum that they are supplying is:

- Conforming to applicable ASTM/AMS standards, and
- Not part of the lots, location, and dates mentioned on the Ceradyne Quality Alert dated May 18, 2006.
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4.22 First Article Inspection Reports. As specified on the Purchase Order, the Seller shall submit the first article part(s) to the Buyer's receiving inspection department together with documents showing data representing results of Seller's first article test/inspection, including actual dimension or value for each specified characteristic. The First Article Inspection Report shall meet at a minimum, the requirements of AS9102. The first article part(s) shall be clearly identified by tagging, serial number, or other positive identification method.

A first article is required for every new part or drawing change and at a minimum of every two years during the course of continuous production and for any process changes, or move of production from the original approved production location.

4.23 Notice of Planned Obsolescence. Supplier shall provide notice to Buyer of any plans or intentions to cease manufacturing, or obsolete any item sold to Buyer. Such notice shall be provided as soon as is possible so that Buyer can take the appropriate actions.

4.24 Mandatory requirements for all powders shipped to, and consumed by Ceradyne Inc.

4.24.1 Supplier shall ship 200 grams of powder per lot of powder in advance of any shipment of powder. Such shipment shall be sent sufficiently in advance of the scheduled shipment date to allow time for confirmation of the powder and approval of the certified lot prior to shipment. Ship To: Attention, Receiving Inspection Department, 3169 Red hill Ave., Costa Mesa Ca. 92651, U.S.A.



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4.24.2 A Certification will be enclosed or attached to the powder certifying the powder to the required specification (CMS) and other purchase order requirements.

4.24.3 The Certification shall state that the powder sample being sent is a representative sample of the lot called out on the certification.

4.24.4 The bag/container must be legibly labeled with the following information:

- Chemical identification of the powder
- Powder grade being supplied
- Powder Lot Number sample comes from
- Vendor Name
- Ceradyne's part number of powder
- Ceradyne Purchase Order Number
- Date of sample

5.0

SPECIAL PRODUCT ASSURANCE REQUIREMENTS

The following special product assurance requirements clauses are applicable to the Purchase Order only when specifically called out by the clause numbers on the Purchase Order

103 Final Source Inspections. Items to be delivered under this Purchase Order require final inspection, tests or surveillance by the Buyer's Quality Representative at the Seller's plant, prior to delivery. When the product is ready for source inspection, the Seller shall notify Buyer's Purchasing Department at least (48) hours in advance to permit scheduling of source inspection. Upon request, the Seller shall make available to the Buyer, facilities, equipment and personnel to operate the equipment as required.

104 Government Inspections. Government inspection is required prior to shipment from Seller's plant. Upon receipt of this Purchase Order, Seller shall promptly notify the Government representative who normally services Seller's plant, in order that appropriate planning for Government inspection can be accomplished. If the representative of the Government Inspection Office cannot be located, the Buyer should be notified immediately. Minimum 72-hour notification required.



108 Process/Inspection Flowcharts. A process/inspection flowchart is required 30 calendar days prior to the start of production to indicate quality checkpoints and key characteristics established in production flow.

109 Sample of Raw Material. A sample of the raw material used to comply with this purchase order shall be submitted with each shipment. If more than one lot of raw material is used, a sample of the raw material is to be submitted for each lot. The sample shall be of sufficient size to allow for chemical and physical testing.

Uncontrolled
Document
Unless stamped