TECHNICAL SPECIFICATIONS

ITEM 00661
TRAFFIC PAINT (SOLVENT BASED)

661.1 Description. This item shall govern the materials, composition, manufacture and testing of all traffic paint and related materials as covered herein.

661.2 Bidder's and/or Vendor's Requirements. All prospective bidders are hereby notified that, before any bid is considered, the City of La Porte may require the bidder to submit a statement in detail of the facts as to the previous experience of the bidder in performing similar or comparable work, as to the business and technical organization, financial resources and the manufacturing facilities of the bidder which are to be used in performing the contemplated work. Any bid submitted by a firm with unsatisfactory facilities, resources, equipment or experience may be rejected by the City of La Porte.

661.3 Intent. The coating design specified has been stipulated by means of carefully controlled formulations durability testing methods. The intent of the City of La Porte is to procure coatings which are identical in all essential respects to the standards of the Texas Department of Transportation (TxDOT); hereafter referred to as "Standards". Paints provided under this specification shall meet all applicable requirements of the Environmental Protection Agency.

Specifications, codes and accepted practices not specifically listed in these specifications are not applicable.

When required, the paint manufacturer shall supply Labor Form LSB-OOOS-4, "Material Safety Data Sheet."

661.4 Conformance of Finished Products. Coatings shall conform, on a weight basis, to the composition requirements of the standard formulae. No section variation from the standard formulae will be permitted except for replace of volatiles lost in processing, or those approved by the Engineer. The finished coatings shall conform with all requirements stipulated for each standard formulae, and shall equal a Wet Standard in characteristics such as color, drying, flow, settling, brush ability, can stability, hiding, etc.

Film characteristics such as gloss, hardness, light permanency, adhesion, etc., shall also conform. When testing for such conformity, the coating shall be applied and tested under parallel conditions with the Wet Standard.

The finished product shall be free of skins and foreign materials.

661.5 Mill Tests and Testing. All paint contractors shall be required to furnish to the City Engineer a copy of certified Mill test report for all paint to be used in projects administered by the City of La Porte. The City of La Porte shall have the option of performing necessary tests on material purchased for projects administered by the City of La Porte, the cost of testing shall be borne by the contractor. The contractor shall be required to reimburse the City of La Porte for the cost of storage and/or handling of paint failing to meet specification requirements.

Testing shall be in accordance with TxDOT requirements. Any questions should be addressed to the City Engineer.

Raw materials and finished products which fail to meet any requirements of these specifications shall be subject to rejection. Final acceptance or rejection shall be based on results of tests on samples of raw materials and paint taken during production, and upon tests made on finished

paints prior to delivery. Approval of materials, as a result of preliminary testing prior to manufacture into finished coatings, shall not be binding upon final approval or rejection. Because of the possibility of contamination and volatile losses, it shall be agreed that only the Wet Standard, currently in possession of licensed testing agencies, shall constitute standards for final comparison involving acceptance or rejection. By entering into a contract with the City of La Porte, the contractor agrees that the judgment of the City Engineer shall be final in all questions relative to conformance with the provisions of these specifications.

661.6 Manufacturing procedures, except when specified, shall be left to the discretion of the contractor. It is the responsibility of the manufacturer to ascertain that the raw materials and manufacturing procedures he proposes to use will produce a product meeting the specification requirements.

661.7 Shipment shall be made in suitable, strong, well sealed containers which not only meet specifications and Federal requirements, but are also sufficiently sturdy to withstand normal handling to which shipments are subjected in transit. FINISHED COATING CONTAINERS AND CASES SHALL BE PLAINLY AND SECURELY LABELED WITH THE NAME AND THE DESIGNATION OF THE COATING, ORDER NUMBER, REQUISITION NUMBER, BATCH NUMBER, DATE OF MANUFACTURE, GROSS WEIGHT, AND MANUFACTURER'S NAME. LABELING SHALL BE ON THE SIDES OF CONTAINERS AND CASES. LABELS MUST BE SUFFICIENTLY MOISTURE-RESISTANT TO WITHSTAND OUTDOOR STORAGE FOR A MINIMUM OF ONE YEAR. When the finished product is palletized for shipment, the labels shall be to the outside for easy identification. Once the finished product has been labeled properly, the label shall not be modified or changed in any manner without specific approval of the City Engineer.

Containers shall be filled by weight based on the actual gallon weight of the paint at 77 degrees F.

661.8 Raw Materials. The exact brands and types of raw materials used in the Wet Standard are listed for the purpose of facilitating the selection of parallel material equal not only in quality and composition but also in physical and chemical behavior after being used in the finished product. Since evaluation of paint containing questionable materials may require sixty days and since meeting delivery schedules is a responsibility of the paint manufacturer, he is reminded that he should schedule material procurement and paint production to permit him to meet delivery commitments. The final decision as to the equality of materials may be reserved by the City of La Porte. After the City of La Porte has agreed to the brand names of raw materials proposed by the contractor, no substitutions will be allowed during the manufacture without prior agreement with the Engineer.

"The contractor should be aware that it is his responsibility to select raw materials that not only meet the individual raw material specifications but will also produce coating conforming to the specific formulae requirements."

A. Materials of Foreign Origin: Because of the limited information available on materials manufactured outside the continental limits of the United States, the manufacturer is advised to review paragraphs 691.5 and 691.8 of the specifications when considering the use of materials of foreign origin.

B. Materials Required to Meet Federal And ASTM Specifications: All materials required to meet Federal or ASTM specifications must conform to the specifications as shown. Specifications or Amendments of other dates will not supersede.

C. PIGMENTS:
    1. White:
        a. Titanium Dioxide, shall meet ASTM Specification D-476, Type I or II.
        b. Lead free Zinc Oxide shall meet ASTM Specification D-79 American process.

2. Colored: Titanium Dioxide, Special, Tutile, non-chalking

Specific Gravity	4.1 + 0.05
Oil Absorption	18 + 10%
Moisture	0.5% max.
Retained on #325 Mesh	0.1% max.
$Ti0_2$	95% min.
Fe_20_3	2.0 - 3.0%
PH	6.5 - 7.0
Ignition Loss	0.34% max.
Y (luminosity)	42.5-45.5

3. Medium Chrome Yellow:

Color and Color Characteristics. The luminance factor of the pigment shall be within the limits listed below when tested before and after exposure.

	Min.	Max.
Initial	53	59.0
Final	45	

In addition, the allowable change between the initial and final luminance factors shall be not more than 9 units.

The initial X, Y chromaticity color coordinates of the pigment shall be within the rectangle defined by the sets of coordinates shown below:

X	Y
0.490	0.455
0.511	0.433
0.514	0.480
0.535	0.458

Method of Test: The pigment shall be tested according to Test Method Tex-810-B TxDOT.

Color Standard: National Bureau of Standards, Chromatic Standard No. SCH-30. The formula of the test enamel using the pigment to be tested is as follows:

Material	Parts by Weight
Color Pigment	54.0
Long Oil Alkyd Resin (1)	31.5
4% Calcium Drier	0.6
6% Cobalt Drier	0.3
Anti-Livering Agent	0.1
Anti-Skinning Agent	0.2
Mineral Spirits (2)	13.3 (3)

a. Alkyd Resin Solution meeting Federal Specification TT-R-266D, Type 1, Class A, November 17, 1971.

b. Mineral Spirits meeting ASTM D-235, Type IV.

c. The amount of Mineral Spirits may be varied slightly to produce the desired grinding consistency.

Number of coats: Two

4. Inert:

   a. Talc, Paint-Grade Magnesium Silicate shall meet ASTM Specification D-605-69 (Reapproved 1976).

   b. Calcium Carbonate:

CaC0 3	min. 97.0%
H 2 0	max. 0.4%
Specific Gravity	2.63-2.73
Weight retained on #325 Screen max.	0.75%

   Color: Equal to material listed in Standard Formula. Substitution in a Standard Formula shall not result in a viscosity variation greater than 4 KU.

   c. Calcined Kaolin (Aluminum Silicate Anhydrous)

	Min%	Max%
$A1_20_3$	39.6	44.0
$Si0_2$	51.0	56.5
Fe_20_3		1.0
Ti0		2.5
$CAO^2 + M_g0$		0.8
$Na_20 + K_20$		1.2.
Ignition Loss		1.0

   In addition, the X-ray diffraction pattern shall match the X-ray diffraction pattern specified by the TxDOT.

   Materials having color requirements shall be tested according to Test Method Tex-810-B TxDOT.

D. RESINS:

1. Chlorinated Paraffin: Shall meet Federal Specification MIL-C-429C, Type I.

2. Acrylic Copolymer Resin

   This material shall be an acrylic copolymer composed of i-butylmethacylate-diethyl aminoethyl methacylate copolymer binder resin. The characteristics of the acrylic copolymer resin shall be as follows:

   Specific Gravity, 25“C (77“)…….....1.0
   Color, Gardner, 20% by Weight in Toluene, Maximum.....1
   Acid Number, Maximum.....……..1.0
   Glass Transition Temperature.....……..50“C (122“F.)
   Viscosity, 20% by Weight in Toluene, Pascal Seconds(Centipoises)…….0.020-0.030(20-30)

3. Traffic Paint Alkyd Resin Solution:

a. General:

Type	Pure, drying alkyd
Oil Length/Type*	Medium/Soya, linseed or tall
Solvent	Toluene

No mixture of two or more oils is permitted.

Compatibility – A 1:5' solution 75% Traffic Alkyd Resin Solution and Toluene shall be clear and transparent and shall show no separation after 24 hours of storage in a 3/4-full test tube at 75 to 85 degrees F. This rubber alkyd-solvent solution shall produce a clear film upon drying.

b. Solid Resin Basis (based on non-volatile material):

Phthalic Anhydride, ASTM D63	33 to 37%
Oil Acids	48 to 55%
Acid Number	8.0 max.
Ash Residue	0.10% max.
Unsaponifiable Material	2.0% max.
Iodine Number of Fatty Acids	115 min.
Refractive Index of Fatty Acids	1.4660 min.
Tall Oil Alkyd Rosin	1.0% max.

c. 45% Resin Solids Basis:

Color: Gardner 1953 Standard – 9 max.

Drying Time: Reduce the resin to 45% solids with Toluene, add (based on the resin solids present) the equivalent of 0.06% Cobalt (metal) and 1% Lead (metal). Let the mixture set for 3 hours before testing. A 3 mil wet film of this solution shall set-to-touch in less than 90 minutes.

d. In addition to the above requirements, the Traffic Alkyd Resin Solution shall meet the following Percent Transmittance requirements when tested according to Test Method Tex-814-b, utilizing methyl isobutyl keytone as the primary solvent and methyl alcohol as the precipitating agent.

% Transmittance	Min.	Max.
T	10	70%
T		

Calculate volume in milliliters of precipitating agent as follows:

$V = 91 * X$ and $V = 1.398 * V$

Where: V = volume of precipitating agent required for T;
X = grams of alkyd resin solids and
V = additional volume of precipitating agent for T.

E. THINNERS:

1. Acetone

2. Toluene meet ASTM D-362.

3. Methyl Alcohol meet ASTM D-1152

F. ADDITIVES AND CHEMICALS:

1. Driers: Shall pass ASTM D600

2. Additives listed below must be similar and equal to the standard sample submitted to an independent licensed testing laboratory by the manufacturer and approved by the City Engineer prior to the award of contract for coatings in which the additive is proposed for use:

   a. Soya Lecithin

      This material shall be of suitable quality for use in the manufacture of paint.

   b. Anti-Skinning Agent

      This material shall be an anti-skinning agent suitable for use in paints.

   c. Treated Bentonite Clay:

      1. Bentone 34, NL Industries;
      2. Claytone 40, Southern Clay Products:
      3. Tixogel VP, United Catalyst, Inc.

G. STANDARD FORMULAE:

1. WPT - 8f White Paint, Traffic	Pounds
Traffic Alkyd, 75% solids Toluene	140
RCI, Beckosol 97-150 Acrylic Copolymer BR-210	125
Chlorinated Paraffin, Type 1, Dover, Paroil 40E	30
Soya Lecithin	6
Titanium Dioxide, Rutile, DuPont, Ti-Pure R-900	150
Lead Free Zinc Oxide, ASARCO, AZO-66	50
Talc, WC&D 2664	175
Calcium Carbonate, J.M. Huber, Hubercarp M-4	275
Treated Bentonite Clay	5
Methanol	3
36% Lead Drier	2
12% Cobalt Drier	1
Toluene	35

Anti-Skinning Agent	3
Acetone	270
Total	**1270.00**

Gallon Weight: ±0.05 of theoretical gallon weight

Grid: 4 minimum, Particles: 8 maximum (Test Method Tex-806-B)
Viscosity: 83 to 97 KU

Skinning: No skinning within 48 hours (Test Method Tex-811-B)

2. YPT-8f, Yellow Paint, Traffic	Pounds
Traffic Alkyd, 75% Solids Toluene	140
RCI, Becksol 97 -	150
Acrylic Copolymer BR-210	125
Chlorinated Paraffin, Type 1, 1C1 Occidental, Chloroway 41sw	30
Soya Lechithin	6
Lead Free Zinc Oxide, ASARCO, AZO-66	50
Titanium Dioxide Special, Rutile, Hitox Corp. Hitox	35
Medium Chrome Yellow, Cookson, Y-969-L	125
Talc, WC&D 2664	290
Calcium Carbonate, J.M. Huber, Hubercarb M-4	175
Treated Bentonite Clay	5
Methanol	3
36% Lead Drier	2
12% Cobalt Drier	1
Toluene	35
Anti-Skinning Agent	3
Methyl Ethyl Ketone	260
Acetone	270

Total	**1295.00**

Gallon Weight: ±0.05 lbs. of theoretical gallon weight

Grind: 4 minimum, Particles: 8 maximum (Test Method Tex-806-B)

Viscosity: 83 to 97 KU

Skinning: No skinning within 48 hours (Test Method Tex-811-B)

661.9 Installation Methods. All traffic paint applications shall meet the following requirements:

A. Traffic paint shall be applied at the rate of one gallon of unthinned paint per 105 square feet of surface area.

B. Traffic paint shall be applied with a minimum thickness of 15 mils, measured in a wet condition.

C. Paint striping shall be applied and measured to ± 1/4" of the specified widths.

All traffic paint striping not meeting these requirements shall be "touched up", removed and/or completely restriped to these standards and in accordance with the drawings at no additional cost to the City of La Porte, as directed by the Engineer.

Where traffic buttons exist, the paint shall be applied to the pavement adjacent to, but not on the buttons or markers, unless another method is specified.

Word and symbol markings on pavement shall be in accordance with "Pavement Word and Symbol Markings"

Section of the latest Texas Manual on Uniform Traffic Control Devices of the TxDOT.

661.10 Testing. When required, the contractor shall pay for and provide to the City of La Porte, a testing report performed by a local testing laboratory designated by the Engineer. The report shall verify that the raw and finished materials to be supplied under this contract meet the requirements of this specification.

661.11 Rejection, materials and finished products which fail to meet any or all requirements of these specifications shall be subject to rejection. All materials and finished products rejected by the Engineer, whether in containers or applied to roadway surface shall be removed from the jobsite and replaced with materials meeting specifications and requirements and all costs of such removal and replacement shall be borne by the Contractor.

661.12 Measurement and Payment. Payment for this material and its installation shall be in accordance with the conditions prescribed in the contract awarded by the City of La Porte and as shown on the bid items, or payment shall not be made directly but will be considered subsidiary to the furnishing and installation of white or colored traffic paint, as specified.