

SECTION D – SPECIFICATIONS/SCOPE OF WORK1. General Description and Scope

This Solicitation requires the preparation and delivery of White and Yellow Non-toxic, Lead-Free, Waterborne Pavement Marking Paint (fast-dry, 60-second no-track).

Material shall be a ready-mixed, pigmented binder, emulsified in water and capable of anchoring reflective beads that are applied separately. All paint shall be waterborne, nontoxic, lead free, and must not contain any hazardous material listed in the Environmental Protection Agency Code of Federal Regulations (CFR) 40, Section 261.24, Table 1.

Materials conforming to this specification shall be selected according to laboratory and field evaluations conducted by the National Transportation Product Evaluation Program, hereafter referred to as NTPEP. All materials supplied under this contract shall be identical in composition to the materials that have performed satisfactorily during the test and have been placed on Maryland State Highway Administration's (MSHA) Qualified Product List (QPL). If requested by the Contract Administrator, the bidder shall provide the necessary documentation from MSHA to support his/her claim that the materials are on MSHA's QPL.

2. Material Specifications

Paint Physical Requirements - Paints shall conform to the manufacturer's formulations as initially approved for use by the County and shall be controlled from batch to batch. All paint shall be tested in conformance with the requirements listed below.

Samples of shipments will be subject to random tests such as X-ray analysis, infrared spectroscopy, ultraviolet spectral analysis, atomic absorption spectroscopy, etc. Bleeding ratio and settling rate will also be tested at random intervals.

The combined total of lead, cadmium, mercury, and hexavalent chromium shall not exceed 100 ppm, when tested by X-ray fluorescence spectroscopy, or other method capable of detection at this level.

The manufacturer shall provide the County with a certified analysis of the material in conformance with TC-1.02 of the Standard Specifications.

- (a) **Viscosity** – Viscosity shall be 85 ± 10 KU when tested in conformance with D 562 at 77 degrees F.
- (b) **Pigment for Yellow Paint** - The colorants used to attain the color of the yellow product shall be one or more of the following, along with titanium dioxide: Pigment Yellow 65, Pigment Yellow 75, and opaque Pigment Yellow 74.
- (c) **Color and Appearance** - Unless otherwise specified, color and appearance must be evaluated using the following: CIE 1976 L*a*b*, illuminant D65, and standard observer angle of 10 degrees. The geometry must be 45/0 or 0/45; or d/8, using the mode excluding specular gloss (spex mode). Measurements shall be taken from samples applied to the black portion of a Leneta Form 2A, or equivalent, at a wet film thickness of 15 ± 1 mils. The applied sample must have been allowed to dry for at least 12 hours before measurements are taken. The evaluation shall be as follows:
 - i. **Production** - The color of the dry paint film of the production sample shall match the specified Federal Standard 595 color numbers, under the specified conditions. The colors shall match when compared instrumentally and visually using D65 illumination.
 - ii. **Control** - The maximum permissible variation from the specified color standard shall be **4.0** delta Ecmc. The Federal Standard 595 colors to be used are **37886** for white paint and **33538** for yellow paint. A paint sample meeting this requirement shall also visually match the mandated standard under D65 illumination, as determined by the County's Lab. If the visual match is not deemed adequate, the County may choose to accept a sample if it meets the following reflectance requirement.
 - iii. **Reflectance** - When determined without beads using CIE XYZ Yxy, shall be a minimum Y of 80 % for white and 50 % for yellow when tested in conformance with E 1164.

- iv. **Contrast Ratio** - The contrast ratio shall be a minimum of **0.97** when tested in conformance with Federal Test Method 4121, Procedure B, and applied as indicated under **(b)**, and allowed to dry at room temperature for at least 12 hours. The substrate shall be a Leneta Form 2A, or equivalent.
- (d) Flexibility** - The pigmented binder shall not display cracking or flaking when subjected to the flexibility test of TT-P-1952D, with the exception that the panels shall be 35 to 31 gauge (0.0078 to 0.0112 in.) tin plate approximately 3 x 6 in. The tin plates shall be lightly buffed with steel wool and thoroughly cleaned with solvent and dried before being used for the test.
- (e) Total Solids** - The total solids (nonvolatile) content shall be a minimum of 70 percent by mass when tested in conformance with D 2369.
- (f) Weight** – Weight for the product sample shall be within ± 0.3 lb/gal of the value obtained for that product by NTPEP.

3. Qualification

Materials conforming to this specification shall be field evaluated on the NTPEP's northern test decks for pavement marking materials. The NTPEP laboratory results shall be in conformance with this Specification. Only those formulations that are listed will be considered candidates for selection. Materials performing satisfactorily throughout the test period will be placed on the County's Qualified Products List (QPL). All materials supplied during the contract shall be identical in composition to the materials submitted for initial testing. Conformity with these requirements will be determined by the County.

Material Acceptance - Only Laboratory approved and stamped materials conforming to this Specification will be accepted. Any deviation from specifications will result in a rejection of the entire batch. Prior to shipment, the manufacturer may be asked to provide samples of the paint from each production batch. Each sample shall be accompanied by a certified analysis in conformance with TC 1.02, showing compliance with the physical and chemical requirements of this Specification. The County will determine conformity with these requirements.

Paint shall not skin, curdle, settle, lump, or separate, or be unusable or difficult to apply within 12 months of the date of manufacture.

Paint not approved, but shipped, or approved paint that is later determined by the County to be defective, shall be retrieved by the manufacturer at no expense to the County.

Certification - The manufacturer is responsible for quality control (QC) testing. The manufacturer shall certify in writing that any paint supplied during the Contract period conforms to the identical formulation as the samples submitted for evaluation on the NTPEP Northern Test Decks, and identify the formulas by referring to the code used on the decks. Any paint that fails to conform will be rejected.

The manufacturer shall certify of any paint supplied under the Contract that it complies with all applicable specifications, and that it is identical in composition to that paint as initially approved.

Certification for lead free yellow paint shall include, for the purpose of showing compliance with this specification, the name or the type of colorant used to achieve the yellow color. (The County will keep the paint composition and chemical analysis information confidential.)

The manufacturer shall provide the following for each batch of paint to be supplied to the county:

- (a) Manufacturer's Certification.**
- (b) Material Safety Data Sheets** for all materials submitted for testing and use.
- (c) Application temperature ranges and optimum temperatures of paints for fast drying when measured at the spray gun nozzle.**
- (d) A facility, in operation, capable of producing the paint in the quantity and quality specified by the County.**

- (e) A laboratory capable of performing the required tests. This laboratory will be subject to the County's approval.

4. Delivery

Containers: Paint shall be supplied in 275-gallon Totes, see Attachment I for spec. Each Tote shall contain 275 gallons of paint based on volume at 77 degrees F. Material information, including color, batch number, Vendor name, and date of manufacture shall be clearly marked on the outside of each Tote.

All paint shall be delivered on open-type flat-bed trailers.

Delivery Time - For the duration of the Contract, the Vendor shall have the capability of delivering a minimum of 3000 gallons of the required paint within 35 calendar days after receipt of a delivery order and a purchase order (See page 1 for Required Delivery Schedule). Such documents will be deemed to have been received by the Vendor on the day sent when submitted by facsimile transmission, or via email. Failure to deliver the materials within 35 calendar days may result in assessment of liquidated damages as described below. Deliveries shall be made to County's Sign Shop, located at 1283 Seven Locks Road, Rockville, MD 20854, between 7:30 AM and 3:00 PM EST any day except Saturday, Sunday, and County holidays.

Notification of delivery - A notification of delivery and estimated time of arrival must be provided to Mr. Kirby White, the Shop Supervisor at 240-773-7330 at least **two** business days prior to the expected delivery date. Failure to provide proper notification may result in a lengthy unloading delay, which will be at no additional cost to the County.

Liquidated Damages - Material delivery shall be made within 35 calendar days after the receipt of a delivery order and a purchase order. With the understanding that pavement markings provide positive guidance for traffic safety, and that the County has a responsibility to the traveling public to ensure that adequate markings are present at all times, it follows that late deliveries of paint could indirectly result in traffic safety issues for the motorists and pedestrians alike. Inasmuch as such safety issues could potentially cause liability concerns for the County, the County will deduct the sum of \$150.00 per business day from moneys due the Vendor, not as a penalty, but as liquidated damages for each scheduled shipment not delivered within the time specified. In addition, the County may assess Liquidated damages in the amount of \$150.00 per business day for paint rejected by the County which will be calculated from the original due date of the order until the County's receipt and acceptance of a new paint order, provided the Vendor is notified of the rejection by facsimile transmission within 24 hours of delivery. Paint determined by the County to be defective at a later date, must be replaced by the Vendor within 35 calendar days of notification. Liquidated damages will continue until such time as the paint is received and rejected paint has been replaced with paint that is acceptable to the County. County holidays will be excluded from the computations for the assessment of Liquidated Damages.