

## TRAFFIC MARKING MATERIALS – THERMOPLASTIC MATERIAL – HOT SPRAY.

(REV 3-18-16) (7-20)

SECTION 971 is expanded by the following new Article:

### 971-11 Thermoplastic Material-Hot Spray.

**971-10.1 General:** This work shall consist of furnishing and applying thermoplastic material when the project requires refurbishing existing thermoplastic stripes. The manufacturer shall utilize alkyd based materials only and shall have the option of formulating the material according to his own specifications. However, the requirements delineated in this Specification and Section 711 shall apply regardless of the type of formulation used.

#### 971-11.2 Composition:

| Component                                          | White         | Yellow                     |
|----------------------------------------------------|---------------|----------------------------|
| Binder                                             | 25.0% minimum | 25.0% minimum              |
| TiO <sub>2</sub> (ASTM D-476 Type II Ructile)      | 10.0% minimum | -                          |
| Glass Spheres                                      | 35.0% minimum | 35.0% minimum              |
| Yellow Pigment                                     | -             | % minimum per manufacturer |
| Calcium Carbonate and Inert Filler (No. 200 sieve) | 30.0% maximum | 40.0% maximum              |
| Percentages are by Weight                          |               |                            |

**971-11.3 Binders:** The manufacturer shall have the option of formulating the material according to his own specifications. However, the physical and chemical properties contained in this Specification shall apply regardless of the type of formulation used. The pigment, beads and filler shall be well dispersed in the resin. The material shall be free from all skins, dirt and foreign objects.

**971-11.4 Physical Requirements:** Sample specimens shall be prepared in accordance with ASTM D-4960.

Procedure shall meet the following requirements:

| Property                          | Test Method                         | Minimum | Maximum |
|-----------------------------------|-------------------------------------|---------|---------|
| Water Absorption                  | ASTM D-570                          | -       | 0.5%    |
| Softening Point                   | ASTM D-36                           | 190°F   | -       |
| Low Temperature Stress Resistance | AASHTO T-250                        | Pass    | -       |
| Specific Gravity                  | Water displacement                  | 1.87    | 2.3     |
| Indentation Resistance            | ASTM D-2240*<br>Shore Durometer, A2 | 5       | 30      |
| Impact Resistance                 | ASTM D-256, Method A                | 1.0 N·m | -       |
| Flash Point                       | ASTM D-92                           | 475°F   | -       |

| Property                                                                                                                       | Test Method | Minimum | Maximum |
|--------------------------------------------------------------------------------------------------------------------------------|-------------|---------|---------|
| *The durometer and panel shall be at 110°F with a 4.4 lb load applied. Instrument measurement shall be taken after 15 seconds. |             |         |         |

**971-11.4.1 Set To Bear Traffic Time:** The thermoplastic shall set to bear traffic in not more than two minutes.

**971-11.4.2 Retroreflectivity:** The white and yellow pavement markings shall attain an initial retroreflectance of not less than 300 mcd/lx·m<sup>2</sup> and not less than 250 mcd/lx·m<sup>2</sup>, respectively. The retroreflectance of the white and yellow pavement markings at the end of the one year service life shall not be less than 150 mcd/lx·m<sup>2</sup>.

**971-11.4.3 Durability:** Durability is the measured percent of thermoplastic material completely removed from the pavement. The thermoplastic material line loss must not exceed 5.0% at the end of the one year service life.

**971-11.5 Glass Spheres:** Glass spheres shall be Type 1 or high index and meet the requirements of 971-2.

**971-11.6 Sharp Silica Sand:** Sharp silica sand used for bike lane symbols and pedestrian crosswalk lines shall meet the following gradation requirements:

| Sieve Size | % Passing |
|------------|-----------|
| 20         | 100       |
| 50         | 0 to 10   |

**971-11.7 Application Properties:** The thermoplastic material shall readily apply and adhere to the existing traffic stripe at temperatures as recommended by the manufacturer from equipment approved by the Engineer to produce a line which shall be continuous and uniform in shape having clear and sharp dimensions at a minimum thickness as identified in the plans. No signs of moisture shall be visible on the pavement surface as determined in accordance with the binder manufacturer's recommendations.

The material, when formed into traffic stripes, must be readily renewable by placing an overlay of new material directly over an old line of the same material. Such new material shall bond itself to the old line in a manner such that no splitting or separation occurs.

Overlay stripe thicknesses shall be measured as specified in Section 711 for refurbishing of thermoplastic stripes.

**971-11.8 Packing and Marking:** The thermoplastic material shall be packed in suitable biodegradable or thermo-degradable containers which will not adhere to the product during shipment and storage. The container of thermoplastic material shall weigh approximately 50 lb. The label shall warn the user that the material shall be heated in the range as recommended by the manufacturer.