

**KANSAS DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION TO THE
STANDARD SPECIFICATIONS, EDITION 2007**

Delete SECTION 2202 and replace with the following:

SECTION 2202

IMAGE SYSTEMS FOR RETROFLECTIVE SHEETING

2202.1 DESCRIPTION

This specification covers Process Inks, Electronic Cuttable Films, and Digital Print for use on retroreflective sheeting.

2202.2 REQUIREMENTS

a. General. Provide transparent or opaque process inks with reducers and thinners as required for proper application. Provide durable, transparent or opaque, colored electronic cuttable films with a pressure sensitive adhesive and a removable liner. Provide digital print on Type XI retroreflective sheeting. Provide materials that are suitable for processing legends, borders, and background colors on retroreflective sheeting. Provide process inks or electronic cuttable films in 2 types as follows:

Type I - For use with Type I retroreflective sheeting.

Type High Intensity - For use with all types of High Intensity retroreflective sheeting.

b. Color. Provide transparent inks, films, and digital print that are yellow, red, orange, green, blue, or brown. Opaque ink, film, or digital print is black. Provide colors that comply with the chromaticity limits in **TABLE 2201-1**.

c. Performance. Provide process inks, electronic cuttable films, and digital print that, when applied according to the manufacturer's recommendations, comply with the following:

- (1) They are compatible with the retroreflective sheeting.
- (2) They have good adhesion to the sheeting and do not cause blistering, puckering, shrinkage, expansion or other deterioration of the sheeting.
- (3) After artificial weathering, they have a "good" or better colorfastness, show no more than a 10% loss of gloss and show no evidence of cracking, edge lifting, curling or other surface deterioration.
- (4) Process inks dry hard within 16 hours.

2202.3 TEST METHODS

All tests will be conducted in accordance with ASTM D 4956 with the exception of artificial weathering. Artificial weathering will be conducted according to ASTM G 155, Cycle 1, with the following additions and exceptions:

- At the end of each 20-hour cycle, place the panels in a cold cabinet at approximately 0°F for 1 hour. After removal from the cold cabinet, return the panels to the weatherometer to await the start of the next cycle.
- Water used in the weatherometer is city water softened to a total hardness content of less than 5 parts per million expressed as calcium carbonate.

2202.4 PREQUALIFICATION

Manufacturers desiring to provide material under this specification are to submit prequalification samples of each type and color covered by this specification that they wish to prequalify. Each sample of process ink consists

of 1 quart of transparent and opaque inks and any necessary reducer or thinner required for proper application. Each sample of electronic cuttable film and digital print consists of 2 pieces 24 inches square.

Supply a sufficient quantity of the correct type of retroreflective sheeting for ink or film applications. Directions for proper application to retroreflective sheeting must accompany all samples of ink or film.

Forward the prequalification samples to the Engineer of Tests, Materials and Research Center, 2300 Van Buren, Topeka, KS 66611. Samples will be tested for compliance with all requirements of this specification. Each manufacturer will be notified of the test results.

If the prequalification samples of ink, film, or digital print comply with this specification, the product will be placed on a list of prequalified products maintained by the Bureau of Materials and Research. No ink, film, or digital print will be used on KDOT projects unless it has been prequalified. Manufacturers will be required to requalify at intervals determined by the Engineer of Tests.

Testing and evaluation by KDOT may be waived if complete testing has been performed on the identical product by AASHTO National Transportation Product Evaluation Program (NTPEP). Forward an official copy of the test report along with evidence that the product referenced is identical to that submitted for prequalification, to the Engineer of Tests for evaluation.

2202.5 BASIS OF ACCEPTANCE

Prequalification as required by **subsection 2202.3**.

Receipt and approval of a Type C certification as specified in **DIVISION 2600**.

Visual observation of performance.

10-12-09 M&R (KS)
Apr-10 Letting