



REQUEST FOR QUOTATION

Collective# 0000041691 **Bid Due Date** 03/24/2015
Bids must be received no later than 11:00 AM on the above Bid Due Date.

Deliver Goods/Services To:

Contact person/Telephone
Srividya Deshpande/201-395-3449

Quantity	Description	Unit Price	Total
	<p>GLASS BEADS - Two (2) Year Requirements contract to commence on or about May 26, 2015 to May 25, 2017.</p> <p>The attached "Warehouse Requirements Contract/Standard Terms and Conditions" is included and is to be made part of this solicitation. Please read all terms and conditions before bidding. There are no guarantees as to the quantities, if any, that may actually be ordered. Deliver to various New York and New Jersey warehouse facilities.</p> <p>Contract Delivery Terms: WITHIN FIVE (5) BUSINESS DAYS A.R.O.</p> <p>***PLEASE QUOTE FULLY DELIVERED PRICES FIRM FOR TWO (2) YEARS*** Quote ONLY at a maximum of two decimal places.</p> <p>In addition to signing this RFQ, please print the name of the authorized signatory: _____</p> <p>A price preference of 10% is available for NY/NJ Minority and Women Business Enterprises (M/WBE) or 5% for NY/NJ Small Business Enterprises (SBE) certified by the Port Authority (PA) by the day before the bid opening for awards not exceeding \$1,000,000. My firm was certified as a _____ on _____.</p>		
	PLEASE QUOTE FULLY DELIVERED PRICES	PAYMENT TERMS	Total Delivered Price

This Quotation is subject to the terms and conditions set forth on the back page hereof. Bidder is advised to read these before signing.

We have read the instructions and, if favored with an order, we agree to furnish the items enumerated herein at the prices and under the conditions indicated.

Signed _____
Firm Name _____
Telephone number _____ Date _____
Fax Number _____
Federal Taxpayer ID _____

Bidder
Must
Sign
In
Two
Places

NOTICE TO BIDDERS: Unless the following term of assurance that the above offer is irrevocable is signed, the offer submitted herein shall not be deemed to be complete.

The foregoing offer shall be irrevocable for 90 days after the date on which the Port Authority of New York and New Jersey opens this proposal.

Signed _____ Date _____
Firm Name _____



REQUEST FOR QUOTATION

Bid Due Date
03/24/2015

Quantity	Description	Unit Price		Total	
	<p>This is a Formal Bid Invitation</p> <p>Mail Sealed Bids to:</p> <p>The Port Authority of NY & NJ Attn: Bid Custodian Procurement Department 2 Montgomery Street, 3rd Floor Jersey City, NJ 07302</p> <p>by the date and time listed above, where it will be publicly opened and read. Bids are only accepted Monday through Friday, excluding Port Authority holidays, between the hours of 8 A.M. & 5 P.M., via regular mail, express delivery service, or hand delivery. You must clearly mark the outside envelope/package with "BID ENCLOSED" and show your company name and address, as well as the Bid number and Due date as stated on this bid document. A valid photo ID is required to gain access into the building to attend the bid opening or hand deliver a bid.</p> <p>Questions concerning bid may be addressed to Srividya Deshpande at 201-395-3449 or sdeshpande@panynj.gov</p>				
	PLEASE QUOTE FULLY DELIVERED PRICES	PAYMENT TERMS		Total Delivered Price	

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We have read the instructions and, if favored with an order, we agree to furnish the items enumerated herein at the prices and under the conditions indicated.

Signed _____

Firm Name _____

Telephone number _____ Date _____

Fax Number _____

Federal Taxpayer ID _____

Bidder Must Sign In Two Places

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The foregoing offer shall be irrevocable for 90 days after the date on which the Port Authority of New York and New Jersey opens this proposal.

Signed _____ Date _____

Firm Name _____



REQUEST FOR QUOTATION

Bid Due Date
 03/24/2015

Quantity	Description	Unit Price		Total
220,000 LB	BC0100222 GLASS BEADS, TYPE I GRANULATION, MANUFACTURED AS PER FEDERAL SPECIFICATION #TT-B-1325D, FOR REFLECTORIZED PAVEMENT MARKING. BEADS ARE TO BE PACKED IN 2000 LB CARTONS. PALLETIZED, SHRINK WRAPPED AND DELIVERED ON FLAT BED TRUCK. ***MINIMUM DELIVERY 44,000 LBS (22 SKIDS)****			
	PLEASE QUOTE FULLY DELIVERED PRICES	PAYMENT TERMS		
		Total Delivered Price		

This Quotation is subject to the terms and conditions set forth on the back page hereof. Bidder is advised to read these before signing.

We have read the instructions and, if favored with an order, we agree to furnish the items enumerated herein at the prices and under the conditions indicated.

NOTICE TO BIDDERS: Unless the following term of assurance that the above offer is irrevocable is signed, the offer submitted herein shall not be deemed to be complete.

Signed _____
 Firm Name _____
 Telephone number _____ Date _____
 Fax Number _____
 Federal Taxpayer ID _____

**Bidder
 Must
 Sign
 In
 Two
 Places**

The foregoing offer shall be irrevocable for 90 days after the date on which the Port Authority of New York and New Jersey opens this proposal.
 Signed _____ Date _____
 Firm Name _____

TERMS AND CONDITIONS

1. The Port Authority (PA) reserves the right to request information relating to seller's responsibility, experience and capability to perform the work.
2. Unless otherwise provided, complete shipment of all items must be in one delivery FOB delivery point. Payment will not be made on partial deliveries unless authorized in advance by the party to be charged and the discount, if any, will be taken on the total order.
3. PA payment terms are net 30 days. Cash discounts for prompt payment of invoices may be taken but will not be considered in determining award, except in the case of tie bids.
4. Separate unit and total FOB delivered prices must be shown.
5. Sales to the PA and to PATH are currently exempt from New York and New Jersey State and local taxes and generally from federal taxation. The seller certifies that there are no federal, state, municipal or any other taxes included in the prices shown hereon.
6. The PA shall have the absolute right to reject any or all proposals or to accept any proposal in whole or part and to waive defects in proposals.
7. Unless the phrase "no substitute" is indicated, bidder may offer alternate manufacturer / brands, which shall be subject to Port Authority approval. Please indicate details of product being offered with bid.
8. Acceptance of seller's offer will be only by Purchase Order Form signed by the PA. No change shall be made in the agreement except in writing.
9. If the seller fails to perform in accordance with the terms of this purchase order, the PA may obtain the goods or services from another contractor and charge the seller the difference in price, if any, a reletting cost of \$100, plus any other damages to the PA.
10. Upon request, sellers are encouraged to extend the terms and conditions of any terms agreement with the PA to other government and quasi-government entities by separate agreement.
11. By signing this quotation or bid, the seller certifies to all statements on Form PA 3764A regarding non-collusive bidding; compliance with the PA Code of Ethics; and the existence of investigations, indictments, convictions, suspensions, terminations, debarments and other stated occurrences to assist the PA in determining whether there are integrity issues which would prevent award of the contract to the seller. The PA has adopted a policy set forth in full on PA 3764A, that it will honor a determination by an agency of the State of New York or New Jersey that a bidder is not eligible to bid on or be awarded public contracts because the bidder has been determined to have engaged in illegal or dishonest conduct or to have violated prevailing wage legislation. The Terms and Conditions of PA 3764A apply to this order. A copy can be obtained by calling (201) 395-3405 or at <http://www.panynj.gov/business-opportunities/become-vendor.html>
12. The vendor may subcontract the services or use a supplier for the furnishing of materials required hereunder to such persons or entities as the Manager, Purchasing Services may from time to time expressly approve in writing. All further subcontracting shall also be subject to such approval.
13. The successful bidder (vendor) shall not issue nor permit to be issued any press release, advertisement, or literature of any kind, which refers to the Port Authority or that goods will be, are being or have been provided to it and/or that services will be, are being or have been performed for it in connection with this Agreement, unless the vendor first obtains the written approval of the Port Authority. Such approval may be withheld if for any reason the Port Authority believes that the publication of such information would be harmful to the public interest or is in any way undesirable.
14. Neither the Commissioners of the Port Authority, nor Directors of PATH, nor any of them, nor any officer, agent or employee thereof, shall be charged personally by the Contractor with any liability, or held personally liable to the Contractor under any term or provision of this Agreement, or because of its execution or attempted execution, or because of any breach, or attempted or alleged breach, thereof.

WAREHOUSE REQUIREMENT CONTRACT**Information for Bidders****AWARD METHOD****1. AWARD TO SINGLE BIDDER:**

It is the intent of the Port Authority of New York and New Jersey (the "Port Authority") to award an order to one Bidder based on the total estimated delivered price for all items. However, the Port Authority shall have the absolute right to reject any or all bids or to accept any bid in whole or in part and to waive defects in bids.

2. CORRECTION IN COMPUTATION

Each Bidder shall insure that all information and figures are inserted as required and that all computations have been verified for accuracy. Bidders are advised that the Port Authority may verify only the quotation or quotations that it deems appropriate and may not check each bid for errors in computation. The Port Authority reserves the unqualified right to recalculate any and all extensions set forth by the Bidder. In the event there is a discrepancy between any unit price listed and the "Estimated Total Price" or the "Total Estimated Contract Price," the Bidder's unit price, shall prevail.

3. ACCEPTABLE PRODUCTS

This Bid may call for specific brands and/or manufacturers that have been deemed acceptable for the purpose intended. Bidders may however, offer alternate products. Bidder must identify the specific mfr. and / or model number they intend to supply for alternate products only. Prior to award, specification sheets and samples may be requested to be submitted for evaluation. The Bidder shall bear all costs of evaluation, if any. Should the proposed alternate product be deemed not acceptable, the bidder shall be obligated to provide one of the listed acceptable mfr. and model no's at the original quoted price to maintain bid eligibility for contract award. If you do not specify a mfr./model no., you will be required to supply one of the brands, if any, specified in the item description at the quoted price.

4. SAMPLES

This bid may or may not call for specific brands that have been deemed acceptable for the purpose intended. If this bid calls for specific brands that have been deemed acceptable for the purpose intended, the Bidder may quote alternate products other than those listed hereunder. In that case, the Bidder must indicate the manufacturer name and model/part number of the alternate product next to each applicable line item. A Bidder quoting products may be required,

at his own expense, to submit a sample of the proposed product and/or a copy of the specifications for the sample being submitted. If the Bidder fails to submit the required sample, the Bidder may be deemed non-responsive. If this bid does not call for the specific brands that have been deemed acceptable for the purpose intended, the Bidder may be required, at its own expense, to submit a sample of a proposed product.

Samples of all the requested products shall be submitted to the Port Authority for evaluation within **seven (7) business days** of request. Failure by the Bidder to deliver samples within the required time frame may result in the rejection of the Bid. The package containing sample products should **clearly indicate the following**: (1) the **Bidder's name and address**, (2) the **Bid number**, and (3) the **Bid due date**. Additionally, each item **must be tagged with the Port Authority's Material Stock Number and the Bidder's name and address**. Sample products are to be sent directly to: the Port Authority of New York and New Jersey, Central Warehouse, 777 Jersey Ave, Jersey City, New Jersey 07302. All sample products submitted by the Bidder will be evaluated by the port Authority, and the Port Authority will make the final determination as to whether or not the sample product is acceptable. The Bidder shall bear all costs of the evaluation, if any. Should a proposed alternate product be deemed not acceptable, the Bidder shall be obligated to provide one of the listed acceptable brands, including the manufacturer's name and model/part numbers at the original quoted price to maintain eligibility for contract award.

All samples must be picked up by the Bidder within thirty (30) days of notification, after which all samples will become the property of the Port Authority.

5. ENERGY STAR

Where applicable, the Bidder shall make best efforts to provide products that earn the ENERGY STAR and meet the ENERGY STAR specifications for energy efficiency. The Bidder is encouraged to visit www.energystar.gov for complete product specifications and updated lists of qualifying products.

6. CERTIFICATION OF RECYCLED MATERIALS

Bidders are requested to submit, with their bid, Attachment I-A "Certified Environmentally Preferable Products / Practices Form", attesting that the products or items offered by the Bidder contain the minimum percentage of post-consumer recovered material in accordance with the most recent guidelines issued by the United States Environmental Protection Agency (EPA), or, for commodities not so covered, the minimum percentage of post-consumer recovered materials established by other applicable regulatory agencies. The data submitted by the Bidder in Attachment I-A is being solicited for informational purposes only.

Recycling Definitions:

For purposes of this solicitation, the following definitions shall apply:

- a. **"Recovered Material"** shall be defined as any waste material or by-product that has been recovered or diverted from solid waste, excluding those materials and by-products generated from, and commonly reused within, an original manufacturing process.
- b. **"Post-consumer Material"** shall be defined as any material or finished product that has served its intended use and has been discarded for disposal or recovery having completed its life as a consumer item. "Post-consumer material" is included in the broader category of "Recovered Material".
- c. **"Pre-consumer Material"** shall be defined as any material or by-product generated after the manufacture of a product but before the product reaches the consumer, such as damaged or obsolete products. Pre-consumer Material does not include mill and manufacturing trim, scrap, or broken material that is generated at a manufacturing site and commonly reused on-site in the same or another manufacturing process.
- d. **"Recycled Product"** shall be defined as a product that contains the highest amount of post-consumer material practicable, or when post-consumer material is impracticable for a specific type of product, contains substantial amounts of Pre-consumer Material.
- e. **"Recyclable Product"** shall be defined as the ability of a product and its packaging to be reused, reconditioned for use, or recycled through existing recycling collection programs.
- f. **"Waste Reducing Product"** shall be defined as any product that will result in less waste generated due to its use rather than another product designed to serve the same function with an greater waste generation rate. This shall include, but not be limited to, those products that can be reused, refilled or have a longer life expectancy and contain a lesser amount of toxic constituents.

STANDARD TERMS AND CONDITIONS**1. GENERAL AGREEMENT**

The Vendor agrees to furnish and deliver on an "**as needed**" basis to the Port Authority's warehouses as set forth herein, the Authority's warehouse requirements for the items set forth in the "Request for Quotation" form, within the calendar days indicated in paragraph 4 below. The furnishing and delivery shall be at the prices quoted in the Request for Quotation, and shall be fixed and firm for the duration of this contract. The contract term is **1 YEAR**. There shall be no minimum quantities or dollars per Purchase Order release. The dollar value of this requisition is for evaluation purposes only and there are no guarantees as to the actual amount, if any, that may be ordered. In full consideration for the performance of all duties and obligations hereunder, the Vendor agrees to accept from the Port Authority a compensation consisting of payment for the items or services supplied by the Vendor computed at the bid prices quoted in the Request for Quotation. The "Unit Prices" quoted **shall not** exceed two decimal places.

2. EXTENSION PERIOD

The Port Authority shall have the absolute right to extend the Base Term for an additional period of up to one hundred and twenty (120) days subsequent to the Expiration Date of the Base Term, or the Expiration Date of the final exercised Option Period (hereinafter called the "Extension Period"), subject to the same terms and conditions as the previous contract period. The prices quoted by the Contractor for the previous contract period shall remain in effect during this Extension Period without adjustment. If it so elects to extend this Contract, the Port Authority will advise the Contractor, in writing that the term is so extended, and stipulate the length of the extended term, at least thirty (30) days prior to the expiration date of the previous contract period.

3. FACSIMILE EQUIPMENT

The Vendor shall have available a facsimile machine for receipt of Purchase Orders via facsimile message from the Port Authority. The Vendor must be able to receive orders via fax machine 24 hours a day, **7** days a week.

4. PURCHASE ORDERS

Releases against the Contract for the Port Authority warehouse(s) will be coordinated using Purchase Orders issued by the Inventory Control Group located at 777 Jersey Avenue, Jersey City, N.J. 07302. Purchase Orders may be verbal or in writing. If verbal, the Port Authority will confirm all orders by a facsimile hard copy transmission bearing the stock number, quantity, delivery location and Purchase Order number. The Vendor shall accept Purchase Orders only from the Inventory Control Group. The Vendor shall deliver within **5 business days**, from receipt of Purchase Order. There shall be no minimums per order.

5. ADDITIONAL ITEMS

Additional related items may be added to this contract by the Manager, Purchasing Services Division. The Port Authority shall not be obligated to add new items to the contract unless it is in the best interest of the Port Authority.

All items to be added shall be set forth in a **change order**.

6. DELIVERY

Delivery shall be, FOB delivered, to any or all warehouses listed. It should be noted that within a facility location, there might be one or more individual site locations where delivery may be required. All deliveries shall be made between the hours of 7:00 a.m. and 2:30 p.m. unless otherwise noted in the specifications. The Vendor **MUST** follow the instructions in paragraph 6 for the proper method of making deliveries. Failure to do so may result in delayed payments.

A. All deliveries must be accompanied by an original packing slip which, shall always contain:

1. **The Port Authority Purchase Order.**
2. **The Port Authority Stock Number.**
3. **A description of each item.**
4. **The quantity shipped of each item.**
5. **The Vendor's packing slip/invoice number.**

B. The Vendor shall not combine orders.

In the event the Vendor receives more than one separate and distinct purchase order for one delivery point, the Vendor shall package each order individually though delivery is made to the same location simultaneously. Each separate order must be accompanied by its own packing slip/invoice containing all information numbered 1 through 5 in Paragraph A above.

C. Shipping cartons shall not contain loose and/or unmarked items.

D. Unless otherwise provided, complete shipment of all items must be in one delivery.

Only in extenuating circumstances partial deliveries to Port Authority warehouses will be accepted. When partial deliveries are made, the receiving warehouse must be notified as to when the balance of the order will be shipped.

7. DELIVERY CONDITIONS

The Port Authority estimates an average of **2** deliveries per month to any one, or combination of delivery points listed. This number is based on past requirements and constitutes no guarantee as to the actual number of deliveries, or the delivery sites. Delivery of material must be within **5 business days** from receipt of purchase order.

8. DELIVERY LOCATIONS AND RESTRICTIONS

All shipments must be 'inside delivery' except where noted below.

**Central Warehouse
777 Jersey Ave.
Jersey City, NJ 07302
(201) 386-6802**

**JFK Int'l Airport Warehouse
P.A. Administration Bldg. 14
Jamaica, NY 11430
(718) 244-3678**

**Newark Liberty Int'l Airport
Building #11 Warehouse
Newark, NJ 07114
MUST BE 'TAIL GATE DELIVERY'
(973) 961-6250**

**LaGuardia Airport Warehouse
Bldg. 2B, Hanger 7 S.Wing
Jackson Heights, NY 11371
MUST BE 'TAIL GATE DELIVERY'
(718) 533-3523**

**GWB Warehouse
220 Bruce Reynolds Blvd.
Fort lee, NJ 07024
MUST BE 'TAIL GATE DELIVERY'
(201) 346-4127**

The Port Authority shall have the unilateral right to add or delete delivery locations that are within the Port District. The Port District is defined as a 25 mile radius from the Statue of Liberty.

9. LEGAL HOLIDAYS

Except where otherwise specified, all of the following holidays will be observed at the Facility. Where specified, these holidays shall mean and include:

- | | |
|----------------------------------|--------------------------------|
| New Year's Day | Labor Day |
| Martin Luther King, Jr. Birthday | Columbus Day |
| Lincoln's Birthday | Veterans Day |
| President's Day | Thanksgiving Day |
| Memorial Day | The day after Thanksgiving Day |
| Independence Day | Christmas |

10. MATERIAL SAFETY DATA SHEETS

When required by Federal, State or Local law, a Material Safety Data Sheet must be included with all deliveries.

11. UNION JURISDICTION

The Vendor is advised to ascertain whether any union now represented or not represented at the facility will claim jurisdiction over any aspect of the operation to be performed hereunder including delivery.

12. BILLING

An invoice with a unique invoice number must be issued for all deliveries. The vendor must attach backup delivery receipts with Purchase Order number. Mail all invoices to: The Port Authority of New York and New Jersey, **Accounts Payable, 1 PATH Plaza, 5th Floor, Jersey City, New Jersey 07306.**

13. NON-PERFORMANCE OF VENDORS DUTIES RELETING CHARGES

If the Vendor fails to perform in accordance with the terms of this Contract, the Port Authority may obtain the goods or services from another Vendor and charge the seller the difference in price, if any, plus a reletting cost of \$100, plus any other damages to the Port Authority.

14. TERMINATION

The Port Authority may terminate this Contract with cause at any time and without cause within **5 business days** written notice to the vendor and in such an event this Contract shall cease and expire on the date set forth in the notice of termination as fully and completely as though such date was the original expiration date. Such cancellation shall be without prejudice to the rights and obligations of the parties arising out of portions of this agreement already performed but no

allowance shall be made for anticipated profits. The Vendor shall complete delivery of all items ordered before receipt of the notice of termination.

15. CONFLICT OF TERMS AND CONDITIONS

In the event of any conflict between these "warehouse requirement contract terms and conditions" and the terms and conditions on the "Request for Quotation" form, these standard terms and conditions shall prevail.

16. PURCHASE BY OTHER GOVERNMENT AGENCIES

Upon such request, vendors who are awarded contracts are encouraged to extend the terms and conditions of these contracts under separate agreement, to other government and quasi-governmental entities.

ATTACHMENT I -A - Certified Environmentally Preferable Products/Practices

Bidder Name: _____ Date: _____

In line with the Port Authority of New York and New Jersey’s (The “Port Authority”) efforts to promote products and practices which reduce the Port Authority’s impact on the environment and human health, Bidders are encouraged to provide information regarding their environmentally preferable/sustainable business practices as they relate to this contract wherever possible. Bidders are requested to complete this form and submit it with their response, if appropriate. Bidders are requested to submit appropriate documentation to support the items for which the Bidder indicates a “Yes” and present this documentation in the proper sequence of this Attachment.

1. Packaging

Has the Bidder implemented any of the following environmental initiatives? (A checkmark indicates, “Yes”)

- ___ Use of corrugated materials that exceed the required minimum EPA recommended post-consumer recycled content
- ___ Use of other packaging materials that contain recycled content and are recyclable in most local programs
- ___ Promotes waste prevention and source reduction by reducing the extent of the packaging and/or offering packaging take-back services, or shipping carton return
- ___ Reduces or eliminates materials which have been bleached with chlorine or chlorine derivatives
- ___ Eliminates any packaging that may contain polyvinyl chloride (PVC), or polystyrene or heavy metals

2. Business Practices / Operations / Manufacturing

Does the Bidder engage in practices that serve to reduce or minimize an impact to the environment, including, but not necessarily limited to, the following items? (A checkmark indicates, “Yes”)

- ___ Recycles materials in the warehouse or other operations
- ___ Use of alternative fuel vehicles or vehicles equipped with diesel emission control devices for delivery or transportation purposes
- ___ Use of energy efficient office equipment or signage or the incorporation of green building design elements
- ___ Use of recycled paper (that meets federal specifications) in their marketing and/or resource materials
- ___ Other sustainable initiative

3. Training and Education

Does the Bidder conduct/offer a program to train or inform customers and employees of the environmental benefits of the products to be offered under this contract, and/or does the Bidder conduct environmental training of its own staff?

- Yes No If yes, Bidder is requested to attach a description of the training offered and the specific criteria targeted by the training.

4. Certifications

Has the Bidder or any of its manufacturers and/or subcontractors obtained any of the following product / industry certifications? (A checkmark indicates, “Yes”)

- ___ ISO 14000 or adopted some other equivalent environmental management system
- ___ Other industry environmental standards (where applicable), such as the CERES principles, LEED Certification, C2C Protocol, Responsible Care Codes of Practice or other similar standards
- ___ Third Party product certifications such as Green Seal, Scientific Certification Systems, Smartwood, etc.

If yes, Bidders are requested to attach copies of the certificates obtained.

I hereby certify, under penalty of the law that the above statements are true and correct.

Name

Date

TT-B-1325D
August 14, 2006
SUPERSEDING
TT-B-1325C
June 1, 1993

FEDERAL SPECIFICATION

BEADS (GLASS SPHERES) RETRO-REFLECTIVE

This specification is authorized for use by all federal agencies.

1. SCOPE AND CLASSIFICATION. This specification covers three types of retro-reflective beads used to reflectorize traffic and airfield marking paints.

- Type I - Low Index of Refraction recycled glass (fire-polished process)
 - Gradation A (Coarse, Drop-on)
 - Gradation B (Fine, Premix)
- Type II - Deleted
- Type III - High Index of Refraction
- Type IV - Low Index of Refraction direct melt glass (molten glass kiln process)
 - Gradation A (Large Coarse, Drop-on)
 - Gradation B (Medium Coarse, Drop-on)

2. APPLICABLE DOCUMENTS.

2.1 Federal. The following documents, of the issue in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein.

FEDERAL LANDS, HIGHWAY

T 520-93 – Determining the Roundness of Large Glass Beads

FEDERAL STANDARDS

FED-STD-141 - Paint, Varnish, Lacquer, and Related Materials; Methods of Inspection, Sampling and Testing
FED-STD-313 – Material Safety Data Transportation Data and Disposal Data for Hazardous Materials Furnished to Government Activities

(Copies of specifications and standards required by suppliers in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting officer.)

Beneficial comments, recommendations, additions, deletions, clarifications, etc. and any data which may improve this document should be sent to: HQ AFCESA/CESC, 139 Barnes Drive, Suite 1, Tyndall AFB FL 32403-5319.

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless a specific issue is identified, the issue in effect on date of invitation for bids of request for proposal shall apply.

American Society for Testing and Materials (ASTM) Standards:

D 1155 - Standard Test Method for Roundness of Glass Spheres

D 1214 - Standard Test Method for Sieve Analysis of Glass Spheres

(Application for copies should be addressed to the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428, (610) 832-9500, www.astm.org.)

National Motor Freight Traffic Association, Inc. Agent:

National Motor Freight Classification

(Application for copies should be addressed to the ATA, Inc., Traffic Department, 2200 Mill Road, Alexandria, VA 22314, www.nmfta.org.)

National Railroad Freight Committee, Agent:

Uniform Freight Classification

(Application for copies should be addressed to G.F. Earl, Tariff Publishing Officer, Suite 1120, 222 South Riverside Plaza, Chicago, IL 60606-5945)

3. REQUIREMENTS.

3.1 Composition. The Type I beads shall be manufactured entirely from reclaimed scrap glass (soda lime cullet). No specific ingredients are required for the Type III beads. The Type IV beads shall be manufactured by a direct-melt process resulting in no visible carbon residue.

3.2 Physical properties.

3.2.1 Appearance. When tested as specified in 4.3.1, the beads shall be transparent, clean, dry, free-flowing, and free from bubbles and foreign matter.

3.2.2 Roundness. When tested as specified in 4.3.2, Type I and Type III beads shall contain not less than 80 percent by weight of true spheres. The Type IV beads shall contain not less than 85 percent by weight of true spheres.

3.2.3 Index of refraction. When tested as specified in 4.3.3, the index of refraction shall be as follows: For Type I and Type IV beads 1.50 to 1.55; for Type III beads 1.90 to 1.93.

3.2.4 Specific gravity. When tested as specified in 4.3.4, the specific gravity shall be as follows: For Type I and Type IV beads 2.30 to 2.50; for Type III beads 4.00 to 4.50.¹

3.2.5 Gradation. When tested as specified in 4.3.5, the beads shall pass each sieve series, as specified in Table I.

Table I. Gradation, percent by weight, passing.

U.S. Sieve #	Microns	Type I				Type III		Type IV			
		A		B		Min	Max	A		B	
		Min	Max	Min	Max			Min	Max	Min	Max
12	1700	---	---	---	---	---	---	100	---	100	---
14	1400	---	---	---	---	---	---	95	100	---	---
16	1180	---	---	---	---	100	---	80	95	95	100
18	1000	---	---	---	---	---	---	10	40	---	---
20	850	100	---	---	---	95	100	0	5	35	70
30	600	80	100	---	---	55	75	---	---	0	5
40	425	---	---	---	---	15	35	---	---	---	---
50	300	18	35	---	---	0	5	---	---	---	---
70	212	---	---	100	---	---	---	---	---	---	---
80	180	---	---	85	100	---	---	---	---	---	---
100	150	0	10	---	---	---	---	---	---	---	---
140	106	---	---	15	55	---	---	---	---	---	---
200	75	0	2	---	---	---	---	---	---	---	---
230	63	---	---	0	10	---	---	---	---	---	---

3.2.6 Resistance to acid. When tested as specified in 4.3.6, the beads shall not develop any surface haze or dulling.

3.2.7 Resistance to calcium chloride. When tested as specified in 4.3.7, the beads shall not develop any surface haze or dulling.

3.2.8 Resistance to sodium sulfide. When tested as specified in 4.3.8, the sodium sulfide should not darken the beads.

¹ For field verification, the mass of Type I and Type IV beads should be 1570 grams per liter and Type III should be 2670 grams per liter.

3.2.9 Water resistance. When tested as specified in 4.3.9, the water shall not produce haze or dulling of the beads, and not more than 4.5 mL of 0.1 N hydrochloric acid shall be used in the titration.

3.3 Material Safety Data Sheet. A Material Safety Data Sheet (MSDS) shall be submitted in accordance with FED-STD-313 (see 6.2).

4. QUALITY ASSURANCE PROVISIONS.

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements as specified herein using facilities approved by the government. The government reserves the right to perform any of the inspections set forth herein when deemed necessary to assure that the beads conform to the prescribed requirements.

4.2 Testing of the end item.

4.2.1 Lot. A lot shall consist of all beads of one type offered for inspection at one time.

4.2.2 Inspection of preparation for delivery. An inspection shall be made to determine that the packing and marking comply with Section 5 of this specification. The sample unit shall be one filled shipping container for each ten ordered, randomly selected from the lot.

4.2.3 Sampling of the end item. Sampling shall be random in the ratio of 45 kg (100 lb) sample (in full bags) per 4,535 kg (10000 lb) shipped. Upon delivery, the material shall be reduced in a sample splitter to a size of approximately 1 kg (2.2 lb). The sample shall be submitted to the laboratory for testing.

4.2.4 Certificate of compliance. When Type I or Type IV beads are offered for inspection, the manufacturer shall certify that the beads conform to the requirements of 3.1.

4.3 Test procedure. The beads shall be tested in accordance with the methods specified in Table II and as otherwise specified herein to determine compliance with the requirements of section 3. Unless otherwise specified all tests shall be conducted at conditions specified in Section 9 of FED-STD-141. All test reports shall contain the individual values used in expressing the final results. Failure to pass any tests, or noncompliance with any requirement, shall be cause for rejection of the sample.

Table II. Tests and methods.

Characteristics	Requirement Paragraph	ASTM Method	Test Method Paragraph
Appearance	3.2.1	--	4.3.1
Roundness	3.2.2	D 1155	4.3.2
Index of refraction	3.2.3	--	4.3.3
Specific gravity	3.2.4	--	4.3.4
Gradation	3.2.5	D 1214	4.3.5
Resistance to acid	3.2.6	--	4.3.6
Resistance to calcium chloride	3.2.7	--	4.3.7
Resistance to sodium sulfide	3.2.8	--	4.3.8
Water resistance	3.2.9	--	4.3.9

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4.3.1 Appearance. Spread thinly 10 g of sample on white bond paper and examine visually for compliance with 3.2.1.

4.3.2 Roundness. The roundness of the Type I and Type III beads shall be determined in accordance with ASTM method D 1155. Use Procedure A for Type III beads and Procedure B for Type I beads. The roundness of the Type IV beads shall be determined in accordance with FLH Designation T 520-93. Evaluate for compliance with the requirements in 3.2.2.

4.3.3 Index of refraction. The index of refraction shall be determined by the immersion method. A microscope capable of a minimum of 100x magnification, equipped with a light source and certified immersion oils shall be used. Place crushed beads on a microscope slide and immerse in a refractive index immersion oil at standard conditions. (The immersion oil shall have a refractive index within 0.02 units of that of the beads to be tested.) Cover with a microscope slide and determine the refractive index of the beads to the nearest one-hundredth of a unit. Evaluate for compliance with the requirements of 3.2.3.

4.3.4 Specific gravity. Place 100 g of the beads in an oven at 105°C ± 2°C and dry to constant weight. Remove the beads and place in a desiccator until the sample is cool. Remove 60 g of beads from the desiccator and weigh the sample accurately. Pour the beads slowly into a 100 mL graduated cylinder containing 50 mL of reagent-grade xylene. Make certain that air is not entrapped among the beads. Calculate the specific gravity as follows:

$$\text{Specific gravity} = \frac{M}{V - 50}$$

M = Mass of sample

V = total volume (xylene level after addition)

Evaluate for compliance with 3.2.4.

4.3.5 Gradation. Determine the gradation of the beads in accordance with ASTM method D 1214 for compliance with 3.2.5.

4.3.6 Resistance to acid. Place 10 g of the beads in a 100 mL beaker and cover with a 1N sulfuric acid. Let soak for 5 minutes. Rinse the beads 3 times with distilled water. Dry, then examine the beads under a microscope and compare with the untreated sample. Evaluate for compliance with 3.2.6.

4.3.7 Resistance to calcium chloride. Place 10 g of the beads in a 100 mL beaker and cover with a 1N calcium chloride solution. Let soak for 3 hours. Rinse the beads 3 times with distilled water. Dry, then examine the beads under a microscope and compare with the untreated sample. Evaluate for compliance with 3.2.7.

4.3.8 Resistance to sodium sulfide. Place 10 g of the beads in a glass stopper bottle and cover with a solution containing by weight 50% sodium sulfide, 48% distilled water, and 2% of an anionic wetting agent. Soak the beads for one hour and then rinse the beads 3 times with distilled water. Dry, then examine the beads under a microscope and compare with untreated sample. Evaluate for compliance with 3.2.8.

4.3.9 Water resistance. Place 10 g of the beads in a 20 x 80 mm extraction thimble. Place the thimble in a large (No. 3) Soxhlet extractor with a 125 mL boiling flask. Add 100 mL of distilled water, and reflux for two hours. Rinse the beads 3 times with distilled water. Remove the beads, dry, then examine the beads under a microscope and compare with untreated beads. Add five drops of one percent phenolphthalein indicator to the content of the boiling flask and titrate with 0.1N hydrochloric acid to the phenolphthalein indicator end point. Evaluate for compliance with 3.2.9.

5. PREPARATION FOR DELIVERY.

5.1 Packing, palletization, and marking. Beads shall be furnished in quantities specified. The packing, palletization, and marking shall be as specified below (also see 6.2).

5.1.1 Packing. The glass beads shall be furnished in lots as specified by the purchaser and packaged in moisture-proof containers. Containers shall be in accordance with the supplier's normal commercial practice, provided that there will be no interaction chemically or physically with the contents so as to damage the containers or alter the strength, quality, or purity of the contents. Containers are to be guaranteed to furnish dry and undamaged beads. The container shall be securely closed to prevent accidental opening or loss of the glass beads, and sufficiently strong to prevent accidental rupture during multiple shipments, handling and storage. The shipping containers shall also comply with the National Motor Freight Classification or Uniform Freight Classification requirements.

5.1.2 Marking. Each package shall contain the following information: Name and address of manufacturer, shipping point, trademark or name, the wording; "Glass Beads, Retro-reflective", the specification number, bead type, weight of the contents in kg and lb, the lot or batch number, Information and Warnings as may be required by federal and state laws, and the month and year of manufacture. Additional markings shall be as specified in the contract or order.

6. NOTES. These notes do not supersede agency specific guidance on intended use.

6.1 Uses for Each Type.

Type I, Gradation A, coarse - low-index recycled glass beads for drop-on applications are intended for marking highways and all airfield markings.

Type I, Gradation B, fine - low-index glass beads for premixed paint are intended for marking highways, or for use in applying temporary airport or airfield markings.

Type III - high index glass beads for drop-on applications are intended for applications where increased retro-reflectivity and increased marking performance is needed.

Type IV Gradation A – Large coarse, direct-melt, low-index glass beads for drop-on applications are intended for highways and all airfield markings where a thicker coating of paint is used (specifically TTP1952E, Type III).

Type IV Gradation B – Medium coarse, direct-melt, low-index glass beads for drop-on applications are intended for highways and all airfield markings where a thicker coating of paint is used (specifically TTP1952E, Type III).

See appropriate pavement marking guide for specific recommended uses and application rates.

6.2 Ordering Data. Purchasers should select the preferred options permitted herein and indicate the following information in procurement documents:

- a. Title, number, and date of this specification.
- b. Type and gradation required (see paragraph 1).
- c. Size and type of container required (see 5.1).
- d. Palletization requirements.
- e. Special Marking requirements.
- f. Instructions and address for submission of MSDS (see 3.3).

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Reviewing Activity
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FAA -- AAS-100
Navy -- YD

Internal Notes, not intended for publishing.

HQ AFCESA/CESC Memo for Record 6 Jul 06:

Code 84 is WR-ALC/ENEP (Mr. Priest Blackstock, DSN 468-3413)

Code 99 is AFMC/A4YE (Mr. James Whittaker, DSN 787-5560)

Code 50 is AFCESA/CESC (Pubs Manager -- Mr. Larry Spangler, DSN 523-6180)

AFCESA/CESC Airfield Marking Program Manager (Mr. Mike Ates, DSN 523-6351)

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