

TRAFFIC MARKING PAINT, VOC COMPLIANT, ACRYLIC COPOLYMER

NOTE: THIS SPECIFICATION AND ANY ACCOMPANYING SPECIFICATION OR BID CAN BE APPEALED.

YOUR APPEAL MUST BE SUBMITTED IN WRITING TO THE CITY PURCHASING DIRECTOR FOR ALL BIDS NO LATER THAN FIVE (5) WORKING DAYS PRIOR TO BID OPENING.

YOUR APPEAL MUST NOT ONLY IDENTIFY THE PROVISION, TERM OR CONDITION THAT IS CAUSING PROBLEMS, BUT ALSO YOUR PROPOSED ALTERNATE PROVISION, TERM OR CONDITION AND BE SUPPORTED BY TECHNICAL DATA, TEST RESULTS AND OTHER INFORMATION.

CONTACT THE APPROPRIATE PURCHASING AGENT OR THE PROCUREMENT SPECIALIST FOR APPEAL FILING INSTRUCTIONS.

APPEALS RECEIVED LATER THAN FIVE (5) WORKING DAYS PRIOR TO BID OPENING OR WITHOUT SUFFICIENT DETAILS WILL NOT BE CONSIDERED.

**NOTICE!**

**A \$76.00 FEE (CHECK OR MONEY ORDER) IS REQUIRED WITH ALL BID APPEALS**  
**THE \$76.00 FEE IS A PREREQUISITE FOR PURSUING THE APPEAL AND MUST ACCOMPANY THE APPEAL (SPECIFICATION AND RECOMMENDATION OF AWARD)**

CAUTION: A BID THAT DOES NOT FULLY COMPLY WITH ALL OF THE PROVISIONS, TERMS, AND CONDITIONS OF THIS OR ANY ACCOMPANYING SPECIFICATION AND BID, **MAY** BE DETERMINED AS A COUNTEROFFER AND **MAY** RESULT IN THE BID BEING REJECTED FOR NON-RESPONSIVENESS.

- I. GENERAL: It is the intent of this specification to describe the minimum requirements for Road Marking Paint to be purchased by the City of Milwaukee, Department of Public Works, Traffic Engineering and Electrical Services Division.
- II. AWARD AUTHORITY:
  - A. The DOA Business Operations Division, Procurement Services Section will be the sole judge of the quality and suitability of the equipment, materials and/or services offered in its determination of the successful bidder for the bids that do not exceed \$30,000.
  - B. The Central Board of Purchases will be the sole judge of the quality and suitability of the equipment, materials and/or services offered in its determination of the successful bidder for bids that exceed \$30,000.
- III. ACCEPTABLE PRODUCTS: Bids will be considered only for paints which have been previously tested and approved by the State of Wisconsin Department of Transportation. **Bidders should provide an affidavit stating that the paint bid has not only been tested and approved by the State of Wisconsin Department of Transportation but also is identical in composition and characteristics to that paint, and shall list the code numbers of such paint.** If not received with the bid, but requested by the DOA, Business Operations Division, Procurement Services Section, the

documentation must be submitted within three (3) working days of receiving a request or the bid will be rejected.

IV. TECHNICAL REQUIREMENTS:

A. GENERAL:

1. Scope: The paint shall be fast drying, VOC compliant acrylic traffic paint for marking highways, crosswalks, stop bars, and legends. It shall be suitable for satisfactory application on bituminous and concrete roadways. A 15 mil application can be applied cold (ambient) or with low heat (maximum of 125° F) with airless or conventional spray equipment provided the pavement is clean and dry.
2. Composition: The paint shall be within 99% to 101% of the typical formula. The manufacturer shall provide the department with the batch formula used to produce the paint showing pounds, trade name of material and the material manufacturer. User shall specify if yellow is to be MCY or lead free. White and lead free yellow shall contain no lead, chromium, or cadmium.
3. PIGMENT CONSTITUENTS:
  - a. Titanium Dioxide: This material shall comply with the latest revision of the specification for Titanium Dioxide Pigments, ASTM-D-476, Type II, Rutile.
  - b. Organic Yellow: Organic yellow shall be pigment yellow C.I. #75 or pigment yellow C.I. #200.
  - c. Calcium Carbonate: This material shall comply with the latest revision of the specification for Calcium Carbonate Pigments, ASTM-D-1199, Type GC, Grade I, with minimum of 95% Calcium Carbonate.
  - d. Magnesium Silicate: This material shall comply with the latest revision of the specification for Magnesium Silicate Pigments, ASTM-D-605.
  - e. Silica: A high quality, high purity natural silica, inherently bright white, low in moisture, inert, and at least 99.5% SI0-2, 30 to 40 micron in size.
  - f. Medium Chrome yellow, ASTM D-211 Type III.
  - g. Yellow Iron Oxide, Latest revision of ASTM-D-768.
  - h. Calcium Sulfide; Simibrite 40-90: Manufactured by Southern Indiana Minerals, Inc.
  - i. Rheological Additive: This material shall be one of the following self-activating organic clays:

Benton SD-2	NL Chemicals, Inc.
Claytone APA or	Southern Clay Products
Claytone HY	

Tixogel MP-250

United Catalyst, Inc.

4. Vehicle Constituents:

- a. Acrylic Copolymer Resin: May be anyone of the two listed or any combination of the two to achieve the desired properties.
- 1) This material shall be an acrylic copolymer composed of MMA/NBMA, (POLY(METHYL METHACRYLATE/N-BUTYL METHACRYLATE/METHACRYLIC ACID) copolymer binder resin with the following characteristics:

Appearance	White, non-dusting beads
Nonvolatiles (%)	Minimum 98.5
Acid Value (mgKOH/g), maximum	3.0
Properties of Solution (Conc: 40% in Toluene)	
Transparency	clear
Color (Gardner)	2 maximum
Viscosity cps	300 - 400
Gardner	L - 0
Typical Properties:	
Molecular weight (Mw)	60000
Tg (°C)	50

- 2) This material shall be an acrylic copolymer composed of i-butyl methacrylate-diethyl aminoethyl methacrylate copolymer binder resin. The characteristics of the acrylic copolymer resin shall be as follows:

Appearance, white, non-dusting beads

Non-volatiles % minimum	99
Specific Gravity 25C (770)	1.0
Color, Gardner, 20% by weight in Toluene maximum.	2
Acid number	7-1.7
Glass Transition temperature	50°C (122°F)
Viscosity, 40% by weight in Toluene	L-0
Gardner @	25°C
Molecular weight (mw)	60,000

- b. Soya Lecithin: This material shall be suitable quality for use in the manufacturing of paint.
- c. Acetone: This material shall comply with the latest revision of the specification for Acetone ASTM-D-329.

- d. Aromatic 150: This material shall comply with the latest revision of the specification for High Flash Naphas ASTM D3734.
- e. Dioctal Phthalate or other suitable plasticizer giving similar results.
- f. Chlorinated Paraffin: This material shall comply with the latest revision of Military Specification MIL C-429, Type I.

5. VOC COMPLIANT ACRYLIC CO-POLYMER WHITE

<u>TYPICAL FORMULA</u>		<u>ALTERNATE</u>	
Diocetyl Phthalate	12	Diocetyl Phthalate	12
Aromatic 150	35	Aromatic 150	35
Acetone	295	Acetone	295
Soya Lecithin	10	Soya Lecithin	10
Chlorinate Paraffin	20	Chlorinated Paraffin	20
Anti-Skin Agent	3	Anti-Skin Agent	3
Acrylic Copolymer	170	Acrylic Copolymer	170
Anti-Settle Agent	6	Anti-Settle Agent	6
Calcium Carbonate	400	Calcium Carbonate	400
Magnesium Silicate	50	Calcium Sulfide	150
Silica	100	Titanium Dioxide	100
Titanium Dioxide	100		
Totals:			
	1201		1201

a. Control Tolerance:

- |     |  |              |
|-----|--|--------------|
| 1)  | Viscosity  | 75-90 Ku     |
| 2)  | Weight per gal. white  | 11.90 ± 0.2  |
|     | alternate  | 11.80 ± 0.2  |
| 3)  | Reflectance white  | 83 min       |
| 4)  | Dry Opacity @ 15 mils wet  | 0.98 minimum |
| 5)  | Dry to no pick-up ASTM-D-711   | 8 maximum    |
| 6)  | Total solids   | 71 minimum   |
| 7)  | Pigment  | 53-57        |
| 8)  | Non-volatile vehicle   | 37 minimum   |
| 9)  | Hegman Grind   | 2 minimum    |
| 10) | Color. The color after drying shall be a flat white, free from tint, furnishing the maximum amount of opacity and visibility under both daylight and artificial light. |              |

6. VOC COMPLIANT ACRYLIC CO-POLYMER YELLOW

<u>TYPICAL FORMULA</u>		<u>ALTERNATE</u>	
Medium Chrome Yellow	100	Medium Chrome Yellow	100
Yellow Oxide	3	Yellow Oxide	3
Magnesium Silicate	50	Calcium Sulfide	150
Silica	100	Calcium Carbonate	400
Calcium Carbonate	400	Anti-Settle Agent	6
Anti-Settle Agent	6	Acrylic Copolymer	170
Acrylic Copolymer	170	Chlorinated Paraffin	20

Chlorinated Paraffin	20	Soya Lecithin	10
Soya Lecithin	10	Diocetyl Phthalate	12
Diocetyl Phthalate	12	Anti-Skin Agent	3
Anti-Skin Agent	3	Aromatic 150	35
Aromatic 150	35	Acetone	295
Acetone	295		
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Totals:	1204		1204

a. Control Tolerance:

1)	Viscosity	75-90 Ku
2)	Weight per gallon yellow	12.05 ± 0.2
	alternate	11.95 ± 0.2
3)	Reflectance yellow	50 min
4)	Dry Opacity @ 15 mils wet	0.98 minimum
5)	Dry to no pick-up ASTM-D-711	8 maximum
6)	Total solids	71 minimum
7)	Pigment	53-57
8)	Non-volatile vehicle	37 minimum
9)	Hegman Grind	2 minimum
10)	Color. For yellow the color shall closely match Chip 33538 of Federal Standard 595 and shall be within 6% of central color, PR-1 chart x = 0.5007; y = 0.4555.	

7. VOC COMPLIANT ACRYLIC CO-POLYMER YELLOW  
LEAD CHROMIUM AND CADMIUM FREE

<u>TYPICAL FORMULA</u>		<u>ALTERNATE</u>	
Diocetyl Phthalate	12	Diocetyl Phthalate	12
Aromatic 150	35	Aromatic 150	35
Acetone	295	Acetone	295
Soya Lecithin	10	Soya Lecithin	10
Chlorinated Paraffin	20	Chlorinated Paraffin	20
Anti-Skin Agent	3	Anti-Skin Agent	3
Acrylic Copolymer	170	Acrylic Copolymer	170
Anti-settle Agent	4	Anti-settle agent	4
Calcium Carbonate	400	Calcium Carbonate	400
Magnesium Silicate	50	Calcium Sulfide	150
Yellow Iron Oxide	2	Yellow Iron Oxide	2
Titanium Dioxide	30	Titanium Dioxide	30
Organic Yellow	35	Organic Yellow	35
Silica	100		
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Totals:	1166		1166

a. CONTROL TOLERANCE:

1)	Viscosity	80-95 Ku
2)	Weight per gal. yellow	11.5 ± 0.2
	alternate	11.4 ± 0.2
3)	Reflectance yellow	50 min
4)	Dry Opacity @ 15 mils wet	0.98 minimum
5)	Dry to no pick-up ASTM D-711	8 maximum
6)	Total solids	70 minimum
7)	Pigment	50-55

- 8) Non-volatile vehicle 37 minimum
- 9) Hegman Grind 2 minimum
- 10) Color. For yellow the color shall closely match Chip 33538 of Federal Standard 595 and shall be within 6% of central color, PR-1 chart.  $x = 0.5007$ ;  $y = 0.4555$ .

- b. The volatile content of the finished paint shall contain less than 90 grams of volatile organic matter per liter of total non-volatile paint material in accordance with ASTM D3960.

V. ACCEPTANCE:

- A. The paint shall be homogenous, well ground, shall not settle badly or cake in the container, and shall readily break up with a paddle to a smooth uniform consistency. It shall be free from water, dirt, and other foreign matter and shall dry within the specified period to a good, tough, serviceable film.
- B. The paint shall be formulated to withstand outdoor storage in unopened 55 gallon drums or 5 gallon pails for 12 months. **During this 12 month period, any paint, which has livered, hardened in any way, thickened in the container, or allowed the pigment to have settled out so that it cannot be remixed by hand or by mechanical mixing to a smooth uniform suspension of useable consistency shall be immediately replaced with acceptable material. Disposal and replacement shall be at the supplier's expense including all handling and transportation charges.**

VI. PREQUALIFICATION OF PAINT: The paint bid must have been tested and approved by the State of Wisconsin Department of Transportation prior to the bid opening date.

VII. SERVICE: Since proper application is deemed essential to the success of this process, the manufacturer shall have at least one technician available to instruct in the application of this type of paint. The technicians shall be familiar with the application equipment and materials, and shall have successful experience in the placing of fast drying traffic paint.

VIII. PURCHASING: The ready-mixed paint shall be purchased by volume. One (1) gallon shall mean two hundred thirty one (231) cubic inches at seventy-seven (77) degrees Fahrenheit.

IX. CONTAINERS: For shipment paint shall be delivered in 5 gallon pails or 55 gallon drums as specified in the Invitation to Bid. Any pail or drum which is leaking at time of arrival, shall not be paid for or accepted.

- A. 55 Gallon Drum: All 55 gallon drums shall be of the open head type so that the entire top of the drum may be removed. The top must have one (1) 2" bunghole one side and one (1) 3/4" bung hole on the opposite side.
- B. 5 GALLON PAILS: All 5 gallon pails shall be delivered on 36" x 48" non-returnable pallets, 24 pails per pallet and the top layer of 12 pails is to be fastened together with banding or an equivalent substitute for banding. Containers shall be non-

returnable. All containers shall be of the open head type so that the entire top of the pail may be removed.

- C. Labels: The label of each container shall be the same color as the color of the paint (white for white paint, yellow for yellow paint, etc.) and shall bear the following statement in legible letters.

City of Milwaukee or the name of the V.A.L.U.E. Agency

White (Yellow) traffic paint

Purchase Order No. \_\_\_\_\_; Date of Manufacture \_\_\_\_\_

Manufacturer's Batch No. \_\_\_\_\_; Code Number \_\_\_\_\_

Type of thinner that may be used \_\_\_\_\_

- XI. ADVANCE NOTICE OF SHIPMENT: For shipments to the City of Milwaukee, the shipper shall call Mr. Bruce Nelson at 1-414-286-5949 to allow for a 24 hour advance notice to consignee, City of Milwaukee, Department of Public Works, Traffic Engineering and Electrical Services Division, 1540 West Canal Street, Milwaukee, WI 53233.

For shipments to V.A.L.U.E. members, the shipper shall contact that agencies designee.

- XII. PATENTED MATERIALS: The successful bidder will be required to assume all costs arising from the use of patented materials, equipment, devices, or processes used on or incorporated in the work, and shall agree to indemnify and save harmless the City and its employees from all suit or actions of any nature for or on account of the use of any patented materials, equipment, devices, or processes in connection with the pavement marking materials furnished under this specification.
- XIII. REFERENCES: Any Federal Specification, Standard, or ASTM Designation referred to herein shall mean the latest issue or revision thereof.