KANSAS STATE UNIVERSITY

Paint, Misc. and Asphalt Sampling Workbook

Certified Inspector Training Program

AD ASTRA PER ASPERA

Kansas Department of Transportation

Paint, Misc and Asphalt Sampling

Table of Contents

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PAINT, MISCELLANEOUS, AND ASPHALT SAMPLING

(PMA)

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The Sampling and Submitting of Asphalt Materials

- Performance graded asphalt binders (PGABs)
- Emulsified asphalts
- Cutback asphalts

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Performance Graded Asphalt Binders (PGABs)

- Metal, quart cans
- Use clean, dry cans
- 2 quarts of each sample
- The laboratory will test the second quart if the first one fails

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Sampling Frequency for PGABs

- Level I – Sample one of every 3 loads- after five samples are tested and accepted the material moves to level II
- Level II – Sample one of every 6 loads- after five additional samples are tested and accepted the material moves to level III
- Level III – Sample one of every 12 loads
- Sampling frequency is listed in the AASHTOWare Project (AWP) system.

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PGAB Samples

- Keep the cans clean and dry
- No rust, dirt, or debris in the can or asphalt on the outside of the can.
- Label cans with the grade, the producer (name and location), and the AWP #.

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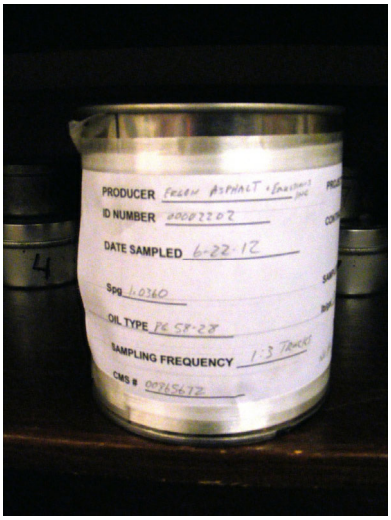

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```
DTMT166                          Kansas Department Of Transportation              PAGE - 1
Run Date:     06 25 12             Performance Graded Asphalt Binder
Run Time:     01:36 PM

MF Sample Id:  00864168                                                    SI:  E
Inspector Id:   000186300    DOUG          WERTH       Resp Loc:   32     Total Samples:   1
Type Insp:    VER     Date Sampled:   06 08 12      Related Sample Id:
Type Test:   53     PERFORMANCE GRADED ASPHALT BINDER
Proj Id:    1070 091 KA 0719 01 Contract #:  511082353  E Line #:  77  Quantity:          150.000
Producer:  00002407  Name:  SUNCOR ENERGY    (CO)        Loc: COMMERCE CITY              St:  CO
Legal Desc:                        Mix Plant:                        Name:
Matrl Cd:  021PG7028    PG70-28 ASPH PER GRD      Desc:  2qrts                    Unit:  TON
Qty Represented:            150.000  Nbr of Items:    0     Qty Assigned:             0.000
Sampled From:  TRUCK                              Ledge:              Lot/Heat Nbr:
Lab:  ASP  Name:  ASPHALT                Dates::Shipped:  06 13 12     Received:  06 15 12
Test Start:  06 15 12    Est Compl:   06 20 12     Act Compl:  06 20 12
Test Result:   CPLY       Authorized By:  K SHUFFLEBARGER - DM
Remarks:
       MRC  12-1700  4-7
       BOL # S4011-12-000446  LEVEL 2, 1 IN 6,
       ANTISTRIP ADDED AT THE HOT MIX PLANT
```

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PGAB Samples

- Samples over 14 days old will not be tested
- Samples containing water will not be tested
- Samples containing dirt, leaves, sticks, cigarette butts, etc. will not be tested

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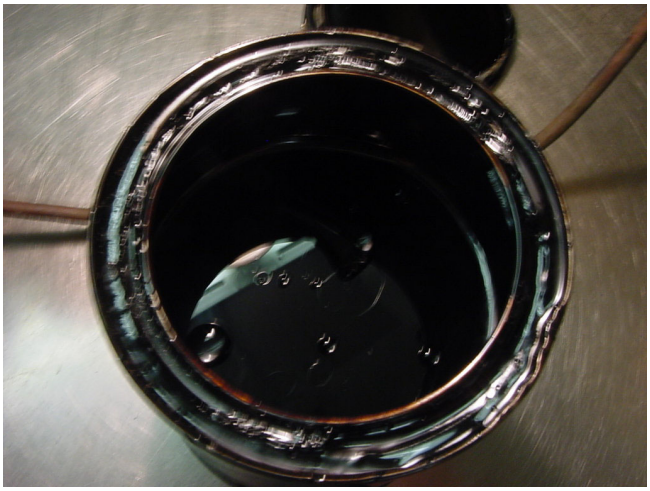

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DTMT130 Kansas Department Of Transportation PAGE - 1
Run Date: 06 21 12 Maintain Sample ID Record
Run Time: 01:22 PM

MF Sample Id: 00864811 SI: E
Inspector Id: 000521025 MICHAEL MARKEE Resp Loc: MR Total Samples: 1
Type Insp: VER Date Sampled: 06 15 12 Related Sample Id:
Type Test: 53 PERFORMANCE GRADED ASPHALT BINDER
Proj Id: K196 040 KA 2557 01 Contract #: 511126595 E Line #: 6 Quantity: 0.000
Producer: 00001806 Name: VALERO (040) Loc: HALSTEAD St: KS
Legal Desc: Mix Plant: CC081705 Name: VENTURE (PLANT #5)
Matrl Cd: 021PG5828 PG58-28 ASPH PER GRD Desc: Unit: TON
Qty Represented: 0.000 Nbr of Items: 0 Qty Assigned: 0.000
Sampled From: TRUCK Ledge: Lot/Heat Nbr:
Lab: ASP Name: ASPHALT Dates::Shipped: 06 19 12 Received: 06 21 12
Test Start: 06 21 12 Est Compl: 06 21 12 Act Compl:
Test Result: NA Authorized By: K SHUFFLEBARGER - DM
Remarks:
MRC - UNABLE TO TEST DUE TO RUST ON CANS
TICKET #B754 8242, TONS=25.15
SAMPLE TAKEN PRIOR TO ADDITIVES ADDED

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Emulsified Asphalt Samples

- One gallon
- Clean, dry, plastic containers
- Fill the plastic container until full

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Emulsified Asphalt Samples

- Send in emulsified asphalt samples ASAP
- Do not dilute the sample
- Label the sample with grade, producer (name and location) and AWP #

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Emulsified Asphalt

- Samples that are old and have “broken out” will not be tested
- Samples that have been diluted will not be tested
- Samples that are not full will not be tested

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Emulsified Asphalt

- Approximately 1/2 of all emulsified asphalt samples submitted are not tested because they are “broke out”, are diluted, or are not full

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DTMT130 Kansas Department Of Transportation PAGE - 1
Run Date: 06 25 12 Maintain Sample ID Record
Run Time: 12:57 PM

MF Sample Id: 00864731 SI: E
Inspector Id: 000112022 DANIEL UPHAM Resp Loc: MR Total Samples: 1
Type Insp: VER Date Sampled: 06 15 12 Related Sample Id:
Type Test: 900 FREE FORM TEXT
Proj Id: 106 KA 2728 01 Contract #: 512046131 E Line #: 15 Quantity: 25.000
Producer: 00002901 Name: VANCE BROTHER(KC,MO) Loc: KANSAS CITY St: MO
Legal Desc: Mix Plant: Name:
Matrl Cd: 022020001 SS-1HP Desc: Unit: TON
Qty Represented: 25.000 Nbr of Items: 0 Qty Assigned: 0.000
Sampled From: ROADWAY Ledge: Lot/Heat Nbr:
Lab: ASP Name: ASPHALT Dates::Shipped: 06 18 12 Received: 06 19 12
Test Start: 06 19 12 Est Compl: 06 22 12 Act Compl: 06 22 12
Test Result: NA Authorized By: K SHUFFLEBARGER - DM
Remarks:
MRC 12-1744 4-3
BOL # 0000351971
UNABLE TO TEST,SAMPLE BROKE OUT.

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DTMT130 Kansas Department Of Transportation PAGE - 1
Run Date: 06 25 12 Maintain Sample ID Record
Run Time: 12:57 PM

MF Sample Id: 00863231 SI: E
Inspector Id: 000121057 BRANDON PERRY Resp Loc: MR Total Samples: 1
Type Insp: VER Date Sampled: 06 13 12 Related Sample Id:
Type Test: 50 EMULSIFIED ASPHALT
Proj Id: U059 023 K 7888 06 Contract #: 511102071 E Line #: 80 Quantity: 1.000
Producer: 00002901 Name: VANCE BROTHER(KC,MO) Loc: KANSAS CITY St: MO
Legal Desc: Mix Plant: Name:
Matrl Cd: 022020001 SS-1HP Desc: Unit: TON
Qty Represented: 1.000 Nbr of Items: 1 Qty Assigned: 0.000
Sampled From: TRUCK Ledge: Lot/Heat Nbr:
Lab: ASP Name: ASPHALT Dates::Shipped: 06 15 12 Received: 06 15 12
Test Start: 06 15 12 Est Compl: 06 15 12 Act Compl: 06 25 12
Test Result: NA Authorized By: DONNA MAHONEY
Remarks:
MRC 12-1698 4-3
BOL # 0000350814 UNABLE TO TEST,SAMPLE DILUTED.
PLEASE SEND RESULTS TO LAWRENCE CONST.

20

Cutback Asphalt

- 2 metal, quart cans
- If the first can fails, the laboratory will test the second can
- Use clean, dry cans and maintain cleanliness and dryness while gathering sample
- Label the cans with the grade, producer (name and location) and AWP #

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Cutback Asphalt

- Samples containing water will not be tested
- Samples containing debris will not be tested
- Samples over 14 days old will not be tested

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Summary

- Use the proper container for the material you are sampling.
  - PGAB – 2 metal quart cans
  - Emulsified asphalt– 1 plastic gallon container
  - Cutback asphalt– 2 metal quart cans

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Label The Sample

- Label the container with at least the following:
  - Grade
  - Producer (name and location)
  - AWP #

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Remember

- Make sure the lid of the asphalt sample container is secure. If the lid comes off during transport, the laboratory will not be able to test it.
- Never use a solvent soaked paper or cloth to clean the asphalt sample container. The solvent can contaminate the sample and give inaccurate test results.

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Part V References

- 5.7.1 – Asphalt materials
- 5.9.26 – Sampling asphalt materials
  (Kansas Test Method KT-26)
- 5.5.2.2 – Required sample sizes
  (Bituminous material)

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Prequalified List (PQL)

- PQL 4.1
  - The List contains all prequalified performance graded asphalt binders, emulsified asphalts, and cutback asphalts

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Who Can You Call?

- If you have questions about the sampling and submitting of asphalt materials, you can always call the Materials Lab:

- **Asphalt Supervisor,** ET Specialist, Chemistry Section, Asphalt Subsection

  785-296-0392

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Purpose:

- Become familiar with the materials that you need to sample
- Learn how to sample the material
- Learn how to submit the material to the lab for testing

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Reasons for Proper Sampling:

- To make your job easier:
  - Learn where to locate information.
  - Reduce the number of samples and resamples.
- To assure the quality of our highways:
  - Proper sampling helps guarantee that the materials used in KS highways meet our specifications.
- To save money:
  - Unnecessary and improper sampling costs the state in shipping, handling, waste disposal, and man-hours.

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Certifications

- Many of the materials discussed in this next section of the class are required to have a certain type of certification as a basis of acceptance.
- The Materials Certifications Specification is 15-26001-R12

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- **b. Types of Certifications.**
- (1) Type "A" certification. This certification is to include a copy of the results of tests conducted by the
- manufacturer's or other qualified laboratory on samples obtained from the lot or lots of material in the shipment. When a mill test report is submitted as the laboratory report, the quantity in the shipment does not need to be included on the report, provided that the identifying heat or lot numbers involved are roll stamped, embossed, or durably affixed to each item of material in the shipment represented by the report. In this case, provide the necessary quantity information on a cover sheet, clearly identifying the quantity of each heat or lot in the shipment.
- (2) Type "B" certifications. This certification is to include a current summary of the maximum to
- minimum range of the manufacturer's quality control test results as determined by the manufacturer's or other qualified laboratory. These summaries must provide data on all major specification requirements. Also include the range of lots and manufacture dates represented by the data. When combining multiple components into a single item, submit a detailed parts summary indicating the lot/heat number, part description and quantity for each part. Summary reports dated more than six months prior to the date of manufacture or shipment of the product will not be accepted. The Engineer of Tests may also request copies of detailed test reports for material produced during a specified time interval for verification of the certification.
- (3) Type "C" certifications. This certification is to include a statement certifying that the material in the
- shipment is essentially the same as material that is prequalified.
- (4) Type "D" certifications. This certification is to comply with **subsection 2601.2a**.
- (5) Type "E" certifications. This certification applies to assemblies or structures that are composed of two
- or more components or materials. These components or materials have been approved previously on an individual basis for KDOT projects, but lose their identity when they are incorporated into an assembly or structure. This certification would apply to signs, overhead sign and lighting structures, etc. The certification is to state that all the components or materials used in the fabrication of the represented assembly or structure were previously approved for KDOT use.

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This section will cover:

- Center mount reflectors
- Bridge paints

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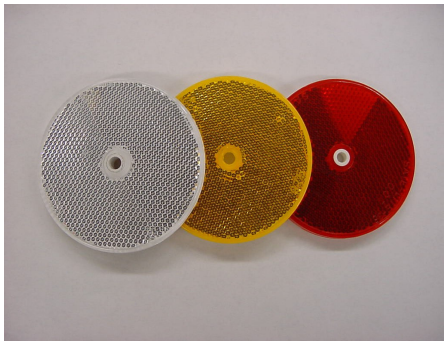
Center Mount Reflectors



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Center Mount Reflectors

Part V 5.5.2.9.1 2015 SMS, Section 2204

Basis of Acceptance:

Each batch/lot is tested

Sample Size:

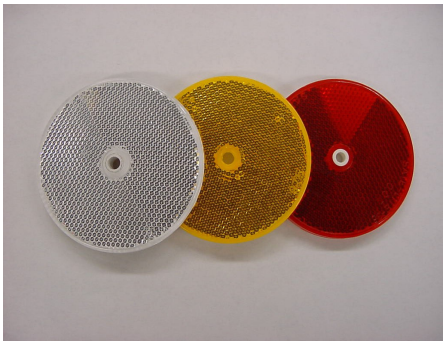
Randomly select 18 reflectors per each 5000 for each color

and

4 reflectors for each additional 5000 or fraction thereof

Protect the faces of the reflectors from scratches and damage during shipping

Three colors: White Amber Red



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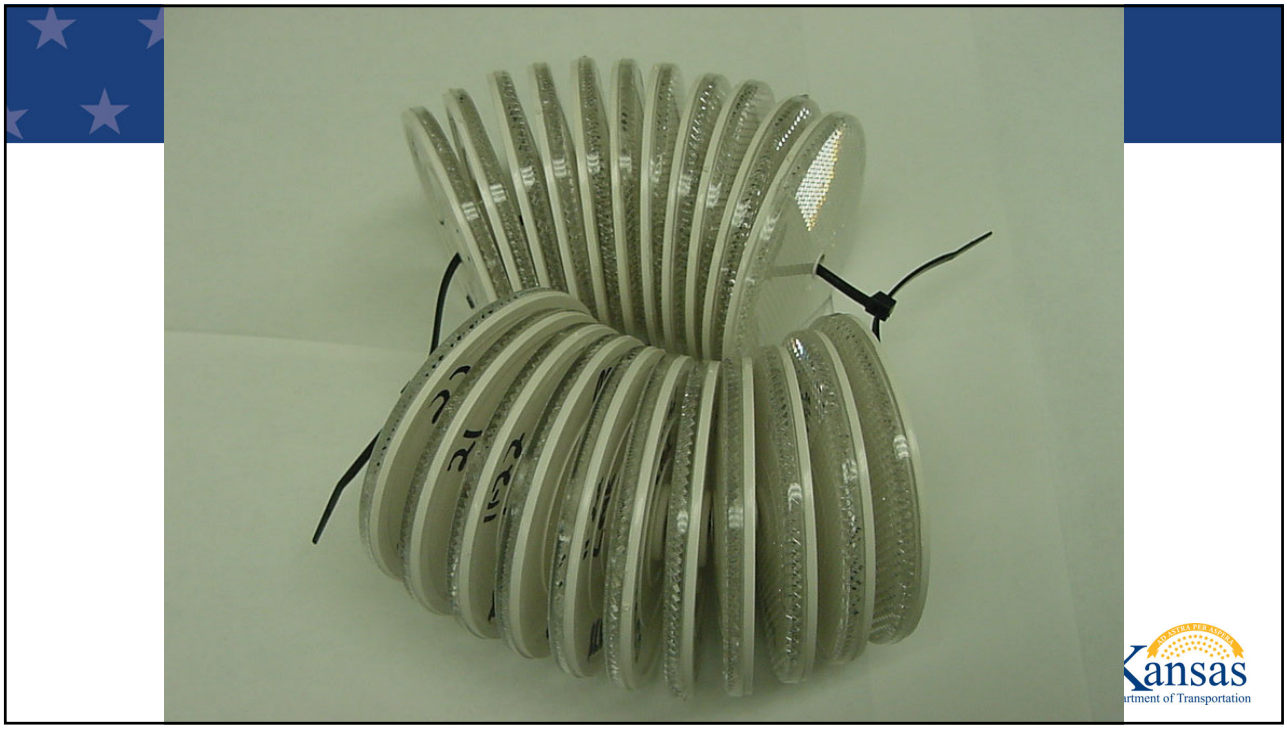

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Quiz

If you had a shipment of 6,000 red center mount reflectors, how many reflectors would you sample and send to the lab for testing?

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ANSWER:

22

(18 for the first 5,000 and an additional 4 for the extra 1,000)

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Bridge Paint

Part V 5.7.7.1

Bridge paint primers:

- Inorganic zinc primer
- 2015 SMS, Section 1801
- PQL 18.1

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Bridge Paint

Part V 5.7.7.1

Bridge paint primers:

- Organic zinc primer
- 2015 SMS, Section 1802
- PQL 18.3

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Zinc Primer

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Bridge Paint

Part V 5.7.7.1

Bridge Paint Finish Coat:

*Water-Borne Acrylic 2015 SMS, Section 1806, PQL 18.6

(Used with Inorganic Zinc and Organic Zinc Primers)

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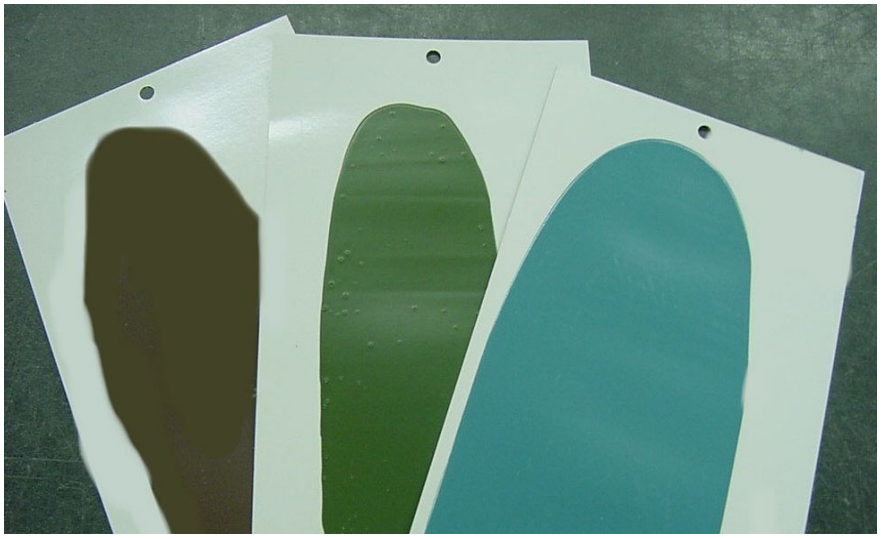
Finish Coats



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Bridge Paint

Part V 5.7.7.1

Bridge Paint Systems:

- Moisture Cure Urethane System
  2015 SMS, Section 1807, 15-18001-R01, PQL 18.8
  (A two or more component system, including a primer and a topcoat)

- Calcium Sulfonate Alkyd System
  2015 SMS, Section 1808, 15-18002-R02, PQL 18.7
  (A three-component system, including a sealer, primer, and topcoat)

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Bridge Paint

Basis of acceptance (2015 SMS):

1. Prequalification
2. Receipt and approval of a Type C certification
3. Visual observation of performance on the project
4. No verification sample required but can always be submitted

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Sampling Bridge Paint

Part V 5.9.28, Kansas Test Method KT-28

***Liquid Portion**

Either a 1 gallon can as shipped or a one quart can sample from larger shipped containers. Be sure container is thoroughly mixed before sampling.

***Dry Pigment**

One pint taken at random from the shipped container

Use proper type container for sampling. Many paints contain water or react with metal.

Each part of a multi-component paint needs to be sampled and submitted on the same AWP form.

Label each container with:

- Producer
- Product Name or Number
- Recommended Mix Ratio
- AWP Number

IMPORTANT

*The product name is needed and should also be added in the "remarks" in AWP.

*"Samples should never be taken after the paint has been thinned, from a paint pot of the spraying system or from a spray nozzle as such samples are not representative of the paint as it was originally tested and accepted. "

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What to use for sampling:

Clean, one pint or one quart friction top containers (metal or plastic) for single component paint, paste and pigment.

Wide-mouth, screw-top, plastic quart containers or plastic–lined cans for the liquid components of multi-component inorganic zinc paints.

Never place samples of these materials in unlined metal screw or friction top cans.

Quart

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Bridge Paint

Part V 5.7.7.1

"Paint that has been tested and accepted by the laboratory may be unfit for use if held in storage for extended periods of time. If the contractor is unable to mix the paint so that the pigment is completely and uniformly incorporated with the vehicle, the Engineer should reject it and require the contractor to obtain new material. Attention is called to the fact that it is extremely difficult to properly mix a five gallon can of paint by stirring with a paddle. If any hard pigment settlement is present it is impossible to do so. If necessary, the Engineer should insist that the paint be mixed according to **KT-28.** Make sure all paints have been thoroughly mixed prior to sampling. "

Sampling Bridge Paint Part V 5.9.28, KT- 28

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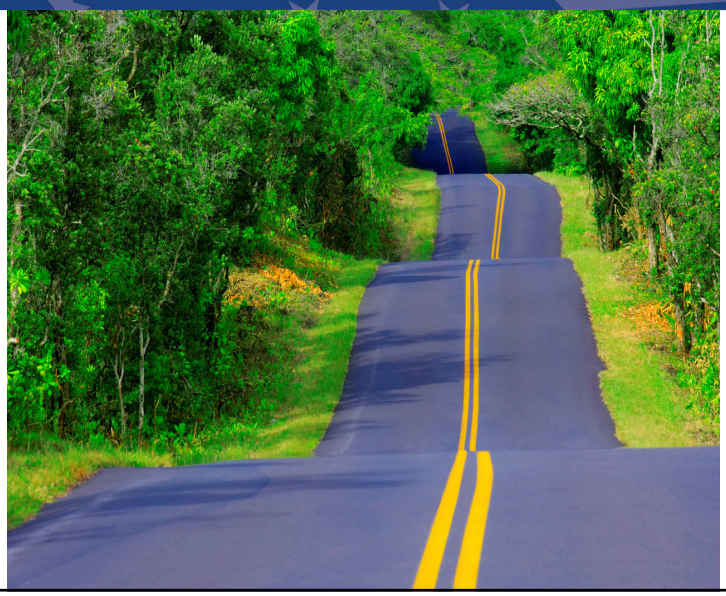
Pavement Markings



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Pavement Marking Material

A. Applied in a liquid form:

1. Pavement marking paint
2. Epoxy pavement marking material
3. Multi-component liquid pavement marking material
4. Thermoplastic/sprayed thermoplastic pavement marking material

These all require glass beads to be added upon application.

B. Applied as a tape:

1. Cold plastic/patterned cold plastic pavement marking
2. High durability pavement marking tape
3. Temporary pavement marking tape
4. Preformed thermoplastic pavement marking material

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Pavement Marking Paint

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Pavement Marking Paint

Part V 5.7.7.2 2015 SMS, Section 2215, 15-22004-R02

Basis of Acceptance:

1. Type D certification
2. Visual inspection

   Verification samples required:

   2 one-quart samples of each color by lot

Sampling Traffic Line Paint, Part V 5.9.68

(Kansas Test Method KT- 68)

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Sampling Pavement Marking Paint

Part V 5.9.68 (KT-68)

- Allow the truck to apply paint for at least 30 minutes before taking the sample.
- Completely fill 2 one-quart plastic-lined metal cans.
- Take samples from the paint tank drain.
- Label samples with:
  - Paint producer
  - Batch/lot umber
  - AWP number

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Epoxy Pavement Marking Material

2015 SMS, Section 2214, 15-22002-R02

Basis of Acceptance:

1. Prequalification
2. Type C certification

Verification samples required:

a. ½ pint sample of each color and ½ pint of the hardener from one lot per project.

Both large and regular beads are used with this material.

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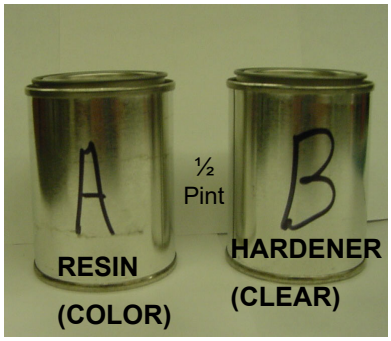
Sampling Epoxy Pavement Marking Material

Part V 5.9.66, Kansas Test Method KT-66

- Allow the truck to apply the epoxy for approximately 30 minutes before taking the sample.
- Take a ½ pint sample for each color
- Sample both (Part A) resin and (Part B) hardener, one per manufacturer per project.

Do not mix Resin and Hardener



10

Sampling Epoxy Pavement Marking Material

Label each sample of resin and hardener with:

- Producer
- Product ID
- Batch/lot number
- Project number
- Date sampled
- AWP number (Parts A and B need different AWP numbers)

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Multi-Component Liquid Pavement Marking Material

- Two or more components
- Can be mistaken for epoxy pavement marking material

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Multi-Component Liquid Pavement Marking Material

Part V 5.7.7.3 2015 SMS, Section 2217, 15-22003-R02

Basis of Acceptance:

1. Prequalification
2. Type C certification
3. Visual observation of performance on the project.

Verification sampling required:

½ pint of each color and ½ pint of the hardener from one lot per project.

Can be confused with Epoxy Pavement Marking Material.

Check Product Number to tell the difference.

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Thermoplastic Pavement Marking Material

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Thermoplastic Pavement Marking Material

- Thermoplastic Pavement Marking Material:
  Part V 5.7.7.4
  2015 SMS, Section 2211, 15-22007-R01
  PQL 19.6

- Sprayed Thermoplastic Pavement Marking Material:
  Part V, 5.7.7.6
  2015 SMS, Section 2213, 15-22009-01
  PQL 19.10

- Preformed Thermoplastic Pavement Marking Material:
  Part V 5.7.7.5
  2015 SMS, Section 2212, 15-22008-01
  PQL 19.9

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Thermoplastic Powder (Section 2211)

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Thermoplastic Pavement Marking Material

- **Regular - 2015 SMS, Section 2211, 15-22007-01**
- **Sprayed - 2015 SMS, Section 2213, 15-22009-01**

Basis of Acceptance:

1. Prequalification
2. Type C certification
3. Visual observation of performance on the project.

Verification samples required:

a. 1 gallon lid for each color per manufacturer per project.

Field Sampling of Thermoplastic Pavement Marking Material

Part V 5.9.30 (Kansas Test Method KT- 30)

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FIELD SAMPLING OF THERMOPLASTIC PAVEMENT MARKING MATERIAL
(Kansas Test Method KT-30)

a. SCOPE

This procedure outlines the proper method for sampling Thermoplastic Pavement Marking Materials on the roadway. As with any sampling procedure securing a representative sample must be the primary goal of the sampler.

b. APPARATUS

b.1. Gallon-can lids.

b.2. Protective barrier to keep material from overflowing the lid on to the roadway. Two possible suggestions are cardboard and sheet metal.

c. OBTAINING A REPRESENTATIVE SAMPLE

c.1. Avoid obtaining a sample immediately on startup of the striping contractor. The sampler should wait until the unit has been operating for one hour prior to obtaining the sample.

c.2. Obtain a representative sample from individual lots of material when possible. If the contractor is using multiple lots in the melter from a single manufacturer, then verify proper certifications are available for the lots and secure a sample from that blended quantity. **Mixing of multiple manufacturers' lots is not permitted.**

c.3. Once **b.1.** and **b.2.** have been satisfied, place a gallon can lid under the spray nozzle, so the lid lip is up (see figure 1), with a protective barrier beneath the lid.

c.4. Do not permit any drop-on beads to come in contact with the representative sample during the sampling process or while it is cooling. It is necessary to determine the amount of beads in the thermoplastic mix itself. Drop-on beads will provide a false value for the quantity of beads in the thermoplastic.

c.5. Have the contractor dispense enough thermoplastic from the melter to fill the lid. Permit the thermoplastic to cool (see figure 2).

c.6. Once the thermoplastic has cooled, break excess material off the outer edge of the lid and place in a plstic bag to keep clean for shipping to MRC (see figure 3 and 4).

d. REPORT

d.1. Report the CMS number, Lot number, and Manufacturer of the Thermoplastic on a piece of paper and send with the thermoplastic, still on the lid, to MRC (see figure 5). **Do not write on the thermoplastic material.**

Figure 1 Can lid with protective material underneath

Figure 2 Lid after thermoplastic has cooled to handle

Figure 3 Removal of excess thermoplastic from lid

Figure 5 shipping documentation

Figure 4 Sample placed in bag for shipment

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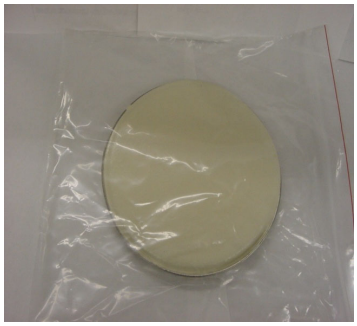
Method of Sampling Thermoplastic Pavement Marking Material

Part V 5.9.30 KT-30

- Wait until the unit has been operating for 1 hour before taking the sample.
- 1 – Gallon Lid
- Do not add beads
- Mark plastic bag or card with
  - Manufacturer
  - Batch/lot number
  - AWP number

DO NOT WRITE ON SAMPLE

KEEP SAMPLE CLEAN



***Can mix lots from same manufacturer.**

****Do not mix manufacturers.**

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Preformed Thermoplastic Pavement Marking Material

Part V 5.7.7.5, 2015 SMS, Section 2212, 15-22008-01

(Used for stop bars and symbols)

Basis of Acceptance:

1. Prequalified List
2. Type C certification
3. Visual observation of performance on the project
4. No verification sample required for symbols

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Plastic Pavement Marking Tape

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Types of Pavement Marking Tapes

Part V, 5.9.81, KT-81, Sampling Cold Plastic, Patterned Cold Plastic and High Durability Pavement Marking Materials.

- Cold plastic pavement marking material
  2015 SMS, 15-22012 PQL 19.3
- Patterned cold plastic pavement marking material
  2015 SMS, 15-22013 PQL 19.5
- High durability pavement marking tape
  2015 SMS, 15-22014 PQL 19.8

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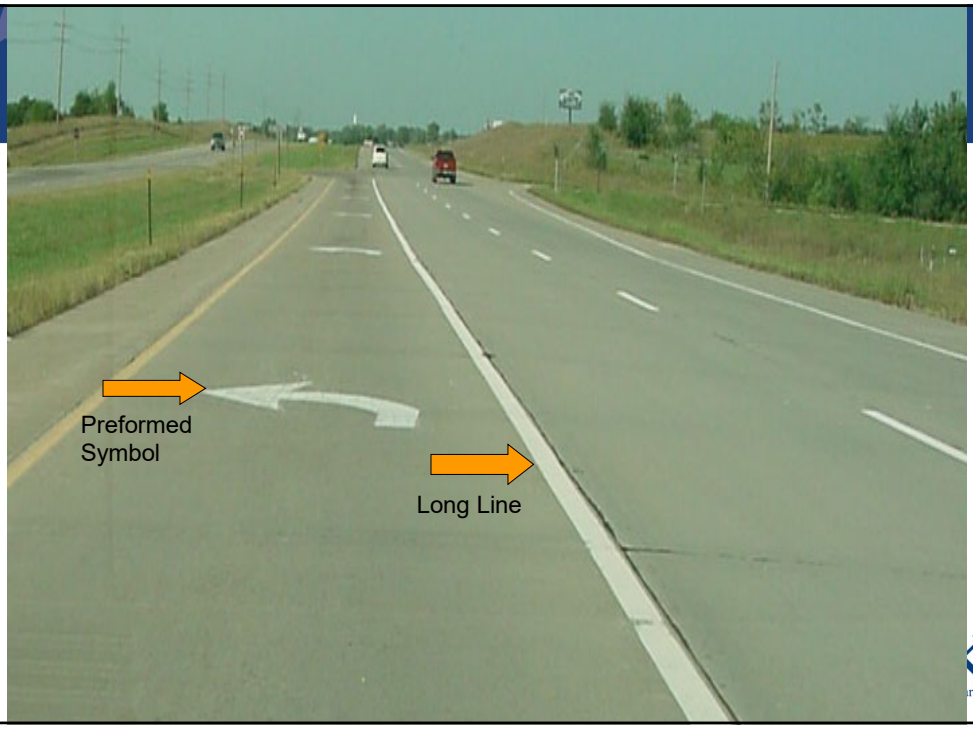

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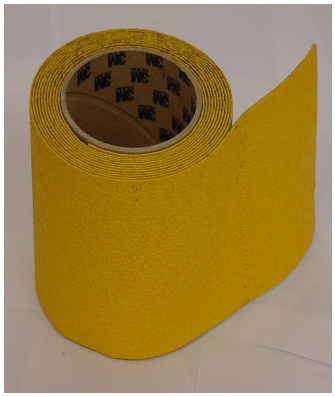
Cold Plastic Pavement Marking Material

2015 SMS, 15-22012

Basis of Acceptance:

1. Prequalified list
2. Long line
   a) Verification sample for each lot & color
3. Preformed symbols
   a) Type C certification
   b) No verification sample required



Kansas Department of Transportation

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Patterned Cold Plastic Pavement Marking Material

2015 SMS, 15-22013

Basis of Acceptance:

1. Prequalified list
2. Long line
   a) Verification sample for each lot & color
3. Preformed symbols
   a) Type C certification
   b) No verification sample required

Kansas Department of Transportation

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High Durability Pavement Marking Tape

2015 SMS, 15-22014

Basis of Acceptance:

1. Prequalified list
2. Long line
   a) Verification sample for each lot & color
3. Preformed symbols
   a) Type C certification
   b) No verification sample required

Looks the same as Cold Plastic Pavement Marking

Check the product Number

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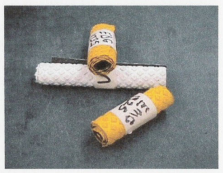
Sampling Tips

General Tips

- Sample materials as soon as you can. Often we get samples marked *"RUSH"*. In reality there is very little we can do to rush a sample through the testing process. Most tests require a duration of time, and there is simply no way to speed up time. So, please send samples in as soon as possible.

Sampling Cold Plastic & High Durability Pavement Marking Tape



Cold Plastic

- [redacted]
- Samples without a liner should be rolled on themselves with the adhesive to the inside. Secure the roll with masking tape. Samples with a liner should be sent in flat or rolled, leaving the liner on the sample.
- With a felt tip marker, write the Brand and Lot number on the masking tape or liner.
- Use care as not to soil the sample on either side. Samples with smudges can lead to bad test results.

Sampling Thermoplastic Materials

- Please read KT method #30 for sampling Thermoplastic.

Sampling Epoxy Pavement Marking

- The term sample, in the case of Epoxy Pavement Marking, refers to part "A" - Resin and part "B" - Hardener.
- One sample must be submitted for testing per color per project per manufacture..
- Prior to collecting samples, allow the truck to apply epoxy pavement marking material and beads for approximately one half hour.
- Coordinate the sampling site with the contractor.
- Obtain a ½-pint can sample of "Resin" and a ½-pint can sample of "Hardener". Mark the Resin "A" and the Hardener "B". **DO NOT MIX THESE SAMPLES. DO NOT SUBMIT GALLONS.**

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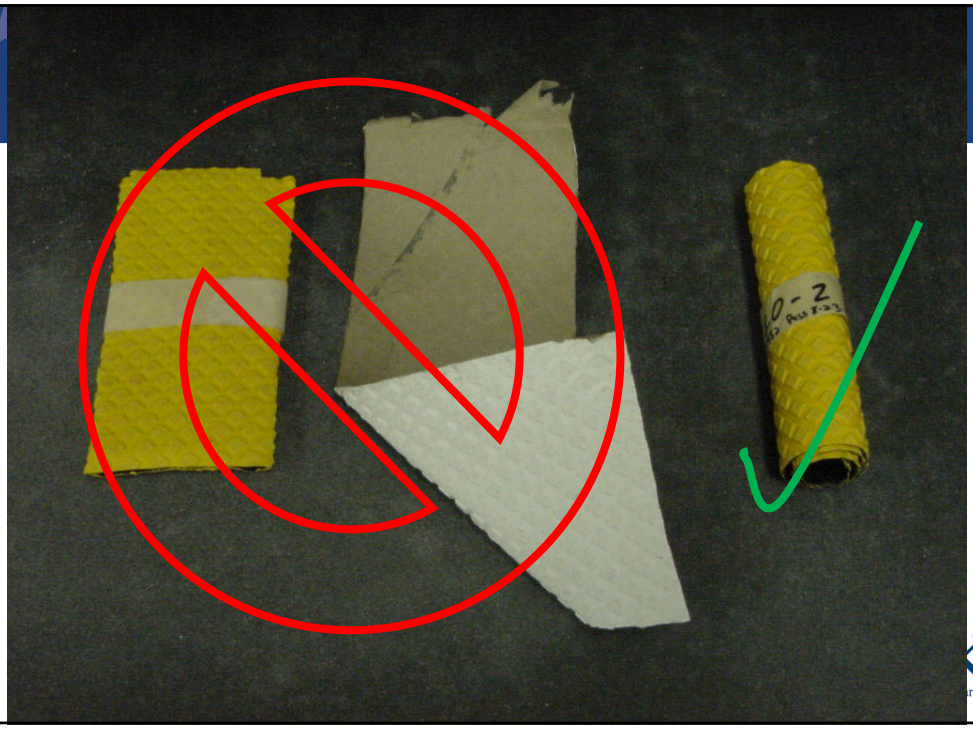

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Who Can You Call?

Verification samples can always be submitted for any material. If you have questions about the sampling and submitting of center mount reflectors, bridge paint, or pavement marking materials you can call the Materials Lab:

If you have questions about the sampling and submitting of paint and miscellaneous materials, you can always call the Materials Lab:

Chad Dexter, ET specialist, chemistry section, paint and miscellaneous subsection
785-296-4517

Kansas Department of Transportation

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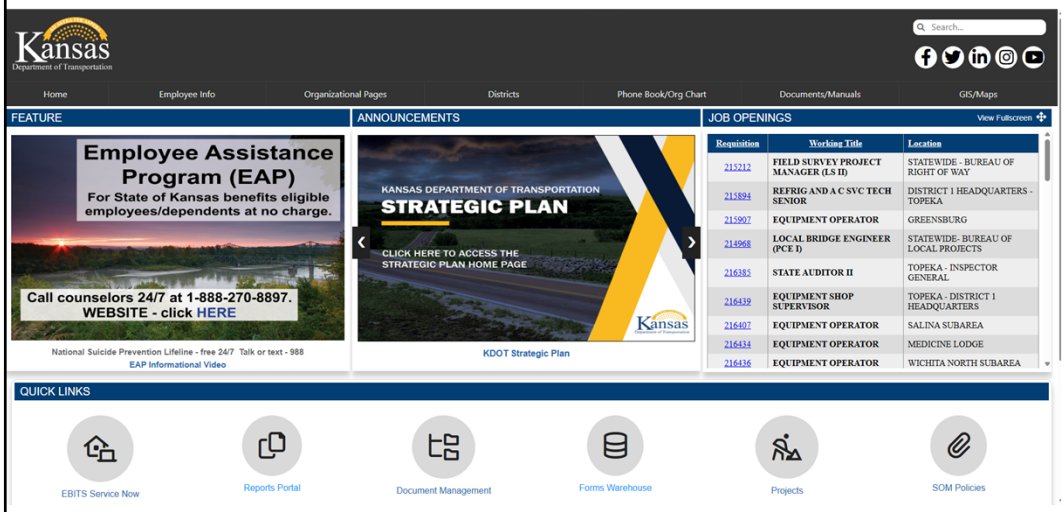
KDOT Intranet

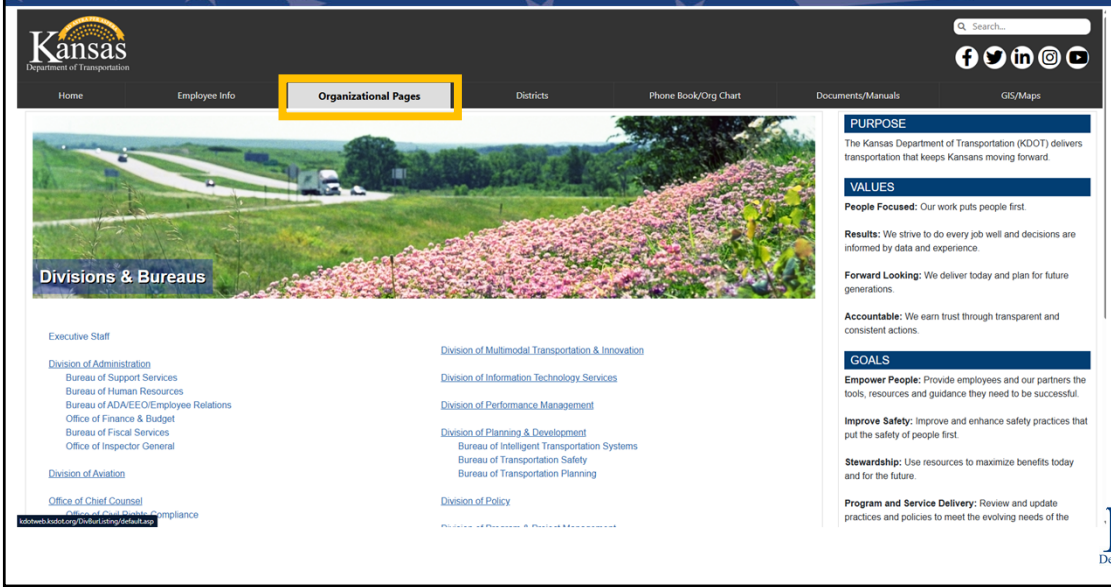
kdotweb.ksdot.org



Kansas
Department of Transportation

1

Organizational Pages



Kansas
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2

Bureau of Construction & Materials

Executive Staff

Division of Administration
- Bureau of Support Services
- Bureau of Human Resources
- Bureau of ADA/EEO/Employee Relations
- Office of Finance & Budget
- Bureau of Fiscal Services
- Office of Inspector General

Division of Aviation

Office of Chief Counsel
- Office of Civil Rights Compliance

Division of Communications

Division of Engineering & Design
- Bureau of Structures & Geotechnical Services
- Bureau of Right of Way
- Bureau of Local Projects
- Bureau of Road Design
- Bureau of Traffic Engineering
- KDOT CADD Support

Division of Field Operations

Division of Multimodal Transportation & Innovation

Division of Information Technology Services

Division of Performance Management

Division of Planning & Development
- Bureau of Intelligent Transportation Systems
- Bureau of Transportation Safety
- Bureau of Transportation Planning

Division of Policy

Division of Program & Project Management
- IKE Program

Division of Project Delivery
- Bureau of Construction & Materials

Division of Safety

Public Involvement

Project Manager Consultant (PMC)

VALUES

People Focused: Our work puts people first.

Results: We strive to do every job well and decisions are informed by data and experience.

Forward Looking: We deliver today and plan for future generations.

Accountable: We earn trust through transparent and consistent actions.

GOALS

Empower People: Provide employees and our partners the tools, resources and guidance they need to be successful.

Improve Safety: Improve and enhance safety practices that put the safety of people first.

Stewardship: Use resources to maximize benefits today and for the future.

Program and Service Delivery: Review and update practices and policies to meet the evolving needs of the agency.

STRATEGIC PLAN

Strategic Plan Home Page

Business Plan Portal

Guidance Document

Kansas Department of Transportation

3

Paint & Misc. Lot Numbers

Kansas Department of Transportation

Home | Employee Info | Organizational Pages | Districts | Phone Book/Org Chart | Docu

The Bureau of Construction & Materials manages the construction administration and materials acceptance of KDOT's annual construction program and manages KDOT's substantial maintenance program.

DOCUMENTS

As Needed Rate Factors
Asphalt Price Adjustment Index
Bid Item List
Cement Treated Base Spreadsheets
Construction Memos
Fuel Adjustment Price Index

Checklist
Paint & Misc. Lot Numbers
Portland Cement Concrete Pavement (PCCP) Spreadsheets
PPE - Safety - MARSH - linking
Rebar Patterns
Quarry Road Lengths

MANUALS

AASHTO & ASTM Portals & Industry Standards via IHS
https://www.ksdot.gov Inspector Testing Training)
KDOT Procurement Manual
Materials & Research Center Test Procedures (KT-MRs)

Kansas Department of Transportation

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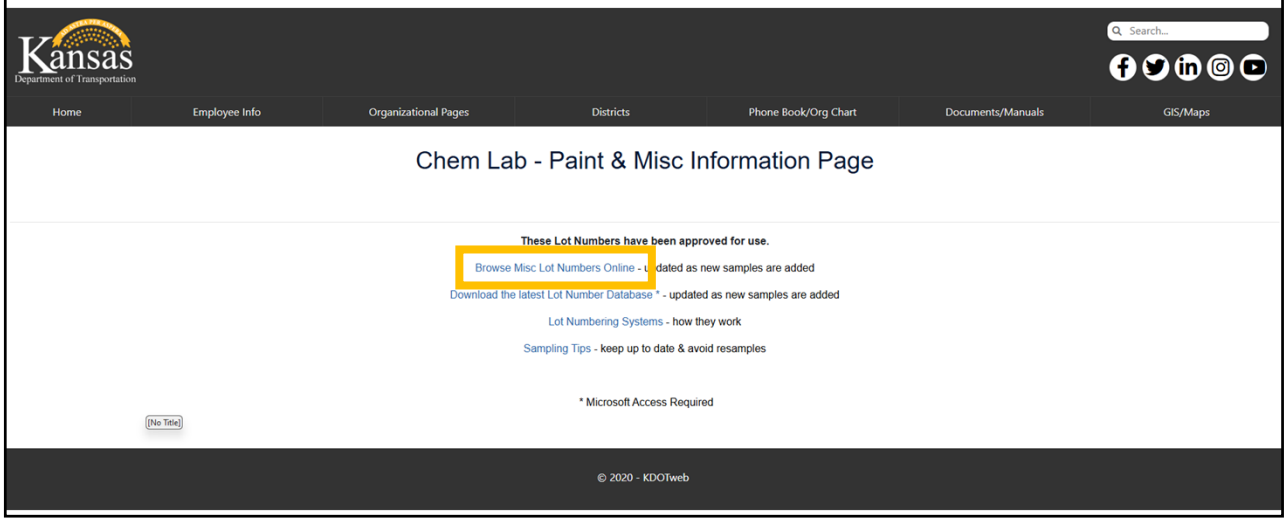
Browse Misc Lot Numbers Online



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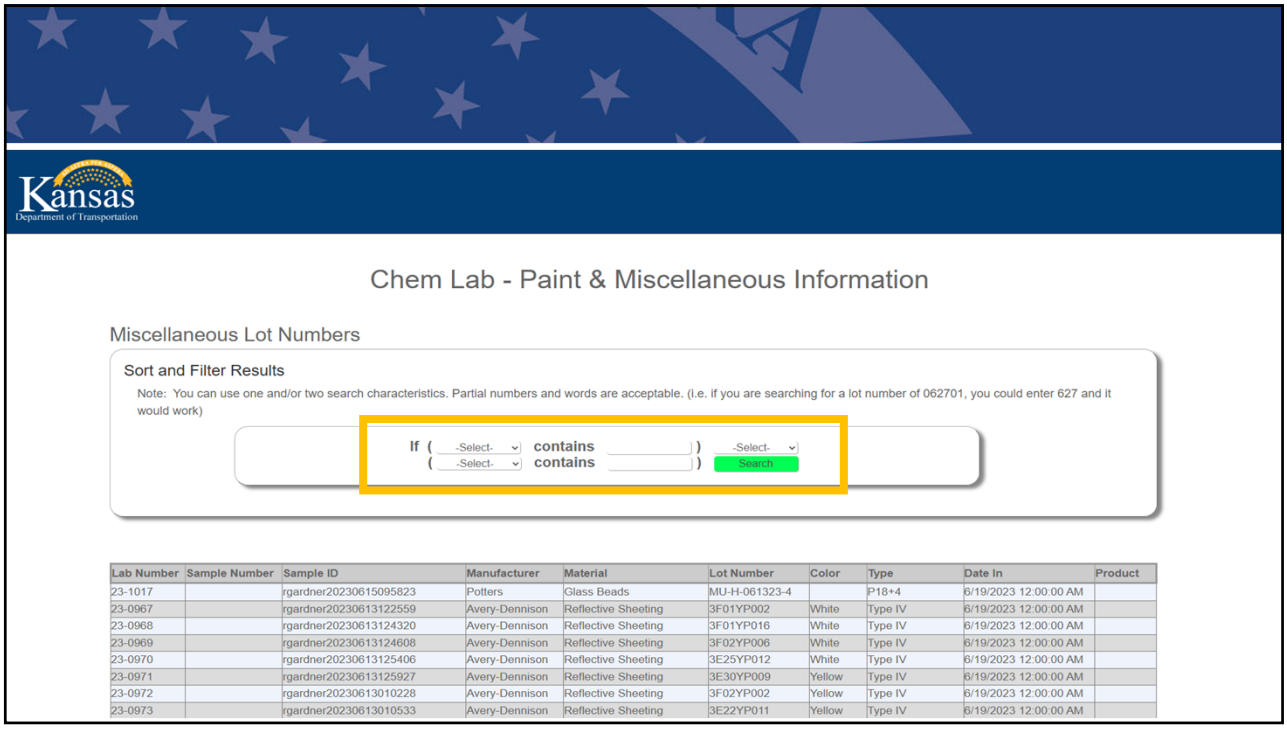

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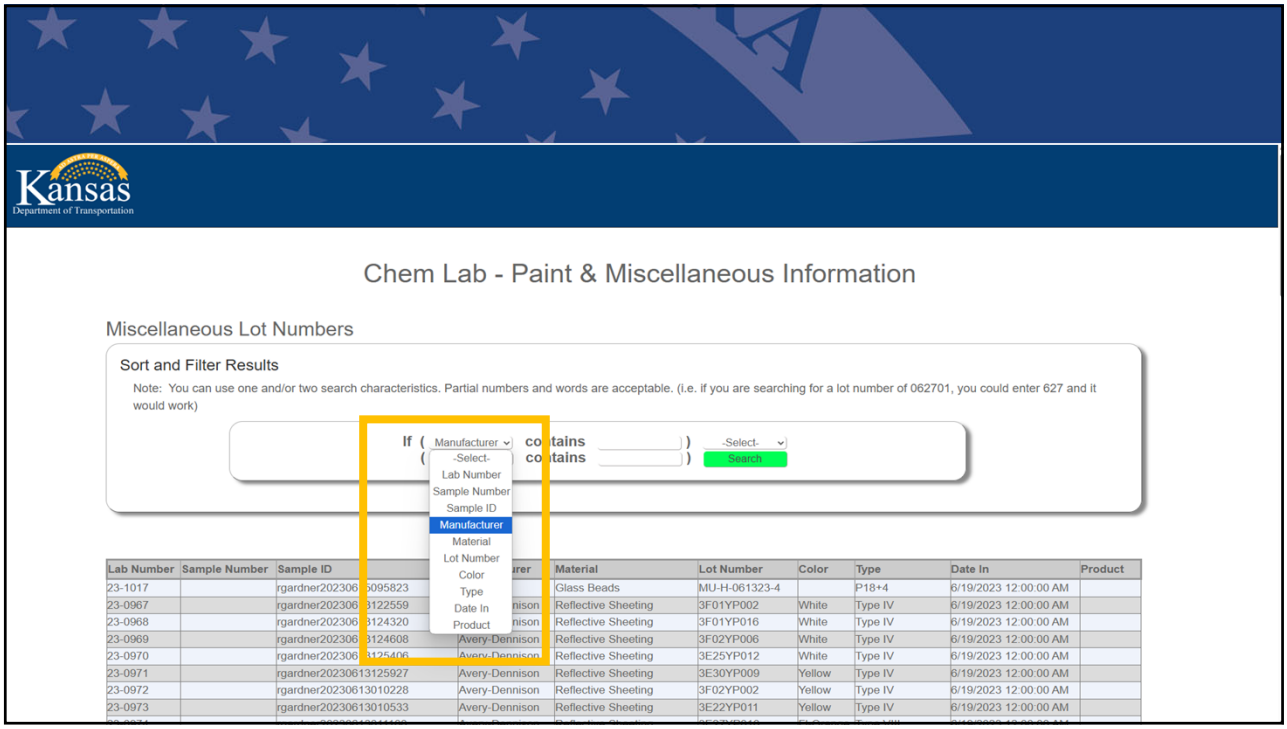
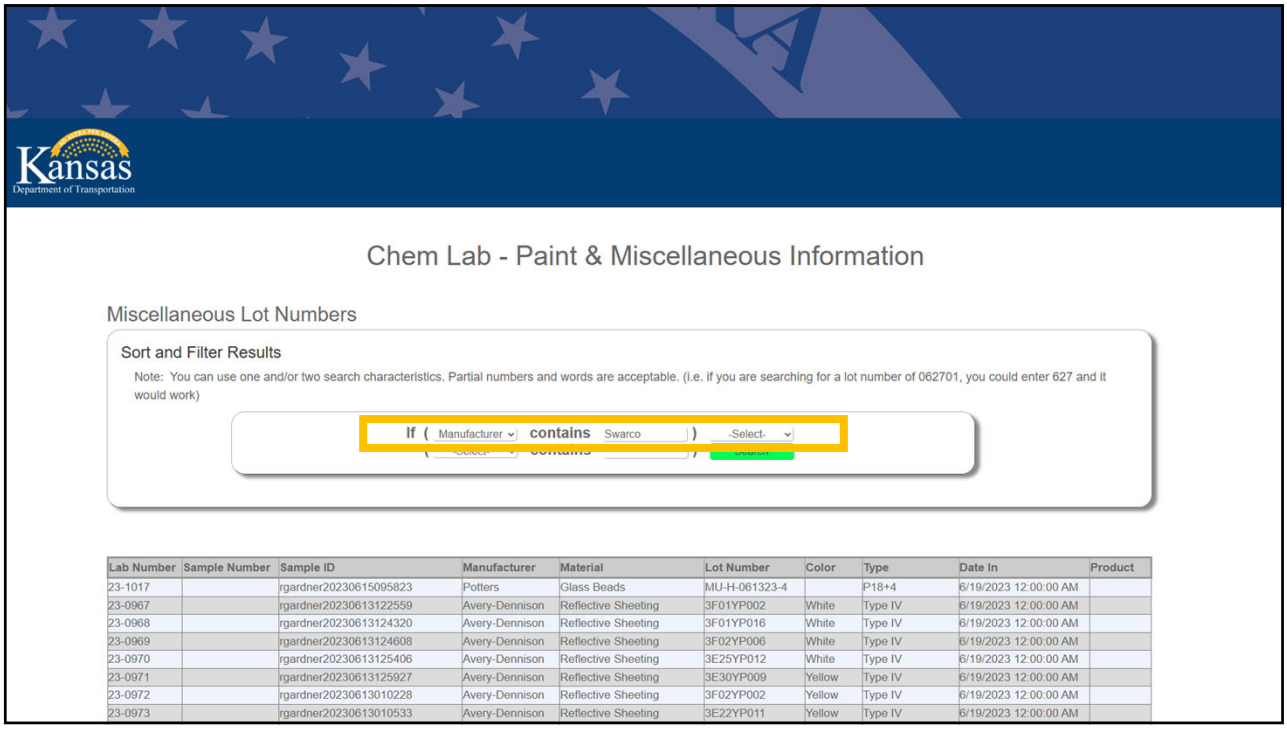
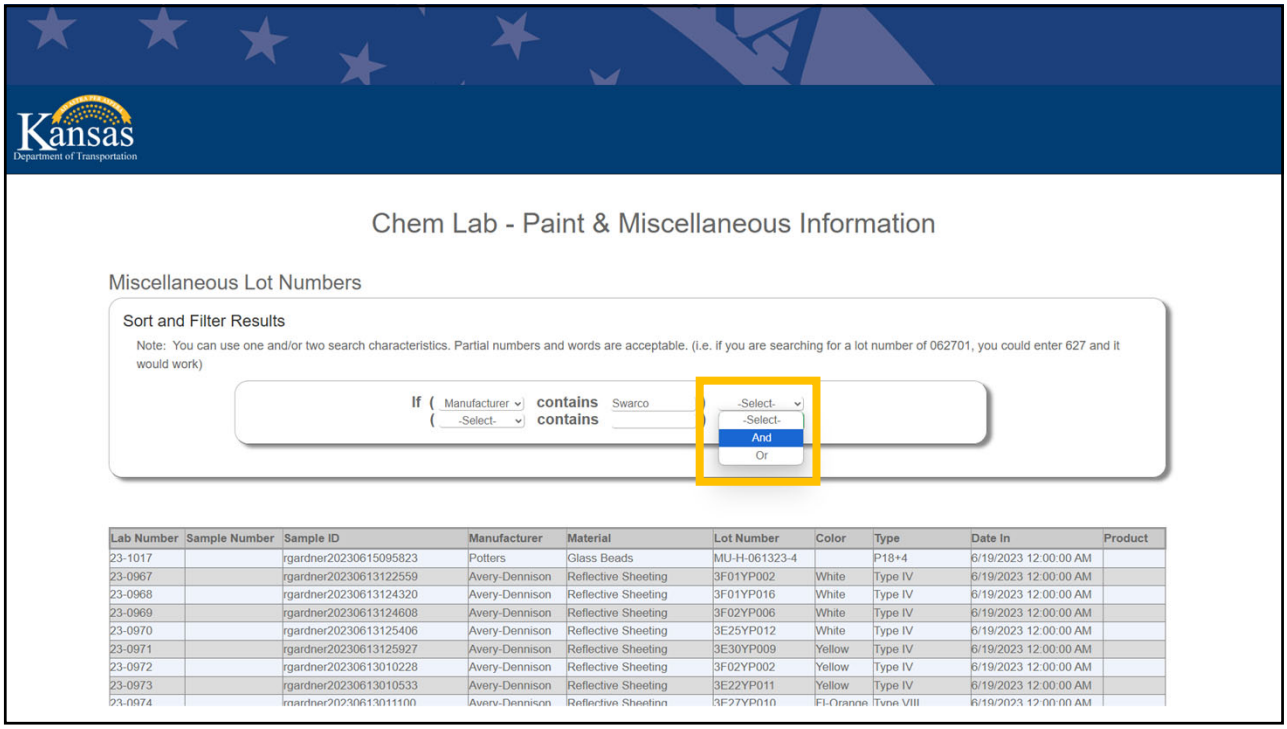

Kansas
Department of Transportation
Chem Lab - Paint & Miscellaneous Information
Miscellaneous Lot Numbers
Sort and Filter Results
Note: You can use one and/or two search characteristics. Partial numbers and words are acceptable. (i.e. if you are searching for a lot number of 062701, you could enter 627 and it would work)
If (Manufacturer contains) -Select-
(-Select- contains) Search
-Select-
Lab Number
Sample Number
Sample ID
Manufacturer
Material
Lot Number
Color
Type
Date In
Product
Lab Number | Sample Number | Sample ID | Material | Lot Number | Color | Type | Date In | Product
23-1017 | rgardner202306 5095823 | Glass Beads | MU-H-061323-4 | | P18+4 | 6/19/2023 12:00:00 AM
23-0967 | rgardner202306 3122559 | Reflective Sheeting | 3F01YP002 | White | Type IV | 6/19/2023 12:00:00 AM
23-0968 | rgardner202306 3124320 | Reflective Sheeting | 3F01YP016 | White | Type IV | 6/19/2023 12:00:00 AM
23-0969 | rgardner202306 3124608 | Avery-Dennison | Reflective Sheeting | 3F02YP006 | White | Type IV | 6/19/2023 12:00:00 AM
23-0970 | rgardner202306 3125406 | Avery-Dennison | Reflective Sheeting | 3E25YP012 | White | Type IV | 6/19/2023 12:00:00 AM
23-0971 | rgardner20230613125927 | Avery-Dennison | Reflective Sheeting | 3E30YP009 | Yellow | Type IV | 6/19/2023 12:00:00 AM
23-0972 | rgardner20230613010228 | Avery-Dennison | Reflective Sheeting | 3F02YP002 | Yellow | Type IV | 6/19/2023 12:00:00 AM
23-0973 | rgardner20230613010533 | Avery-Dennison | Reflective Sheeting | 3E22YP011 | Yellow | Type IV | 6/19/2023 12:00:00 AM

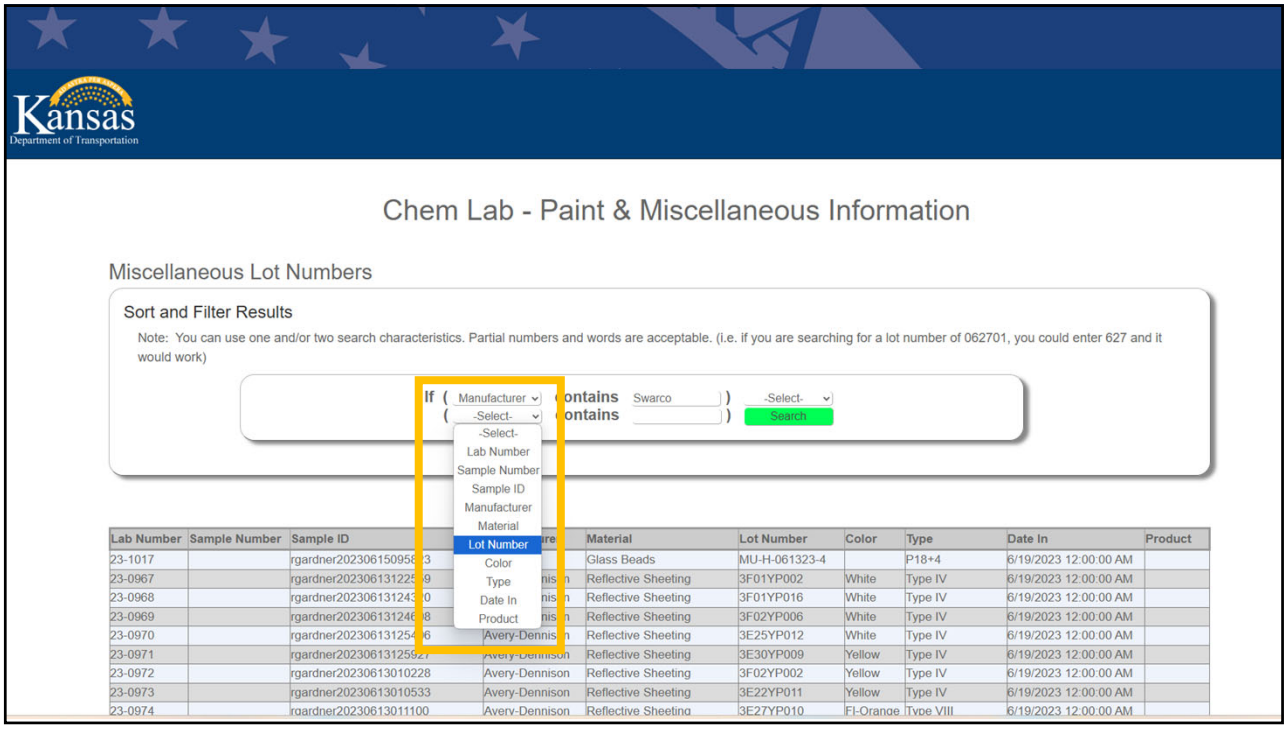
7


Kansas
Department of Transportation
Chem Lab - Paint & Miscellaneous Information
Miscellaneous Lot Numbers
Sort and Filter Results
Note: You can use one and/or two search characteristics. Partial numbers and words are acceptable. (i.e. if you are searching for a lot number of 062701, you could enter 627 and it would work)
If (Manufacturer contains Swarco) -Select-
Lab Number | Sample Number | Sample ID | Manufacturer | Material | Lot Number | Color | Type | Date In | Product
23-1017 | rgardner20230615095823 | Potters | Glass Beads | MU-H-061323-4 | | P18+4 | 6/19/2023 12:00:00 AM
23-0967 | rgardner20230613122559 | Avery-Dennison | Reflective Sheeting | 3F01YP002 | White | Type IV | 6/19/2023 12:00:00 AM
23-0968 | rgardner20230613124320 | Avery-Dennison | Reflective Sheeting | 3F01YP016 | White | Type IV | 6/19/2023 12:00:00 AM
23-0969 | rgardner20230613124608 | Avery-Dennison | Reflective Sheeting | 3F02YP006 | White | Type IV | 6/19/2023 12:00:00 AM
23-0970 | rgardner20230613125406 | Avery-Dennison | Reflective Sheeting | 3E25YP012 | White | Type IV | 6/19/2023 12:00:00 AM
23-0971 | rgardner20230613125927 | Avery-Dennison | Reflective Sheeting | 3E30YP009 | Yellow | Type IV | 6/19/2023 12:00:00 AM
23-0972 | rgardner20230613010228 | Avery-Dennison | Reflective Sheeting | 3F02YP002 | Yellow | Type IV | 6/19/2023 12:00:00 AM
23-0973 | rgardner20230613010533 | Avery-Dennison | Reflective Sheeting | 3E22YP011 | Yellow | Type IV | 6/19/2023 12:00:00 AM

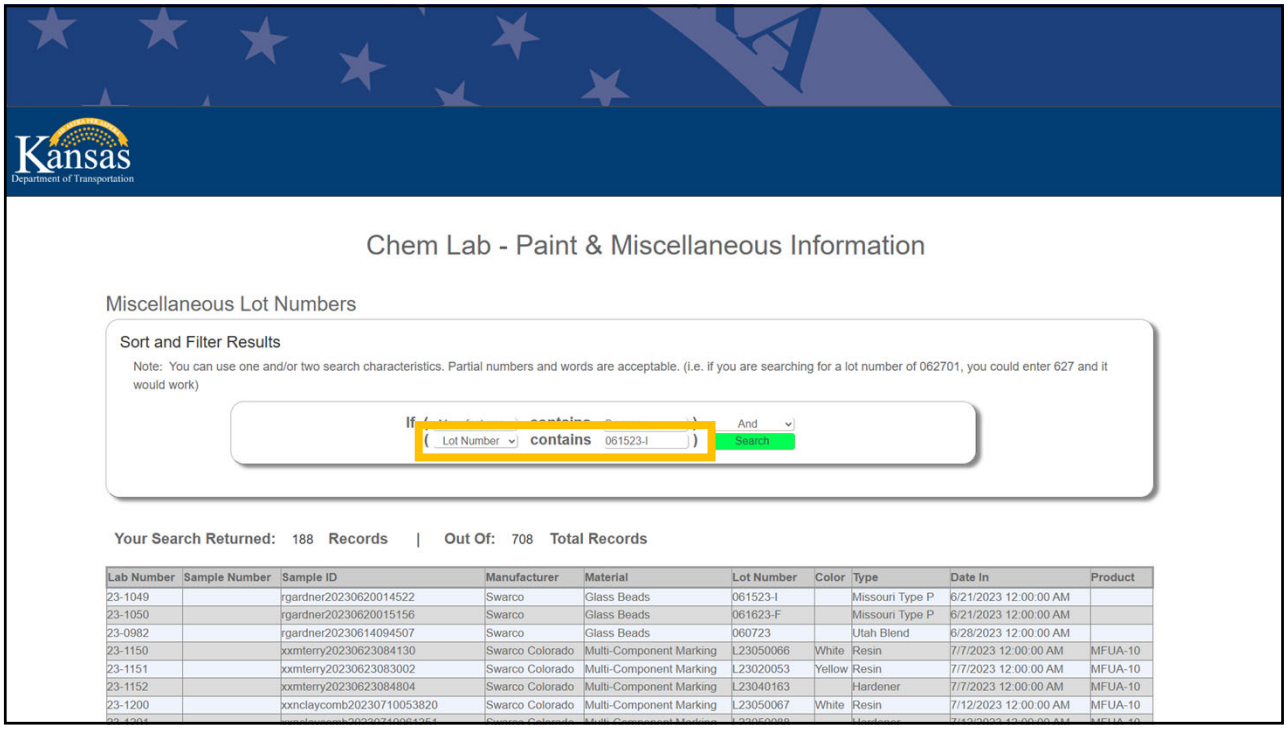
8


Kansas
Department of Transportation
Chem Lab - Paint & Miscellaneous Information
Miscellaneous Lot Numbers
Sort and Filter Results
Note: You can use one and/or two search characteristics. Partial numbers and words are acceptable. (i.e. if you are searching for a lot number of 062701, you could enter 627 and it would work)
If (Manufacturer contains Swarco) -Select-
(-Select- contains) -Select-
And
Or
Lab Number | Sample Number | Sample ID | Manufacturer | Material | Lot Number | Color | Type | Date In | Product
23-1017 | | rgardner20230615095823 | Potters | Glass Beads | MU-H-061323-4 | | P18+4 | 6/19/2023 12:00:00 AM |
23-0967 | | rgardner20230613122559 | Avery-Dennison | Reflective Sheeting | 3F01YP002 | White | Type IV | 6/19/2023 12:00:00 AM |
23-0968 | | rgardner20230613124320 | Avery-Dennison | Reflective Sheeting | 3F01YP016 | White | Type IV | 6/19/2023 12:00:00 AM |
23-0969 | | rgardner20230613124608 | Avery-Dennison | Reflective Sheeting | 3F02YP006 | White | Type IV | 6/19/2023 12:00:00 AM |
23-0970 | | rgardner20230613125406 | Avery-Dennison | Reflective Sheeting | 3E25YP012 | White | Type IV | 6/19/2023 12:00:00 AM |
23-0971 | | rgardner20230613125927 | Avery-Dennison | Reflective Sheeting | 3E30YP009 | Yellow | Type IV | 6/19/2023 12:00:00 AM |
23-0972 | | rgardner20230613010228 | Avery-Dennison | Reflective Sheeting | 3F02YP002 | Yellow | Type IV | 6/19/2023 12:00:00 AM |
23-0973 | | rgardner20230613010533 | Avery-Dennison | Reflective Sheeting | 3E22YP011 | Yellow | Type IV | 6/19/2023 12:00:00 AM |
23-0974 | | rgardner20230613011100 | Avery-Dennison | Reflective Sheeting | 3E27YP010 | Fl-Orange | Type VIII | 6/19/2023 12:00:00 AM |

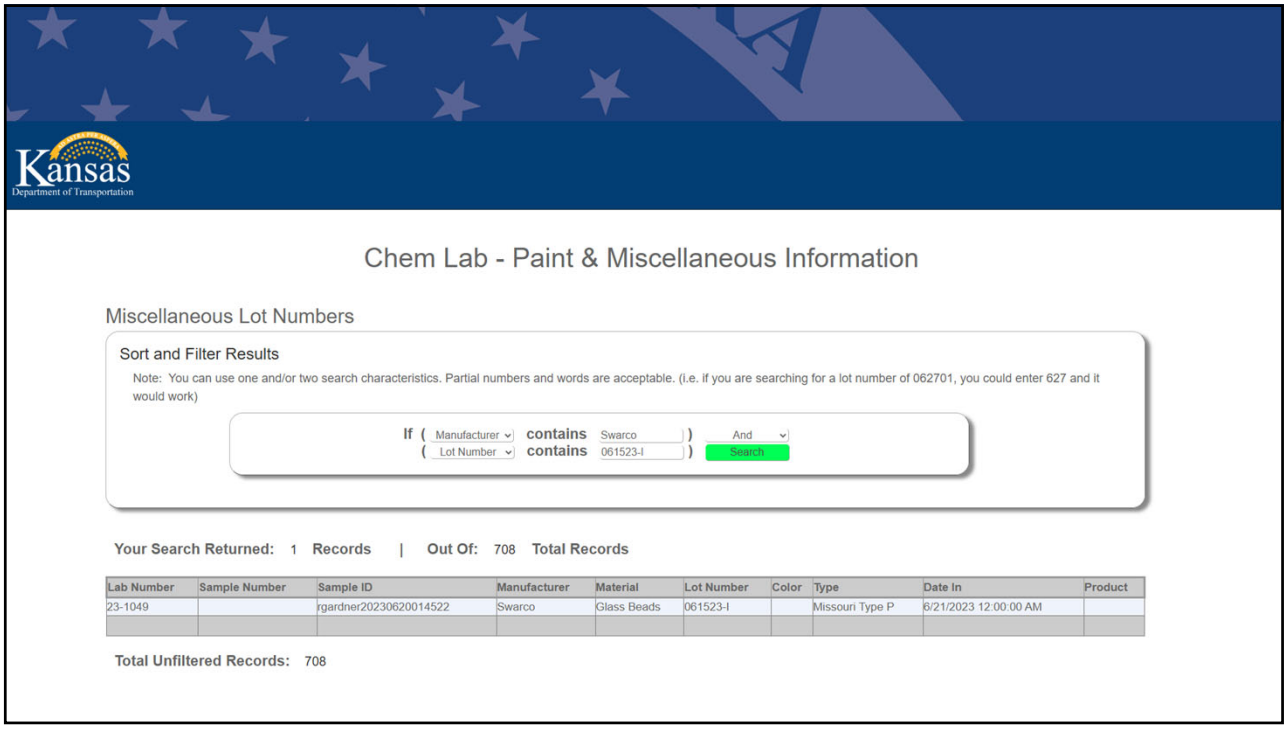
9


Kansas
Department of Transportation
Chem Lab - Paint & Miscellaneous Information
Miscellaneous Lot Numbers
Sort and Filter Results
Note: You can use one and/or two search characteristics. Partial numbers and words are acceptable. (i.e. if you are searching for a lot number of 062701, you could enter 627 and it would work)
If (Manufacturer contains Swarco) -Select-
(-Select- contains) Search
-Select-
Lab Number
Sample Number
Sample ID
Manufacturer
Material
Lot Number
Color
Type
Date In
Product
Lab Number | Sample Number | Sample ID | Material | Lot Number | Color | Type | Date In | Product
23-1017 | | Glass Beads | MU-H-061323-4 | | P18+4 | 6/19/2023 12:00:00 AM |
23-0967 | | Reflective Sheeting | 3F01YP002 | White | Type IV | 6/19/2023 12:00:00 AM |
23-0968 | | Reflective Sheeting | 3F01YP016 | White | Type IV | 6/19/2023 12:00:00 AM |
23-0969 | | Reflective Sheeting | 3F02YP006 | White | Type IV | 6/19/2023 12:00:00 AM |
23-0970 | | Reflective Sheeting | 3E25YP012 | White | Type IV | 6/19/2023 12:00:00 AM |
23-0971 | | Reflective Sheeting | 3E30YP009 | Yellow | Type IV | 6/19/2023 12:00:00 AM |
23-0972 | | Reflective Sheeting | 3F02YP002 | Yellow | Type IV | 6/19/2023 12:00:00 AM |
23-0973 | | Reflective Sheeting | 3E22YP011 | Yellow | Type IV | 6/19/2023 12:00:00 AM |
23-0974 | | Reflective Sheeting | 3E27YP010 | Fl-Orange | Type VIII | 6/19/2023 12:00:00 AM |

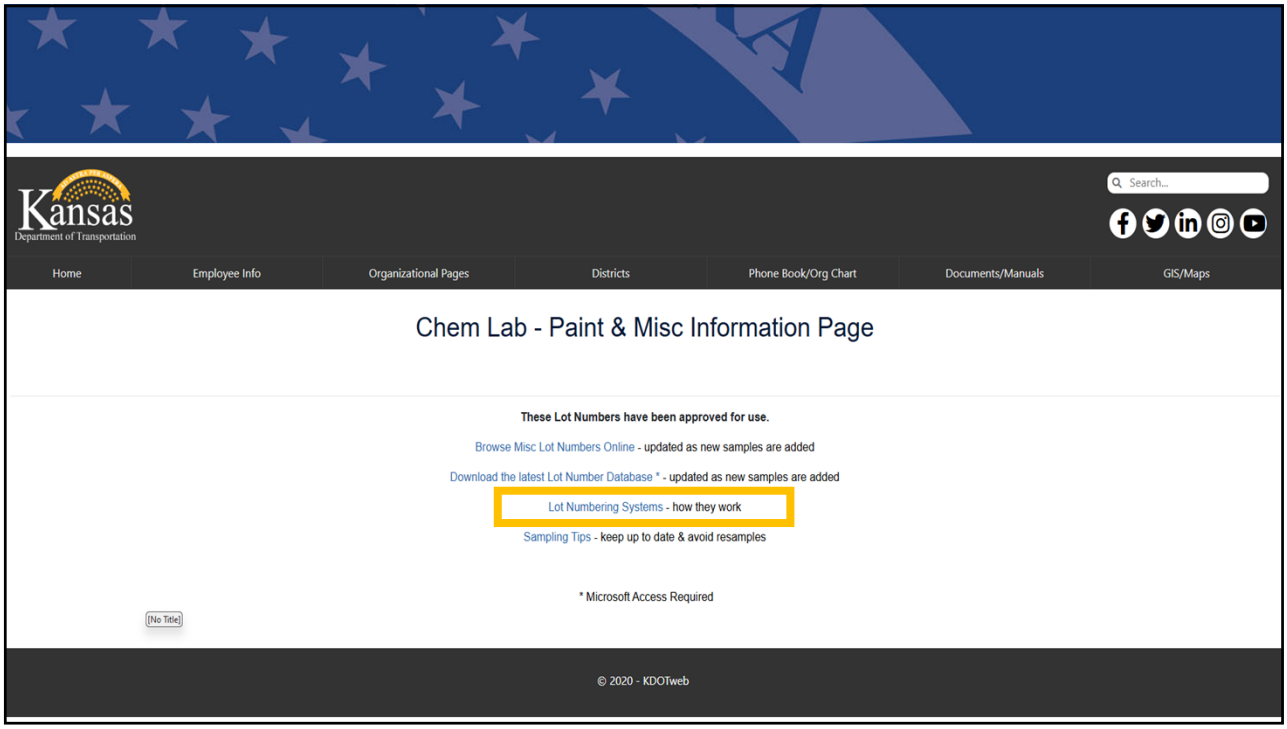
10


Kansas
Department of Transportation
Chem Lab - Paint & Miscellaneous Information
Miscellaneous Lot Numbers
Sort and Filter Results
Note: You can use one and/or two search characteristics. Partial numbers and words are acceptable. (i.e. if you are searching for a lot number of 062701, you could enter 627 and it would work)
(Lot Number contains 061523-I) And Search
Your Search Returned: 188 Records | Out Of: 708 Total Records
Lab Number | Sample Number | Sample ID | Manufacturer | Material | Lot Number | Color | Type | Date In | Product
23-1049 | | rgardner20230620014522 | Swarco | Glass Beads | 061523-I | | Missouri Type P | 6/21/2023 12:00:00 AM |
23-1050 | | rgardner20230620015156 | Swarco | Glass Beads | 061623-F | | Missouri Type P | 6/21/2023 12:00:00 AM |
23-0982 | | rgardner20230614094507 | Swarco | Glass Beads | 060723 | | Utah Blend | 6/28/2023 12:00:00 AM |
23-1150 | | xxmterry20230623084130 | Swarco Colorado | Multi-Component Marking | L23050066 | White | Resin | 7/7/2023 12:00:00 AM | MFUA-10
23-1151 | | xxmterry20230623083002 | Swarco Colorado | Multi-Component Marking | L23020053 | Yellow | Resin | 7/7/2023 12:00:00 AM | MFUA-10
23-1152 | | xxmterry20230623084804 | Swarco Colorado | Multi-Component Marking | L23040163 | | Hardener | 7/7/2023 12:00:00 AM | MFUA-10
23-1200 | | xxnclaycomb20230710053820 | Swarco Colorado | Multi-Component Marking | L23050067 | White | Resin | 7/12/2023 12:00:00 AM | MFUA-10

11


Kansas
Department of Transportation
Chem Lab - Paint & Miscellaneous Information
Miscellaneous Lot Numbers
Sort and Filter Results
Note: You can use one and/or two search characteristics. Partial numbers and words are acceptable. (i.e. if you are searching for a lot number of 062701, you could enter 627 and it would work)
If (Manufacturer contains Swarco) And
(Lot Number contains 061523-I) Search
Your Search Returned: 1 Records | Out Of: 708 Total Records
Lab Number | Sample Number | Sample ID | Manufacturer | Material | Lot Number | Color | Type | Date In | Product
23-1049 | | rgardner20230620014522 | Swarco | Glass Beads | 061523-I | | Missouri Type P | 6/21/2023 12:00:00 AM |
Total Unfiltered Records: 708

12



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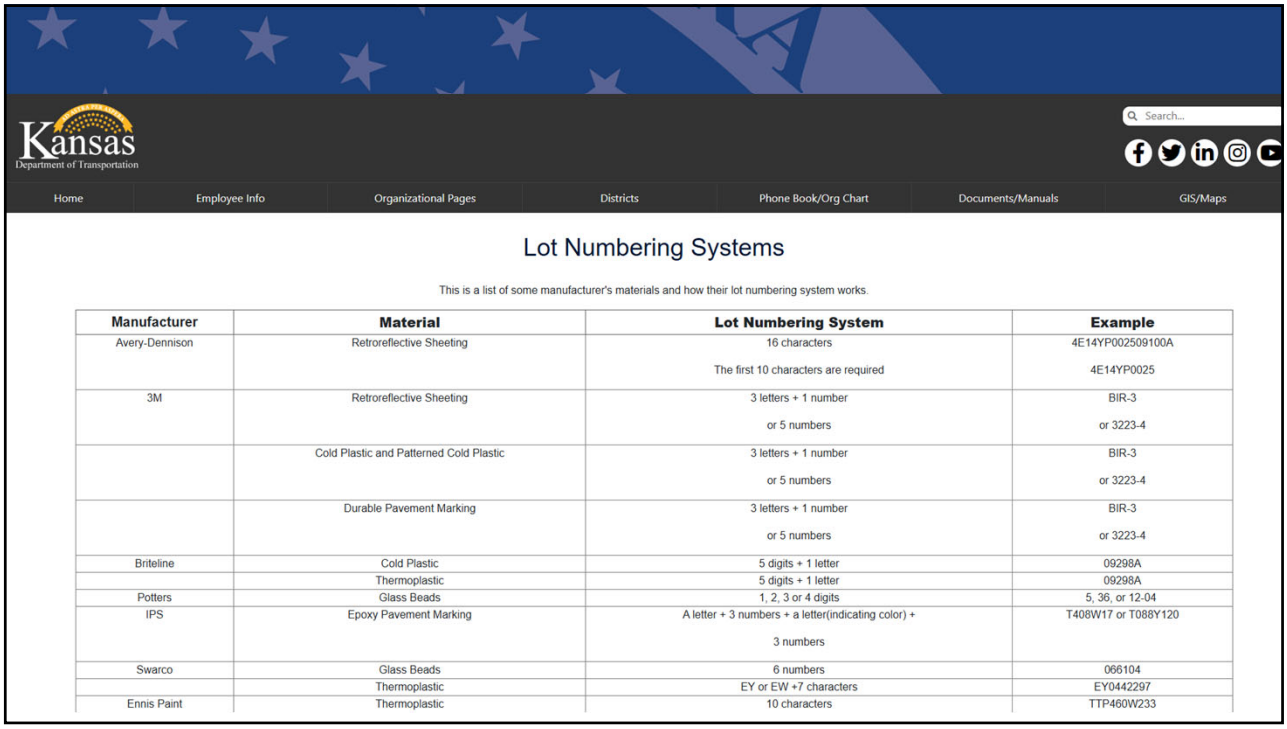

Manufacturer	Material	Lot Numbering System	Example
Avery-Dennison	Retroreflective Sheeting	16 characters The first 10 characters are required	4E14YP002509100A 4E14YP0025
3M	Retroreflective Sheeting	3 letters + 1 number or 5 numbers	BIR-3 or 3223-4
	Cold Plastic and Patterned Cold Plastic	3 letters + 1 number or 5 numbers	BIR-3 or 3223-4
	Durable Pavement Marking	3 letters + 1 number or 5 numbers	BIR-3 or 3223-4
Briteline	Cold Plastic	5 digits + 1 letter	09298A
	Thermoplastic	5 digits + 1 letter	09298A
Potters	Glass Beads	1, 2, 3 or 4 digits	5, 36, or 12-04
IPS	Epoxy Pavement Marking	A letter + 3 numbers + a letter(indicating color) + 3 numbers	T408W17 or T088Y120
Swarco	Glass Beads	6 numbers	066104
	Thermoplastic	EY or EW +7 characters	EY0442297
Ennis Paint	Thermoplastic	10 characters	TTP460W233

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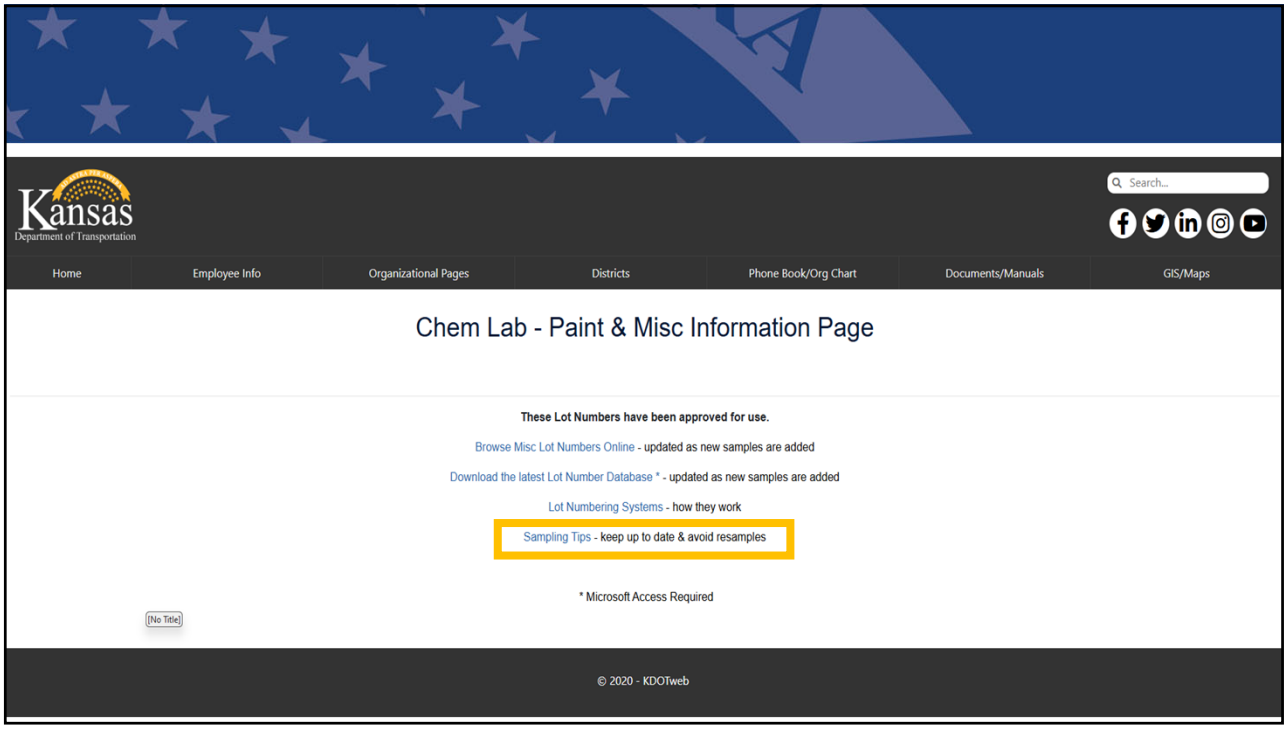
Kansas
Department of Transportation
Search...
Home
Employee Info
Organizational Pages
Districts
Phone Book/Org Chart
Documents/Manuals
GIS/Maps
Chem Lab - Paint & Misc Information Page
These Lot Numbers have been approved for use.
Browse Misc Lot Numbers Online - updated as new samples are added
Download the latest Lot Number Database * - updated as new samples are added
Lot Numbering Systems - how they work
Sampling Tips - keep up to date & avoid resamples
* Microsoft Access Required
[No Title]
© 2020 - KDOTweb

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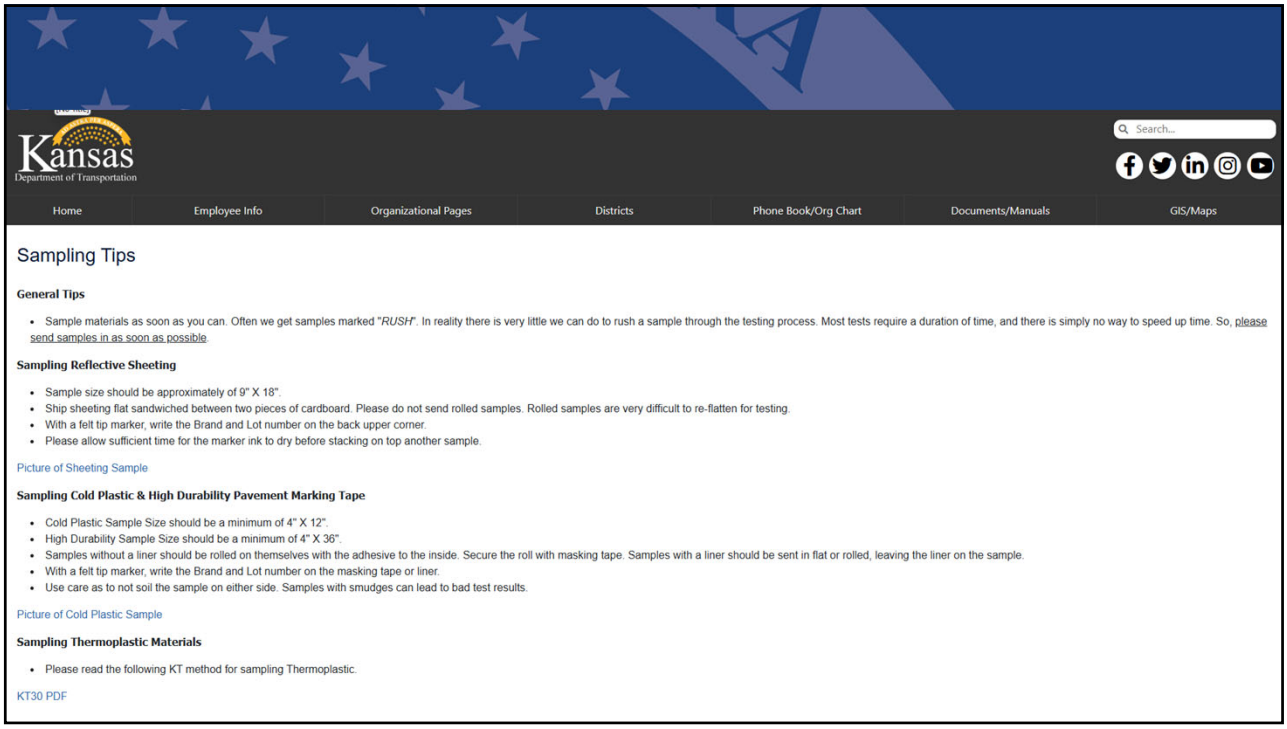
Kansas
Department of Transportation
Search...
Home
Employee Info
Organizational Pages
Districts
Phone Book/Org Chart
Documents/Manuals
GIS/Maps
Sampling Tips
General Tips
Sample materials as soon as you can. Often we get samples marked "RUSH". In reality there is very little we can do to rush a sample through the testing process. Most tests require a duration of time, and there is simply no way to speed up time. So, please send samples in as soon as possible.
Sampling Reflective Sheeting
Sample size should be approximately of 9" X 18".
Ship sheeting flat sandwiched between two pieces of cardboard. Please do not send rolled samples. Rolled samples are very difficult to re-flatten for testing.
With a felt tip marker, write the Brand and Lot number on the back upper corner.
Please allow sufficient time for the marker ink to dry before stacking on top another sample.
Picture of Sheeting Sample
Sampling Cold Plastic & High Durability Pavement Marking Tape
Cold Plastic Sample Size should be a minimum of 4" X 12".
High Durability Sample Size should be a minimum of 4" X 36".
Samples without a liner should be rolled on themselves with the adhesive to the inside. Secure the roll with masking tape. Samples with a liner should be sent in flat or rolled, leaving the liner on the sample.
With a felt tip marker, write the Brand and Lot number on the masking tape or liner.
Use care as to not soil the sample on either side. Samples with smudges can lead to bad test results.
Picture of Cold Plastic Sample
Sampling Thermoplastic Materials
Please read the following KT method for sampling Thermoplastic.
KT30 PDF

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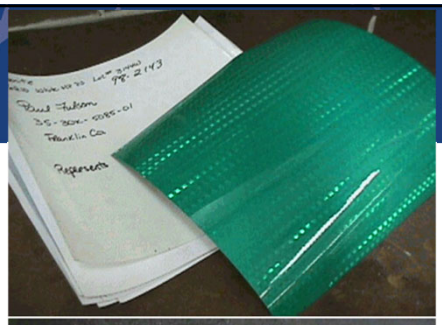

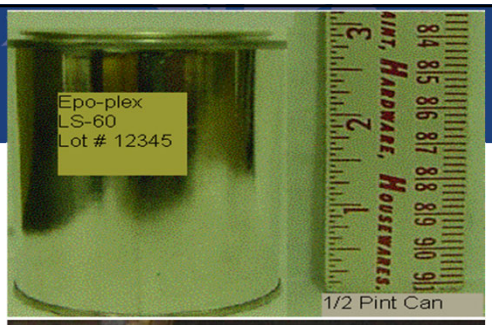

Kansas
Department of Transportation

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5.5 REQUIRED SAMPLE SIZES

1. SCOPE

This section covers the size of samples to be submitted to the Materials and Research Center for testing. The sample sizes listed are minimums and in special cases the Engineer of Tests may request that larger samples are submitted.

Each sample or group of samples must be accompanied by an information sheet containing all data necessary for issuing a complete report of the test results. Additional details are set forth in **Section 5.4** of this manual.

2. REQUIREMENTS

2.1. AGGREGATES

2.1.1. Aggregates for Quality Testing

2.1.1.1. Official Quality (OFQ) requirements for soundness do not apply for aggregates having less than 10% material retained on the No. 4 (4.75 mm) sieve.

2.1.1.2. OFQ requirements for wear do not apply to aggregate having less than 10% materials retained on the No. 8 (2.36 mm) sieve.

2.1.1.3. Crushed aggregates with less than 10% material retained on the No. 4 (4.75 mm) sieve (excluding mineral filler supplements) must be produced from a source complying with the official quality requirements prior to final processing.

Material	Sample Size
Crushed Stone	Two 50 lb (23 kg) bags of -1" (-25.0 mm), + #8 (+2.36 mm) material. Select a grading from **Table 1** based on the predominant particle size of the sample material, and make certain the minimum size fraction amounts outlined in **Table 1** are included in the 100 lb (45 kg) sample. Additional bags of individual sized material may be submitted to assure these minimums. A sample graded in accordance with the requirements of **Table 2** shall also be submitted.
Fine Aggregate for Concrete	50 lbs (23 kg) of pile run material.
Chat or Sand-Gravel	50 lbs (23 kg) of + #8 (+2.36 mm) material plus 50 lbs (23 kg) of pile run material. A sample graded in accordance with the requirements of **Table 2** shall also be submitted.
Aggregate for Wetting & Drying Test	Six 50 lbs (6-23 kg) bags of Sand-Gravel graded to meet the middle 1/3 of the MA-1 grading.

Table 1 - Minimum Mass Requirements for Crushed Aggregate Soundness Tests

Sieve Size		Grading and Mass, lbs (kg)		
Passing	Retained On	I	II	III
1” (25.0 mm)	3/4” (19.0 mm)	20 (9)		
3/4” (19.0 mm)	3/8” (9.5 mm)	15 (7)	30 (14)	
3/8” (9.5 mm)	No. 4 (4.75 mm)	6 (3)	10 (5)	35 (16)
No. 4 (4.75 mm)	No. 8 (2.36 mm)	6 (3)	6 (3)	10 (5)

Table 2 - Grading of Wear Test Samples

Sieve Size		Grading and Mass, lbs (kg)			
Passing	Retained On	A	B	C	D
1-1/2” (37.5 mm)	1” (25.0 mm)	10 (5)			
1” (25.0 mm)	3/4” (19.0 mm)	10 (5)			
3/4” (19.0 mm)	1/2” (12.5 mm)	10 (5)	20 (9)		
1/2” (12.5 mm)	3/8” (9.5 mm)	10 (5)	20 (9)		
3/8” (9.5 mm)	1/4” (6.3 mm)			20 (9)	
1/4” (6.3 mm)	No. 4 (4.75 mm)			20 (9)	
No. 4 (4.75 mm)	No. 8 (2.36 mm)				40 (18)

2.1.2 Lightweight Aggregates for Prequalification

Material	Sample Size
Lightweight Aggregate for Concrete	Eight 50 lbs (8-23 kg) bags pile run material. Select a grading from **Table 1** based on the predominant particle size of the sample material, and make certain the minimum size fraction amounts outlined in **Table 1** are included in the total 400 lb (180 kg) sample. Additional bags of individual sized material may be submitted to assure these minimums. A sample graded in accordance with the requirements of **Table 2** shall also be submitted.
Lightweight Aggregate for Cover Material	Two 50 lbs (2-23 kg) bags of pile run material. Make certain the minimum amounts for III Grading from **Table 1** are included in the 100 lb (45 kg) sample. Additional bags of individual sized material may be submitted to assure these minimums. A sample graded in accordance with the C Grading of **Table 2** shall also be submitted.

2.1.3. Aggregates for Verification Samples

Material	Sample Size
Crushed Stone	Two 50 lbs (2-23 kg) bags of pile run material. If the #4 (4.75 mm) and #8 (2.36 mm) retained material is not available in the amounts outlined in **Table 1**, it may be obtained from finer material delivered to the project if the finer material is from the same source as the coarser material. If finer material from the same source is not delivered to the project, then a Modified Soundness test will be conducted. A sample graded in accordance with the requirements of **Table 2** shall also be submitted.
Fine Aggregate for Concrete	50 lbs (23 kg) of pile run material.
Chat or Sand-Gravel	Two 50 lbs (2-23 kg) bags of pile run material. A sample graded in accordance with the requirements of **Table 2** shall also be submitted.
Lightweight Aggregates	Two 50 lbs (2-23 kg) bags of pile run material. Sample size may be increased to ensure the minimum amounts from **Table 1** are included in the sample. A sample graded in accordance with the requirements of **Table 2** shall also be submitted. For Cover Material, provide a C Graded sample.

2.1.4. On Grade Concrete Aggregates

Material	Sample Size
Ledge Sample	400 lbs (180 kg) per 8’ bed, maximum 50 lbs (23 kg) per bag, hand-picked from the ledge. Samples to be selected by Geologist.
Production Samples	Two 40 lbs (2-18 kg) bags of material passing the 3/4” (19.0 mm) sieve and retained on the 1/2” (12.5 mm) sieve. Two 40 lbs (2-18 kg) bags of material passing the 1/2” (12.5 mm) sieve and retained on the 3/8” (9.5 mm) sieve.

2.2. ASPHALT MATERIAL

Material	Sample Size
Performance Graded Asphalt Binder	Two 1 qt (1 L) cans.
Cutback Asphalt	Two 1 qt (1 L) cans.
Emulsion and Rejuvenating Agent	1 gal (4 L) – Plastic Containers ONLY!

2.3. BRICK AND CONCRETE MASONRY UNITS

Material	Sample Size
Masonry Brick, Common	5 per lot (**see note**).
Masonry Brick, ADA Compliant	Call the Materials Certification Technician at the Materials & Research Center.
Facing	10 per lot.
Concrete Building Brick	5 per lot.
Concrete Masonry Units (solid)	5 per lot.
Concrete Masonry Units (hollow load-bearing)	10 per lot per size.

Note: For the purposes of **Section 2.3** (above), a lot shall be any well defined quantity of material produced by essentially the same process.

2.4. CONCRETE CURING MATERIALS

Material	Sample Size
Liquid Membrane – Forming Compounds	Two 1 qt (1 L) samples per each lot of 2000 gal (7500 L) or less.

2.5. JOINT SEALERS AND JOINT FILLERS

Material	Sample Size
Hot Joint Sealing Compound	Information or Verification: 5 lbs. (2.3 kg) Prequalification: 30 lbs. (14 kg)
Cold Applied Chemically Cured Joint Sealant	Two 1 qt (1L) cans per lot.
Preformed Elastomeric Compression Joint Seal	For prequalification – one 6’ (1.80 m) long piece. For identification – one 2.5’ (0.75 m) long piece.
Plastic Joint Compound for Concrete	5 lbs (2.5 kg) per lot.

2.6. MISCELLANEOUS MATERIALS

Material	Sample Size
Air Entraining Admixtures	1 qt (1 L).
Admixtures for Water Reduction and Set Retardation	1 qt (1 L).
Calcium Chloride	Solution – 1 qt (1 L). Dry – 1 gal (4 L).

2.7. NON-FERROUS METALS

Material	Sample Size
Aluminum Alloys – Bridge Rail Posts Bolts Nuts Sheet	 1 post per 100. 2 bolts per lot. 4 nuts per lot. One 12” (300 mm) square piece per lot.
Bronze – Bridge Number Markers Castings	 20 g of drillings. 50 g of drillings.

2.8. PAINT MATERIALS AND MIXED PAINTS

Material	Sample Size
Bridge Paint – Dry Pigment Mixed Paint Vehicle, Thinner, Etc. Aluminum Paste	1 pt. (0.5 L) per lot of each component
Pavement Marking Paint	Two 1 quart (1 L) cans per lot of each color

2.9. REFLECTIVE MATERIALS

2.9.1.

	Sample Size
Reflective sheeting	Prequalification: 3 pieces, 24" x 24" per color. Verification: 1 piece, 12" x 12" minimum per lot per color
Center Mount Reflectors	5000 or less – 18 each. Each additional 5000 (or fraction thereof) of each color – 4 each.

2.9.2. Pavement Marking

Material	Sample Size
Cold Plastic Patterned Cold Plastic High Durability	One 36" (900 mm) piece for materials less than 12" (300 mm) in width. One 24" (600 mm) piece for materials of 12" (300 mm) and greater in width.
Epoxy Resin and/or Epoxy Hardener	Two ½ pint (0.25 L) cans per lot per color.
Multi-Component Resin/Hardener	Two ½ pint (0.25 L) cans per lot per color.
Glass Beads	Two 1 quart cans per lot per color.
Thermoplastic	One gallon can lid per lot per color.

2.10 CULVERT, SEWER AND UNDERDRAIN PIPE

Material	Sample Size
Clay Pipe (except drain tile)	0.5% of total lot, 2 tiles minimum.
Clay Drain Tile	5 per lot.
Cast-Iron Culvert Pipe	5% of total lot, 1 pipe minimum.
Cast-Iron Soil Pipe	5% of total lot, 1 pipe minimum.
Corrugated Steel Underdrain Pipe	0.5% of total lot, 2 pipes minimum.
Corrugated Aluminum Underdrain Pipe	0.5% of total lot, 2 pipes minimum.
Bituminous Coated Corrugated Metal Pipe, Pipe Arches, Coupling Bands, and Structural Plate	1 qt (1 L) of the bituminous coating and approximately 1 ft^2 (3000 mm^2) of coated corrugated steel.

2.11. PORTLAND CEMENT, SCM's, AND LIME

Material	Sample Size
Portland Cement, Fly Ash, Slag, Silica Fume	1 gal (4 L) sample.
Blended Cements	2 gal (8 L) sample.
Hydrated Lime, Quicklime,	1 qt (1 L)

2.12. MATERIALS FOR ROADSIDE IMPROVEMENT

Material	Sample Size
Herbicides	1 qt (1 L) sample.

2.13. STEEL AND IRON

2.13.1 Bar, Strand, and Plate

Material	Sample Size
Steel Bars for Concrete Reinforcement	Prequalification – #3 (10) thru #6 (19) – Three 8 ft (2.5 m) samples per heat. #7 (22) thru #11 (36) – Three 9 ft (2.75 m) samples per heat. #14 (43) and #18 (57) – Three 10 ft (3 m) samples per heat. Verification (Preferable Single Bar Option) – #3 (10) thru #6 (19) – One 8 ft (2.5 m) sample. #7 (22) thru #18 (57) – One 10 ft (3 m) sample. Verification (Alternative Two Bar Option) – #3 (10) thru #5 (16) – Two 4 ft (1.25 m) samples. #6 (19) thru #10 (32) – Two 5 ft (1.5 m) samples. #11 (36) and #14 (43) – Two 6 ft (2 m) samples. #18 (57) – Two 7 ft (2.2 m) samples.
Reinforcing Bar Splices	Prequalification - 3 samples each for bar sizes #4 (13), #6 (19), and #8 (25). Each splice shall have reinforcing bar extending 24" (610 mm) from both ends of the splice. Verification – 2 samples for each bar size used. Each splice shall have reinforcing bar extending 24" (610 mm) from both ends of the splice.
Welded Steel Wire Fabric for Concrete Reinforcement	1 piece, 48" (1.2 m) long and full width.

Fabricated Steel Bar or Rod Mats	See verification of Steel Bars for Concrete Reinforcement for length(s). 1 or 2 pieces sample per size per heat.
Prestressing or Post-Tensioning Strand	One 8 ft (3 m) sample for each 20 ton (18 Mg) lot (or heat). Cut into two 4 ft (1.5m) pieces for shipment.
Structural Steel	1 piece, 24" (610 mm) x 4" (100 mm) minimum. Note: If plate width is 24" (610 mm) or less, cut long dimension of sample parallel with the direction of rolling. If plate width is greater than 24" (610 mm), cut long dimension of sample perpendicular to the direction of rolling.

2.13.2 Fasteners

Material	Sample Size
High Strength Steel Fasteners for Structural Connections (i.e. Bridges, Overhead Sign Supports, etc.):	
Uncoated	
≤ 8000	6 each of bolt, nut, and washer. *
> 8000 but ≤ 22,000	9 each of bolt, nut, and washer.
> 22,000	12 each of bolt, nut, and washer.
Coated	
≤ 8000	6 each of bolt, nut, and washer. *
> 8000 but ≤ 22,000	10 each of bolt, nut, and washer.
> 22,000	15 each of bolt, nut, and washer. * 3 ea. of bolt, nut and washer if greater than 1".
Rivets	
≤ 8000	3
> 8000 but ≤ 22,000	5
> 22,000	7

Note: For the fasteners of **Section 2.13.2** (above), the number of specimens listed are per each individual lot and identified by the individual bolt length, diameter, and head marking (strength and type); or nut marking.

2.13.3 Miscellaneous Steel and Iron Products

Material	Sample Size
Materials for Guardrail:	Note: Sample only if a Type A certification cannot be provided.
Bolts, Nuts, and Washers	3 each per lot.
Guardrail Fittings	3 each per lot.
Sheet Metal for Signs	One 12" (300 mm) square piece for each 4000 lbs (2000 kg).

Anchor Bolts for Bridges, Signing, Lighting, and Traffic Signals Coated or Uncoated	1 per lot (sample only if a Type A certification cannot be provided).
Pipe (A 53) Black or Galvanized Structural Steel Tubing (A 500 or A 501)	One 36" (1 m) per lot or heat. One 36" (1 m) per lot or heat. Only if needed for verification testing
Tire Chains: Sets Cross Chains, Repair Links, etc. Side Chains	 1/2 set per size per order. 1% of pieces. Minimum 5 pieces per order. 1% of length. Minimum 5 ft (1.5 m) per order.

2.14. WATER

Material	Sample Size
Water for Use with Portland Cement	1 gal (4 L).

2.15. MATERIALS FOR ASPHALT AND AGGREGATE MIXTURES, AND SOILS

2.15.1 Asphalt Mixtures

Material	Sample Size
Marshall Analysis: Sample of Combined Aggregate Individual Aggregates – Each Aggregate Except Mineral Filler Mineral Filler Asphalt Cement	 125 lbs (57 kg). 50 lbs (23 kg). 25 lbs (12 kg). 2 gal (8 L).
Bituminous Stabilization of Soils: Soils Sample Cutback Asphalt or Emulsion	 200 lbs (91 kg). 3 gal (12 L).
Marshall Density, Stability, and Extraction/Gradation:	50 lbs (23 kg).
Reflux Extraction or Abson Recovery	30 lbs (14 kg) for PG grading, 20 lbs (9 kg) for all others.

Moisture and Volatile Determination	5 lbs (2.5.kg).

2.15.2 Aggregate Mixtures

Material	Sample Size
Cement Stabilized Bases	500 lbs (225 kg).
Lime Stabilized Bases	500 lbs (225 kg).
Aggregate Binder Bases: Gradation and P.I. Standard Compaction	 40 lbs (18 kg). 150 lbs (68 kg).

2.15.3 Soils

Material	Sample Size
Routine Analysis Only	5 lbs (2.5 kg).
Routine Analysis and Compaction	Two 50 lb (23 kg) bags
Routine analysis, Compaction, and Resilient Modulus	Two 50 lb (23 kg) bags.
Soil Cement Tests	300 lbs (135 kg). In 50 lb (23 kg) bags.
Soil Lime Tests	300 lbs (135 kg). In 50 lb (23 kg) bags.
Moisture Determination	6 oz (170 g) sealed ointment can.
Resistivity and pH	10 lbs (5 kg).
Permeability	Two 50 lb (23 kg) bags.
Comparison P.I. Prepared: (- #40 [-425 μm]) Unprepared:	 0.5 lb (227 g). Sufficient material to yield 0.5 lb (227 g) of prepared material.
Soil Fertility	5 lbs (2.5 kg).

5.7. INSPECTION AND SAMPLING OF MATERIALS

1. ASPHALT MATERIALS

1.1. GENERAL

These instructions cover the inspection and sampling of asphalt materials.

1.1.1. Performance Graded Asphalt Binders and Cutback Asphalt.

Asphalt is a natural constituent of most crude petroleum oils. The crude petroleum is refined to separate the various components including naphtha, gasoline, kerosene, diesel fuel, lubricating oils, etc., and to recover the asphalt.

Asphalt binder is the basic result of this recovery and it is produced in a variety of grades. For highway uses, these are Performance Graded (PG) Binders ranging from PG52-22 to PG82-22. At normal temperatures asphalt binder is semi-solid and is brought to and maintained in a liquid state by the application of heat.

Rapid curing (RC) and medium curing (MC) cutback asphalts consist of an asphalt base fluxed with suitable petroleum distillates or diluents. Blending of the asphalt binder and diluents is done either in tanks or by automatic blending devices which draw the individual ingredients from storage tanks, mix them in pre-determined proportions and discharge the mixture into railroad tank cars or trucks.

1.1.2. Emulsified Asphalt.

Emulsified asphalt is a homogeneous liquid mixture consisting of asphalt binder, water and a small amount of emulsifying chemicals. Some emulsified asphalt grades also contain added petroleum distillate to improve mixing conditions and give long term stockpile life. Asphalt emulsions are of the anionic or cationic types. In general, the anionic type deposits the asphalt binder by evaporation of the water while in the case of the cationic type the asphalt binder is deposited because of an electro-chemical attraction to the aggregate.

1.1.3. Asphalt Rejuvenating Agent.

Asphalt Rejuvenating Agent (ARA) is composed of a polymer modified asphalt emulsion. It is used to increase the ductility and penetration of the asphalt binder in an existing pavement.

1.2. Storage Facility

Special storage facilities (terminals) may be established on approval of the Chief, Bureau of Construction and Materials at a location other than a refinery. A producer's certification must accompany each shipment.

1.3. Sampling Procedure.

Asphalt materials must be sampled in accordance with Department of Transportation Test Methods as set forth in subsection **KT-26**.

1.4. Asphalt Sampling Frequency.

The following Sampling Frequency can be used for Performance Graded Asphalt Binders, Cutback Asphalt, and Emulsified Asphalt.

SAMPLING FREQUENCY LEVEL I - one out of every three trucks is sampled and tested. When 5 more consecutive samples from all sources statewide have been tested, by the Central Laboratory, and all comply with specification requirements, the producer will be upgraded to Level II.

SAMPLING FREQUENCY LEVEL II - one out of every six trucks is sampled and tested. When 5 consecutive samples from all sources statewide have been tested, by the Central Laboratory, and all comply with specification requirements, the producer will be upgraded to Level III.

SAMPLING FREQUENCY LEVEL III - When 5 more consecutive from all sources statewide have been tested, and all comply with specification requirements, one out of every 12 trucks is sampled and tested.

All newly prequalified asphalts begin at Level I. District Materials Engineers and Lab Chiefs will be notified of changes of frequency by e-mail as soon as the change is made. Indicate the sampling frequency level used on the sample container or information sheet.

Some samples may be disposed of in the Materials and Research Center Lab queue as soon as the sampling frequency changes. The disposal will not be entirely random, as all projects will be represented, but will be random within projects. The sample ID will be cleared with the explanation, "Not tested due to change in sample frequency requirements." Samples over 14 days old when received will be disposed.

1.5. Testing performed for each sampling frequency level.

1.5.1. Performance graded asphalt binder.

SAMPLING FREQUENCY LEVEL I - of the 5 samples, all will get a complete analysis.

SAMPLING FREQUENCY LEVEL II - of the 5 samples, all will get a complete analysis.

SAMPLING FREQUENCY LEVEL III - once this level is reached all samples will get a partial analysis. Each month, a complete analysis will be performed on at least one sample per grade per producer.

1.5.2. Asphalt rejuvenating agent, cutback asphalt, and emulsified asphalt.

All samples, regardless of Sampling Frequency Level will get a complete analysis.

1.6. Analysis of Performance graded (PG) asphalt binder

COMPLETE ANALYSIS

Original Binder:
- Flash Point, COC
- Brookfield Viscosity, 135ºC
- Dynamic Shear
- Separation Test, 163°C (modified only)

Rolling Thin Film Oven Residue:
- Mass Loss
- Dynamic Shear
- Elastic Recovery, 77°F (modified only)

Pressure Aging Vessel Residue:
- Dynamic Shear
- Creep Stiffness, 60 seconds
- Slope
- 40 hr. Delta Tc

PARTIAL ANALYSIS

Original Binder:
- Dynamic Shear

Rolling Thin Film Oven Residue:
- Dynamic Shear

2. BRICK AND CONCRETE MASONRY UNITS

2.1. Methods of inspection

2.1.1. At the Source.

Inspection of brick and concrete masonry units will, if possible, be made at the manufacturer's storage yard and will be made by an authorized representative of the Chief, Bureau of Construction and Materials. Inspection at the source will consist of subjecting each lot to a careful visual inspection and obtaining a representative sample of the lot to be submitted to the Materials and Research Center, Topeka, Kansas for test.

The number of samples required is shown in **section 5.5** of this manual. Each size of unit will constitute a separate lot. Specimens selected for sampling shall be representative of the lot of units from which they are selected. After sampling, the lot represented shall be marked for identification.

2.1.2. At Destination.

Inspection of masonry units delivered to the project will be the responsibility of the Field Engineer or the District Materials Engineer.

If the units have been tested and accepted before delivery, a visual inspection should be made to check the condition of the units and their identification. Slight imperfections, minor indentations or surface cracks incidental to the usual method of manufacture, or the chipping resulting from the customary methods of handling in shipment, should not be deemed grounds for rejection.

Units which have not been sampled before delivery must be sampled and inspected on the project. Sampling and inspection will be in accordance as above.

3. CONCRETE CURING MATERIALS

3.1. Burlap

All burlap is visually inspected prior to use to determine compliance with applicable portions of the specifications. Normally, burlap will only be sampled to check the weight. However, if the inspector suspects the material is contaminated with a water soluble ingredient which retards setting of the concrete, the materials should be sampled in accordance with **section 5.5** of this manual. Such samples are submitted to the Materials and Research Center.

3.2. Liquid Membrane Forming Compounds

Acceptance by certification will be discontinued if tests show poor quality control during production.

Samples are taken from the containers in which the material is shipped. Prior to sampling, the material must be thoroughly mixed so that a representative sample is obtained.

Sample size shall be in accordance with the requirements of **section 5.5** of this manual.

4. JOINT SEALING AND JOINT FILLER MATERIALS

4.1. Hot Type Joint Sealing Compound

Inspection and sampling of hot type joint compound is limited to securing samples from filled shipping containers and submitting them to the Materials and Research Center for testing. Samples will be taken by a representative of the Department, and must be available for testing in the Materials and Research Center a minimum of 10 working days prior to the date the material is required for installation.

Samples shall be taken as set forth in **KT-27.**

4.2. Cold Applied, Chemically Cured Joint Sealing Compound

Inspect the material visually before it is used. The Engineer should be satisfied that the shipment can be identified with the certification.

4.3. Preformed Elastomeric Compression Joint Seals for Concrete

The Type C certification shall be reviewed and the material will be inspected by the Engineer before it is used. The Engineer should be satisfied that the shipment is identified and that the proper material has been received.

4.4. Materials for Filling and Sealing Joints in Pipe

4.4.1. Compound Type Joint Filler

Inspection and sampling is limited to securing samples from filled shipping containers and submitting them to the Materials and Research Center for testing. If the material has been sampled, tested and accepted prior to shipment, the Engineer should inspect the material before it is used to satisfy that each package is identified with the test report and that no damage has occurred during handling, shipping and storage. If the material has not been sampled, the District Materials Engineer should be advised so arrangements can be made for sampling. Samples shall be taken as set forth in **KT-27.**

4.4.2. Flexible Gasket Type Joint Filler

The Engineer should inspect each piece of pipe at destination before it is placed so that it is identified with the test report and that the pipe and joint materials have not been damaged during shipping, handling, and storage.

4.4.3. Factory Molded Joints

Since these types of materials are not inspected prior to shipment, they must be inspected by the Engineer. The jute should be inspected for cross-sectional uniformity and freedom from defects that would allow the entrance of the melted lead into the pipe.

4.4.4. Materials for Sealing Joints in Cast Iron Pipe

The seals should be inspected at destination and prior to installation to determine the presence of imperfections that could cause leakage of the joint.

4.4.5. Expanded Closed-Cellular Rubber Gaskets for Reinforced Concrete Pipe and Precast Boxes

Visual Inspection by the Engineer for workmanship, fit, and final installation practices.

5. MISCELLANEOUS MATERIALS

5.1. ADMIXTURES FOR PORTLAND CEMENT CONCRETE

The inspection of admixtures is the responsibility of the Engineer. Since admixtures are delivered to the project without inspection, the Engineer must ensure that the product is on the prequalified list and that certifications as specified are available for each lot of material. If the Engineer has doubt as to the condition of the product or if the material fails to perform as expected, the material should be sampled immediately and submitted to the Materials and Research Center for testing. Samples should be accompanied by a letter stating the deviation from expected performance.

5.2. CALCIUM CHLORIDE

This material will be inspected at destination and a verification sample is to be obtained from the first unit delivered.

Solid calcium chloride will be sampled by selecting at random not less than three containers. Each container so chosen is to be sampled by scraping aside the top layer to a depth of approximately 1 inch (25 mm) and taking samples by means of a sampling thief or other method which will ensure obtaining a representative cross section in the container to a depth of at least 6 inches (150 mm). Precautions must be taken during the sampling to avoid unduly exposure of the sample to atmospheric moisture. The individual samples are immediately and thoroughly mixed to from a representative composite sample which is place in a moisture tight container for shipment to the laboratory.

Liquid calcium chloride will be sampled using the thief method as describe in **KT-26** to obtain a 1 qt (1 liter) sample.

5.3. REFLECTIVE SHEETING

All reflective sheeting will be sampled according to **ASTM D 4956.** A full width X 1 yd (1 m) long specimen is selected at random to represent the entire sheet, roll or lot.

5.4. ELECTRIC LIGHTING AND TRAFFIC SIGNAL EQUIPMENT

When miscellaneous hardware and span and guy wire is shipped from a warehouse located within or near State borders, arrangements will be made to have the various items sampled and tested prior to shipment. When these items arrive on the project without previous sampling and testing, they will be inspected and sampled by the Engineer. The Engineer should review test reports and certifications to ensure that all items on the project are covered by the necessary documents, and should be satisfied that the entire shipment meets the required specifications.

A report covering items accepted by certification and visual inspection is issued by the Engineer. Items sampled and tested by the Materials and Research Center are covered by a copy of the laboratory report.

5.5. CENTER MOUNT REFLECTORS

Center Mount reflectors will be sampled by the Engineer and submitted to Materials and Research Center according to **section 5.5** of this manual.

When only 1 reflector per sample fails testing the entire sample will be accepted for use on KDOT projects. A failure of 2 reflectors per sample will require resampling and testing. A failure of 3 or more will cause the entire sample to be rejected without resampling.

5.6. BEARING PADS OR MATS FOR STRUCTURES

Inspection and the issuance of acceptance reports is the responsibility of the Engineer. The Engineer is responsible for visual inspection on all Elastomeric and Preformed fabric pads.

6. MISCELLANEOUS METALS

6.1. ALUMINUM ALLOYS AND CAST ALUMINUM

Cast products that will be subjected to appreciable stress are the exception to this policy. The aluminum from which the castings are made is shipped to the foundry in ingots where it is remelted, cast and heat treated to a prescribed temper. Since there is a possibility that the alloy might lose its identity, or that heat treatment might not be adequate, it is the Department's policy to test such items prior to acceptance. This policy is especially applicable to stress designed bridge handrail posts cast from Aluminum Association Alloy A444-T4.

Since all aluminum products except castings are shipped to the project without inspection, the Engineer must visually inspect the items for compliance with dimensional requirements, identification with certifications, workmanship, damage during handling, shipment, storage, erection, etc.

While cast items have usually been inspected at the point of production, they should be subjected to visual inspections by the Engineer to determine manufacturing flaws, dimensional defects and possible handling and shipping damage. If castings have not been inspected and sampled at the point of production, sampling in the field will be necessary. If field sampling is required, take one or more castings to represent each lot as defined in the specifications. Forward the samples to the Materials and Research Center for testing. If

radiographs accompanied the shipment, forward these to the Materials and Research Center with the samples. If radiographs have not been furnished, the castings will be subjected to radiographic examination. In either case specimens will be removed for physical and chemical test, which will destroy the sample. Therefore, the Contractor must furnish additional castings at no charge to replace those taken for samples.

6.2. SHEET METAL FOR SIGNS

Sheet thickness should be measured with a micrometer.

7. BRIDGE PAINTS AND PAVEMENT MARKING MATERIALS

7.1. BRIDGE PAINT

7.1.1. Inspection at the Source

Inspection of paint or paint materials at the factory or at a distributer's or dealer's storage area will be made by the Engineer and will be limited to the taking of a representative sample and submitting it to the Materials and Research Center for testing. Except for mixed paints that may have settled badly, this is readily accomplished by following the methods in **KT-28.** If the inspector is asked to sample paint that has settled badly, with pigment caked on the bottom of the container to such an extent that it is impossible to properly mix, the Engineer should reject it on visual inspection and refuse to sample. Make sure all paints have been thoroughly mixed prior to sampling.

7.1.2. Inspection at the Destination

Inspection of paint delivered to a job site will normally be the responsibility of the Engineer. Since the paint should have been tested and accepted prior to delivery, the inspection will usually consist only of visual inspection for identification marks and for the condition of the paint in the container. The Engineer shall see that all paint is properly mixed before application. Paint that has been tested and accepted by the laboratory may be unfit for use if held in storage for extended periods of time. If the contractor is unable to mix the paint so that the pigment is completely and uniformly incorporated with the vehicle, the Engineer should reject it and require the contractor to obtain new material. Attention is called to the fact that it is extremely difficult to properly mix a five gallon can of paint by stirring with a paddle. If any hard pigment settlement is present it is impossible to do so. If necessary, the Engineer should insist that the paint be mixed according to **KT-28.** Make sure all paints have been thoroughly mixed prior to sampling.

7.1.3. Types of Packaging

Paint will usually be offered for sampling in the ready mixed form and may be either in a bulk storage tank or sealed packages such as one gallon and five gallon cans. Aluminum Paint, Inorganic Zinc Primer, Aluminum Epoxy Mastic Primer, and Polyurethane Field Coat will be offered in two or more containers with the paste or pigment in one container and the vehicle in the other container.

The source of the material will usually be the paint factory where the product will be in storage tanks or sealed packages, but it may be a distributer's warehouse or dealer's storage area where the material will be in sealed packages only. Occasionally materials such as linseed oil or thinners will be at a manufacturer's plant other than a paint factory where the manufacturer will be compounding other products used in maintenance or construction.

7.1.4. Thinning

If thinning is permitted, the Engineer should inspect the thinner and see it is the type allowed by the Specifications. If a thinner is used, it must be one specified by the paint manufacturer.

7.1.5. Shop Coat

The shop coat primer on structural steel delivered to the job should be inspected by the Engineer. If the shop coat has been damaged by moving the steel before complete drying, or if the surface is contaminated by dirt, cinders, etc., it should be cleaned and repainted. In extreme cases the Engineer should require the damaged shop coat to be completely removed and the steel repainted with the shop primer. After erection of the steel, the Engineer should check the condition of the shop coat. Any skips, small areas left unpainted because of erection marks, rivets, bolt heads, and welded areas should be properly cleaned and touched up with an appropriate primer. The cleaning of field welded areas should be given careful attention. All slag, spatter, and excess reinforcing should be ground off and the weld area sand blasted before painting.

7.1.6. Methods of Sampling

Unless otherwise specified, all bridge paints will be sampled according to **KT-28.**

7.2 TRAFFIC LINE PAINT

7.2.1. Inspection at the Destination

Inspection of paint delivered to a job site will normally be the responsibility of the Engineer. Inspection will usually consist only of visual inspection for identification marks and for the condition of the paint in the container. The Engineer shall see that all paint is properly mixed before application. Paint may be unfit for use if held in storage for extended periods of time. If the contractor is unable to mix the paint so that the pigment is completely and uniformly incorporated with the vehicle, the Engineer should reject it and require the contractor to obtain new material. Attention is called to the fact that it is extremely difficult to properly mix a five gallon can of paint by stirring with a paddle. If any hard pigment settlement is present it is impossible to do so. If necessary, the Engineer should insist that the paint be mixed according to **KT-28.** Make sure all paints have been thoroughly mixed prior to sampling.

7.2.2. Types of Packaging

Paint will usually be offered for sampling in single component form and may be either in a bulk storage tank or sealed packages such as 55, 5 or 1 gallon containers.

7.2.3. Method of Sampling

Unless otherwise specified, all pavement marking paints will be sampled according to **KT-68**.

7.3. EPOXY PAVEMENT MARKING MATERIAL

7.3.1. Inspection at the Destination

Inspection of Epoxy Pavement Marking Material delivered to a job site will normally be the responsibility of the Engineer.

7.3.2. Types of Packaging

Epoxy Pavement Marking Material will usually be offered for sampling in a ready form and be in a heated bulk tanks. The source of the material will usually be the contractor.

7.3.3. Method of Sampling

Unless otherwise specified, all pavement marking paints will be sampled according to **KT-66**.

7.4. THERMOPLASTIC PAVEMENT MARKING MATERIAL

7.4.1. Inspection at the Destination

Inspection of Thermoplastic Pavement Marking Material delivered to a job site will normally be the responsibility of the Engineer.

7.4.2. Types of Packaging

Thermoplastic Pavement Marking Material will usually be offered for sampling in the melted form in heated bulk tanks or in powder form in sealed sacks. The source of the material will usually be the contractor.

7.4.3. Method of Sampling

Unless otherwise specified, all pavement marking paints will be sampled according to **KT-30**.

7.5. PREFORMED THERMOPLASTIC PAVEMENT MARKING MATERIAL

7.5.1. Inspection at the Destination

Inspection of Preformed Thermoplastic Pavement Marking Material delivered to a job site will normally be the responsibility of the Engineer.

7.5.2. Types of Packaging

Preformed Thermoplastic Pavement Marking Material will usually be offered for sampling in performed markings that are heat fused to the pavement. The source of the material will usually be the contractor.

7.6. SPRAYED THERMOPLASTIC PAVEMENT MARKING MATERIAL

7.6.1. Inspection at the Destination

Inspection of Sprayed Thermoplastic Pavement Marking Material delivered to a job site will normally be the responsibility of the Engineer.

7.6.2. Types of Packaging

Sprayed Thermoplastic Pavement Marking Material will usually be offered for sampling in the molten form that is applied to the pavement by spray means. The source of the material will usually be the contractor.

8. CULVERT, SEWER AND UNDER-DRAIN PIPE

8.1. CAST IRON PIPE

If pipe with a push-on or a mechanical joint is furnished, the joint elements should be examined carefully to determine whether or not they will produce a pressure tight seal. Each length should be carefully examined for all manufacturing defects or damage during handling that will impair its usefulness.

8.2. CORRUGATED METAL PIPE, PIPE ARCHES AND END SECTIONS

As a minimum, the Engineer should inspect the pipe at destination for possible damage during handling and shipping. A tag with the project number and station number should be attached to each section of pipe by the manufacturer. Defective pipe or pipe of questionable quality should be reported to the District Materials Engineer. If the pipe has not been inspected at the fabricator's plant or some other location, a more stringent inspection will be required at the job site, consult the District Materials Engineer for guidance.

8.3. ASPHALT COATED CORRUGATED METAL PIPE, PIPE ARCHES, COUPLING BANDS AND STRUCTUAL PLATE

The pipe is identified by tags attached to each piece. The tags bear the laboratory number under which the pipe was inspected and the date of inspection.

9. CEMENTITIOUS MATERIAL

9.1. PORTLAND CEMENT

Many types of cement are manufactured. and utilized by These types are covered by **Kansas Department of Transportation Specifications Section 2001.** Portland cement may be delivered to the project in bags or in bulk. Most shipments to projects and to ready-mix plants are in bulk.

9.1.1. Responsibility

It is the responsibility of the Engineer to assure that cement manufacturers, concrete producers, and contractors comply with the Standard Specifications and Special Provisions. Complete and sincere cooperation of all persons involved is essential for successful and efficient cement inspection. The current list of prequalified cement plants is available from Kansas Department of Transportation's website.

9.1.1.1. The operator of a prequalified cement plant or terminal furnishes all necessary information and facilities for adequate sampling by the Engineer to maintain prequalified status.

9.1.1.1.1. The plant operator exercises good quality control of the products and submits a monthly report of the test results and a statistical analysis (including standard deviations and means) of all the plant's quality control tests for the month to the Chief, Bureau of Construction and Materials for all products for which the plant is prequalified.

9.1.1.1.2. A representative of the cement company must issue a certification to accompany each shipment consigned to State work. The certifications shall show compliance with the specification and is to be attached to or made a part of the scale ticket, weigh bill, or other shipping document accompanying the shipment.

9.1.1.2. Terminals are described as storage facilities established by cement companies in urban or large market areas some distance from a cement plant. The terminal is considered approved to supply cement to the Department of Transportation projects if the cement plant which produced it is prequalified. Cement shipped from terminals established by a prequalified cement company is to be handled the same as if shipped direct from the cement plant. A certification indicating compliance with the specifications, signed by a representative of the cement company, must accompany each shipment.

9.1.1.3. The Contractor, when purchasing cement from a prequalified cement plant advises the plant of the type of cement required and that a certification must accompany each shipment. The contractor must submit a copy of each certification to the Engineer. When purchasing concrete from a ready-mix operator, the contractor advises the operator of the need for certification of the cement by a representative of the cement company, and furnishes the ready-mix operator information relative to project number, type of cement, and class concrete.

9.1.1.4. The Ready-Mix Plant Operator, when furnishing concrete for State work requires certifications from the cement company for all cement delivered during the progress of work. In the case of cement in storage at the ready-mix plant at the beginning of a project which cannot be certified to be the producing cement company, or which has been in storage for more than three months, the Engineer must be notified so that appropriate sampling and testing may be done prior to the beginning of the work. The Ready-Mix operator certifies each week to the Engineer that all cement used to produce concrete for State work during that week was State approved, and lists certified cement received during the week.

9.1.1.5. The Engineer determines if the project is to be constructed of job mix or ready-mix concrete and reminds the Contractor that cement company certifications or State tests are required for all cement in storage at the beginning of the work and that all shipments received during the progress of the work must be accompanied by certifications. The Engineer verifies that the plant furnishing the cement is prequalified for the type being furnished. The Engineer determines during the construction of the project that certifications are available for all cement being used. The cement is acceptable for immediate use provided each shipment is accompanied by a certification showing compliance with specifications. The Engineer is to review the certifications from the contractor or ready-mix plant operator and at the completion of the project issues an acceptance report covering all cement used on each State project.

9.1.1.6. Regional and District Laboratories perform sampling, record keeping and reporting necessary for monitoring compliance with specifications at cement plants and terminals in their area. Information Samples are obtained at the frequency of one per type prequalified every other month throughout the year. Offices sampling more than one plant should stagger their plants on opposing months to level out their sampling and MRC testing workloads. Samples of cement are to be obtained from one or more of the following sources.

Production Streams (only when agreed to by the producer)
Loading streams
Loaded containers
Transfer streams (from storage silo to shipping silo)

Verification samples are taken by each District at the rate of one sample per each one-half calendar year from each producer's cement plant that is being supplied within the District during this period.

Additional verification samples and tests may be required if any of the producer submitted data, or KDOT Verification or Information Sampling indicate a problem with quality control or compliance with Kansas specification limits. The increased sample frequency will be established in writing by the Chief of Construction and Materials, and will remain in effect until the problem is resolved.

Test reports are issued to the Bureau of Construction and Materials and to the appropriate cement plants on special request.

9.1.2. Basis of Acceptance.

See Standard Specifications Manual Subsection 2001.

9.1.3. Reporting.

Acceptance reports covering shipments of cement from unqualified plants are issued by the Materials and Research Center.

An acceptance report covering cement received from each qualified plant or approved terminal storage unit is issued by the Engineer. The report is issued after all concrete work is completed and covers the quantity of each brand and type of cement used on the project.

9.1.4. Sample Forms and Reports.

The following report forms and suggested certification statements illustrate references in the preceding sections.

9.1.4.1. Certification from the Prequalified Cement Plant or Terminal.

A certification similar to this suggested statement must accompany each shipment destined for State Projects. (See **Figure 1**)

9.1.4.2. DOT Form 697 (697A) - Certification of Cement used by Ready-Mix Company.

9.1.4.2.1. One copy of this form is sent to the Engineer by the Ready-Mix producer for the cement received and/or used during each week. If cement is neither received nor used during a weekly period, this form need not be submitted. (See **Figure 2**)

9.1.4.2.2. A certification is supplied to the Engineer covering cement in storage at the beginning of a project. (See **Figure 3**)

9.1.4.3. DOT Form 623 - Miscellaneous Report Form for projects. It is used by the Engineer to report cement produced by prequalified companies and used on State Projects. (See **Figure 4)**

SUGGESTED CERTIFICATION FROM A PREQUALIFIED
CEMENT PLANT OR TERMINAL

Date:_____

Truck or Car No._____

Shipped to:_____

_____

_____

This certifies that the Type _____ Portland Cement in this shipment was loaded from silo Number _____ , and that it complies with Kansas Department of Transportation specifications.

CEMENT COMPANY:_____

PLANT LOCATION:_____

TERMINAL (IF DIFFERENT):_____

SIGNED:_____

Figure 1

KANSAS DEPARTMENT OF TRANSPORTATION

CERTIFICATION OF MATERIALS USED BY READY MIX COMPANY

Project No.:_____

Date: _____

MEMORANDUM TO:_____,CONSTRUCTION ENGINEER

Re: Certification of Cement

This is to certify that all of the cement used in the production of concrete for the above project during the week of

_____to_____was Type_____ cement and
(Sunday) (Sat., Include.)

that the company from which this cement was received has certified that the cement meets the specifications of the Kansas Department of Transportation. Certifications covering this cement are on file in this office.

The following shipments of certified cement have been received by this company during the weekly period listed above:

BRAND	QUANTITY	DATE OF CERTIFICATION

Re: Certification of Aggregates

Type of Aggregate	Location of Deposit				Total Approx. Tons/Yds. This Week	
	Sec.	Twp.	Range	County	Received	Incorporated in Mix

This is to certify (Check applicable box or boxes)

1. All of the aggregates described above were:
   - ☐ (A) Produced at the deposit location described.
   - ☐ (B) Loaded from State tested and approved stockpile at the production site or from the plant while it was producing aggregate meeting applicable specifications.
2. ☐ Only State tested and approved aggregates were used to produce ready-mixed concrete delivered to State work.

_____
Name of Ready Mix Co

_____
(Signature) (Title)

Figure 2

KANSAS DEPARTMENT OF TRANSPORTATION

CERTIFICATION OF MATERIALS USED BY READY MIX COMPANY

Project No.:_____

Date: _____

MEMORANDUM TO:_____,CONSTRUCTION ENGINEER

Re: Certification of Cement

This is to certify that all of the cement used in the production of concrete for the above project during the week of

_____to_____was Type_____ cement and
(Sunday) (Sat., Include.)

that the company from which this cement was received has certified that the cement meets the specifications of the Kansas Department of Transportation. Certifications covering this cement are on file in this office.

Re: Certification of Aggregates

Type of Aggregate	Location of Deposit				Total Approx. Tons/Yds. This Week	
	Sec.	Twp.	Range	County	Received	Incorporated in Mix

This is to certify (Check applicable box or boxes)

1. All of the aggregates described above were:
   - ☐ (A) Produced at the deposit location described.
   - ☐ (B) Loaded from State tested and approved stockpile at the production site or from the plant while it was producing aggregate meeting applicable specifications.
2. ☐ Only State tested and approved aggregates were used to produce ready-mixed concrete delivered to State work.

_____
Name of Ready Mix Co

_____
(Signature) (Title)

Figure 3

KANSAS DEPARTMENT OF TRANSPORTATION

REPORT OF SAMPLE OF _____

Laboratory No. _____

_____20_____

Received _____20_____

Specification No. _____ Quantity Represented _____

Source of Material _____

Sample From _____

Submitted By _____

Identification Marks _____

Project or POV _____

Type of Construction _____

Contractor _____

TEST RESULTS

Reported By _____

Title _____

D.O.T. Form No. 623

Figure 4

9.2. HYDRATED LIME AND QUICKLIME

9.2.1. Inspection and Sampling

Lime shipped from plants having a satisfactory record of quality control is not inspected by the Engineer prior to its arrival at destination. Therefore, the Engineer is responsible for the identification of the shipment with the accompanying certifications and the taking of verification samples from shipments selected at random. Samples are to be taken in accordance with the requirements of **KT-29.**

The Engineer obtains samples from shipping containers selected at random to verify the certifications issued by the producer. Should these samples indicate inadequate internal quality control by the producer, acceptance on certification is halted and each shipment is sampled and tested prior to use.

9.2.2. Reporting

The Engineer issues reports for lime covered by producer's certifications.

9.3. FLY ASH, SLAG, SILICA FUME

Fly ash is finely divided residue that results from the combination of ground or powdered coal. Slag is a glass-like by-product left over after a desired metal has been separated from its raw ore. Silica fume, also known as microsilica, is an ultrafine powder collected as a by-product of the silicon and ferrosilicon alloy production. See **KDOT Standard Specification section 2004, 2005, 2006, and 2007.** Samples are to be taken in accordance with the requirements of **KT-29.**

10. MATERIALS FOR ROADSIDE IMPROVEMENTS

10.1. This section covers the inspection, sampling and testing of materials used for roadside improvements, including safety rest areas.

Where reference is made to regular sampling and testing procedures or regular inspection procedures, the intent is that the material receives such testing or inspection as is prescribed in the Standard Specifications or in this manual. Reports should be issued for these materials.

Individual material items that do not require regular testing should be judged on the basis of visual inspection and, where indicated, approved catalog cuts. Reports of these inspections are not generally required.

Visual inspection reports of completed bid items should be based on the use of accepted materials in the construction of such items as indicated by tests, approved catalog cuts or visual inspection of the materials as indicated above. Specific reference to the individual tests or inspections need not be made. On visual inspection reports of completed bid items, only a general statement need be made to the effect that all materials used were acceptable.

10.2. PLANTS

Plants used in roadside improvements are either nursery grown or collected from their natural growing site. For acceptance criteria see **Standard Specifications Manual Subsection 2102**. Preliminary inspection may be made at the nursery or collecting field when deemed desirable by the Engineer. Final inspection and acceptance or rejection is made at the planting site in accordance with the Standard Specifications.

10.3. SEEDS

Seed used for highway projects is field grown, usually in Kansas or neighboring states. Contractors may procure seed from the grower or from individuals or companies engaged in buying and selling seed. Seed intended or offered for sale for planting must be processed and handled in accordance with the Kansas Seed Law and applicable rules and regulations of the Kansas State Board of Agriculture. For acceptance criteria see **Standard Specifications Manual Subsection 2103**. The appearance of the seed must not indicate improper storage or handling resulting in damage by rodents, excess humidity, free moisture, overheating or other cause.

10.3.1. Labels - Untreated Seed: The labels must be in the English language and must contain the following information:

10.3.1.1. The commonly accepted name of the kind and the variety, of each agricultural seed component in excess of five percent (5%) of the whole, and the percentage by weight of each in the order of its predominance. Where more than one component is required to be named, the word "mixture" or the word "mixed" shall be shown conspicuously on the label.

10.3.1.2. The percentage by weight of pure seed.

10.3.1.3. The percentage by weight of all weed seeds.

10.3.1.4. The percentage by weight of inert matter.

10.3.1.5. For each named agricultural seed:

10.3.1.5.1. The percentage of germination, exclusive of hard seed.

10.3.1.5.2. The percentage of hard seeds, if present.

10.3.1.5.3. Total germination percentage including hard seed may be shown.

10.3.1.5.4. The calendar month and year the test was completed to determine such percentages. (Seeds shipped within Kansas which have not been planted within 9 months after testing shall be resampled and retested. Seeds shipped across state lines which have not been planted within 5 months after testing shall be resampled and retested.)

10.3.1.6. The percentage by weight of agricultural seeds (which may be designated as "crop seeds") other than those required to be named on the label.

10.3.1.7. The lot number or other lot identification.

10.3.1.8. The origin: i.e., the state where grown, except for lawn grass seeds in quantities of less than 10 pounds.

10.3.1.9. The name and rate of occurrence per unit weight of each kind of "restricted noxious weed seeds" present, which shall not exceed the limit stated in the Kansas Seed Law.

10.3.1.10. The name and address of the person responsible for such statement.

10.3.2. Labels - Treated Seed: Agricultural seed which has been treated with chemicals for insect or disease control, shall be labeled to show the following:

10.3.2.1. A word or statement indicating that the seed has been treated.

10.3.2.2. The commonly accepted, coined, chemical or abbreviated chemical (generic) name of the applied substance.

10.3.2.3. If the substance in the amount applied is harmful to human or other vertebrate animals, a caution statement, such as: "Do not use for food, feed or oil purposes." The caution for mercurials and similarly toxic substances must include in a contrasting color the word "poison" along with a skull and crossbones.

10.3.2.4. A separate label may be used to show this information, or it may be a component part of the main label.

10.3.3. Sampling.

Sampling of seed by Department personnel will seldom be required; however, should such sampling become necessary, it should be accomplished in a manner which will produce a representative sample in accordance with the Rules and Regulations of the Kansas State Board of Agriculture.

10.4. NITROGEN FIXING BACTERIA

Media for the inoculation of legume (bean) seed with nitrogen fixing bacteria are produced by only a few specialists in this field. Legume (bean) plants, when properly inoculated, form nodules on the root systems which contain millions of bacteria, called Rhizobia, that are fed by the host plant and in turn produce nitrogen. This nitrogen is then available to the legume plant to aid growth and making it independent of the supply of nitrogen in the soil. These bacteria are very sensitive to high temperatures and to drying. For acceptance criteria see **Standard Specifications Manual Subsection 2106**.

Observe the contractor's handling and storage of the inoculating material. Heat and drying must be avoided as either will cause extremely rapid death of the nitrogen fixing bacteria. The treating of the seed must be done in strict accordance with the supplier's directions and must result in heavy coating of the seed. Leguminous seed must be planted as soon as possible after inoculation. The maximum number of live bacteria will be on the seed at the time of inoculation after which the live bacteria decrease at a rate dependent on storage conditions. Exposure of the inoculated seeds to sunlight, high temperatures or drying conditions will increase the death rate of the bacteria.

No sampling of Nitrogen Fixing Bacteria is required, but perform a visual inspection of the container label to verify that the bacteria is of the proper culture, supplied in the proper quantity and properly dated.

10.5. AGRICULTURAL LIMESTONE

Ground limestone for agricultural purposes is almost always produced as a by-product of commercial quarrying and crushing limestone for other purposes such as highway and building construction. For acceptance criteria see **Standard Specifications Manual Subsection 2107.**

Sources supplying this material shall have been qualified by the State Board of Agriculture.

10.6. FERTILIZERS

Commercial mixed fertilizers are blended or formulated of ingredients which will furnish the desired amounts of nitrogen (N), phosphorus (P) and potassium (K) together with an inert material.

Usually this item will be listed in the contract proposal as "Fertilizer (xx-xx-xx)." The first number in parenthesis denotes the minimum percentage of nitrogen (N) required, the second number indicates the minimum percentage of available phosphorus (P) required and the third number indicates the minimum percentage of water soluble potassium (K) required. The particular fertilizer required for a contract is chosen by the Landscape Architect to best supply the needs of the crop being planted and the soil conditions on the project. For acceptance criteria see **Standard Specifications Manual Subsection 2108.**

10.7. SUMMARY OF INSPECTION, TESTING AND REPORTING REQUIREMENTS

Many roadside improvement projects contain a number of items not directly related to seeds or plants. These occur in rather variable quantities or numbers and often the Inspector is uncertain of the required inspection. The following gives the requirements for a number of such items.

10.7.1. AGRICULTURAL LIMESTONE - By receipt of proper certification.

10.7.2. AUTOMATIC WATERING SYSTEM - Use regular sampling and testing or inspection procedures on concrete, concrete reinforcing bars, cast iron pipe, steel pipe and corrugated metal pipe used for casing under roadways. Use regular procedure for plastic pipe if plans or specifications require conformance with an ASTM or other specifications. Other items are to be visually inspected. Issue a visual inspection report on the entire completed system.

10.7.3. BERMUDA GRASS SOD RETARDS - Issue visual inspection report.

10.7.4. BURLAP BAG SOD RETARDS - Issue visual inspection report.

10.7.5. CHARCOAL GRILL - Issue visual inspection report.

10.7.6. CHARCOAL GRILL BASE - Use regular sampling and testing or inspection procedures for concrete and reinforcing steel. Issue a visual inspection report for completed base.

10.7.7. COMBINATION TOOL SHED AND COMFORT STATION - Use regular sampling and testing or inspection procedures for concrete, concrete masonry units and reinforcing steel. Issue a visual inspection report for completed shelter.

10.7.8. CONCRETE SHELTER WITH WINDBREAK - Use regular sampling and testing or inspection procedures for concrete, curing material and concrete reinforcing steel. Issue a visual inspection report for completed shelter and windbreak.

10.7.9. ELECTRIC LIGHTING SYSTEM - Use regular sampling and testing or inspection procedures for anchor bolts, concrete, conduit and conduit fittings. Issue a visual inspection report on completed system.

10.7.10. FERTILIZER - Use regular inspection system.

10.7.11. FIREPLACE - Use regular sampling and testing or inspection procedures for concrete and reinforcing steel. Issue a visual inspection report for completed fireplace.

10.7.12. GLASS FIBER MAT (DITCH LINING, RIPRAP, WEED CONTROL) - Use regular procedures for glass fiber mat and subsidiary items such as seed, fertilizer, cover material, etc. Issue a visual inspection report for completed work.

10.7.13. GRILL - Use regular sampling and testing or inspection procedures for concrete and reinforcing steel. Issue a visual inspection report for completed grill.

10.7.14. JUTE MESH EROSION CONTROL MATERIALS - Use regular sampling and testing procedure. Issue a visual inspection report for completed erosion control.

10.7.15. MANURE - Issue visual inspection report.

10.7.16. MULCHING - Issue visual inspection report.

10.7.17. PEAT MOSS - Use regular sampling and testing procedure.

10.7.18. PIPE UNDERDRAIN - Use regular sampling and testing procedures for clay tile and underdrain aggregate.

10.7.19. SANITARY SEWER - Use regular sampling and testing or inspection procedures for pipe and materials for sealing and filing pipe joints.

10.7.20. SEEDS AND REQUIRED NITROGEN FIXING BACTERIA - Use regular inspection procedures.

10.7.21. SOD – Issue a visual inspection report for completed item.

10.7.22. TABLE (WOOD WITH OR WITHOUT BASE: CONCRETE WITH BASE) - Use regular sampling and testing or inspection procedures for concrete and reinforcing steel. Issue a visual inspection report for completed table.

10.7.23. TABLE SHADE - Issue a visual inspection report for completed shade.

10.7.24. TOPSOIL - Issue a visual inspection report.

10.7.25. TREES, SHRUBS, ETC. - Issue a visual inspection report.

10.7.26. WATERING SYSTEM - Use regular sampling and testing or inspection procedures for concrete, reinforcing steel and pipe. Issue a visual inspection report for completed system.

10.7.27. WATER WELL PUMP - Use regular sampling and testing or inspection procedures for concrete and reinforcing steel. Issue a visual inspection report for complete pump.

11. STEEL AND IRON

11.1. STRUCTURAL STEEL

11.1.1. Shapes and Plates.

For acceptance criteria see **Standard Specifications Manual Subsection 1605**. Acceptance reports issued by engineers who inspect items fabricated from structural steel also include the acceptance of the steel used in the fabrication of such units.

11.1.2. Structural Steel Fasteners.

Acceptance reports covering fasteners for bridge connections, splices and sign supports are issued by the Materials and Research Center. Acceptance reports for uncoated fasteners for other uses will be issued by the Field Engineer.

11.2. DEEP BEAM GUARDRAIL AND FITTINGS

Guardrail terminal sections, rail elements and hardware including bolts, nuts and washers must be visually inspected by the Field Engineer for conformance with dimensional requirements, including gage of metal, width, configuration of corrugations, condition of galvanized coating and identification of the shipment with the manufacturer's certification.

12. TIMBER, LUMBER, PILING AND POSTS

12.1. These instructions cover the inspection of timber products used for construction and maintenance purposes. The majority of timber products are produced in the southern states or the west coast region. The treating of most timber products is performed in the general region where the products are produced.

12.2. Basis of Acceptance.

For acceptance criteria see **Standard Specifications Manual Subsections 2303, and 2304**.

12.2.1. Pre-qualification required for wood posts and blocks

12.2.2. Appropriate certification packets required for all wood products

12.3. Methods of Inspection, Sampling and Testing.

12.3.1. Inspection.

Timber products from treatment plants will be pre-qualified and monitored by Department employees working out of the Wichita Regional Laboratory.

12.3.2. Inspection Methods.

12.3.2.1. All wood products will meet the requirements as specified in the Standard Specification Manual subsections, as listed above.

12.3.2.2. Identification: Each piece of inspected timber product is identified by supplier, or their representative, for the required material grade. Following treatment, a lot number is stamped on each piece,

or it may be stamped on a small piece of thin metal which is tacked to one end of the piece. As a minimum, the supplier identification, the treatment lot number, and minimum treatment requirement will be identifiable.

12.3.2.3. Inspection at Destination: Timber products should be inspected by the Field Engineer for identification marks, possible damage during handling and shipment, and serious defects that will impair the utility or durability of the piece. Defects that may have escaped the notice of the inspector include oversize knots, shakes, splits, checks, rot or decay, and straightness. Damage incurred during handling and shipment includes damaged ends and broken surfaces which expose untreated wood.

12.3.2.4. Notify the District Materials Engineer of any timber products that arrive on the project without proper documentation.

12.4. Reporting.

Acceptance reports will be written by field personnel, based on correct and complete documentation, covering all wood products received for use on Kansas Department of Transportation projects.

13. WATER FOR USE WITH PORTLAND CEMENT

13.1. Water from Domestic or City Supplies.

Water from domestic or city supplies and from other sources approved by health authorities for domestic use may be accepted without testing for all concrete except that to be used in the production of prestressed concrete units. All water must be tested before it is used in concrete for the production of prestressed units.

13.2. Untreated Water from Lakes, Ponds, Wells and Streams.

Water from these sources must be sampled and tested in the Materials and Research Center and accepted before it is used in the production of all classes of concrete.

13.3. Sampling.

Care should be exercised to ensure that the sample of water is representative of the source of supply. Equipment used to take the sample and containers for shipping it to the laboratory should be clean. Samples are to be shipped in plastic or glass containers. If glass containers are used they must be carefully packed for shipment. Metal containers are not acceptable for shipping samples of water.

13.4. Reporting.

13.4.1. Water from Domestic or City Supplies. A visual inspection report is issued by the Engineer to cover the water used for regular concrete work. AWP projects do not require this report, because it is handled within the mix design.

13.4.2. Untreated Water and Water for Prestressed Concrete. The Materials and Research Center will issue a report showing the results of tests conducted on samples submitted by the Engineer.

KANSAS DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION TO THE
STANDARD SPECIFICATIONS, 2015 EDITION

Delete SECTION 1807 and replace with the following:

SECTION 1807

MOISTURE-CURE URETHANE SYSTEM

1807.1 DESCRIPTION

This specification covers a moisture-cure urethane micaceous iron oxide paint system for use on structural steel. The system may also be used for overcoating applications.

1807.2 REQUIREMENTS

a. General.

(1) Each coating must be supplied as a single component material. All coatings must be well ground, free of caking, skins, gelation, and excessive settling with a shelf life of not less than 12 months. Pigmentation must contain no toxic heavy metals. The VOC content of the coatings must comply with the EPA Federal Register 40 CFR, Part 59, Subpart D, Table 1 for industrial maintenance coatings.

(2) All coatings must be able to be applied at relative humidity as high as 98% and temperatures as low as 20ºF. There is no restriction on dewpoint temperature differential if the surface is visibly dry and free from condensate. Verify the surface to be free of any frozen water products when the application temperature is below 32ºF.

(3) The manufacturer is responsible for the formulation. Once established, do not change the formulation without prior notification to and approval of the KDOT.

b. Coating system for use on full removal and repaint projects or new construction projects. This system consists of a zinc-rich, moisture-cure polyurethane primer stripe coat applied to all edges, corners, bolts, rivets, and weld seams; a zinc-rich, moisture-cure polyurethane full primer coat; and a micaceous iron oxide-filled, moisture-cure aliphatic polyurethane topcoat. The topcoat color will be specified on the Contract Documents.

(1) Stripe Primer and Full Primer:

- Total solids, % by weight ..... 87 minimum
- Zinc in the dried film, % by weight ..... 83 minimum

(2) Topcoat:

- Total solids, % by weight ..... 77 minimum
- Pigment, Micaceous Iron Oxide ..... 3 lb/gal minimum

(3) Paint System, Cyclic Corrosion/UV Exposure Test, 15 cycles (one cycle = 2 weeks; one week of UV exposure and one week in the Cyclic Corrosion Tester.):

- Scribe Corrosion ..... 7 minimum
- Unscribed Area ..... 9 minimum

c. Coating system for use on overcoating projects. This system consists of a zinc-rich/micaceous iron oxide-filled, moisture-cure polyurethane spot primer; a micaceous iron oxide-filled, moisture-cure polyurethane intermediate coat; and a micaceous iron oxide-filled, moisture-cure aliphatic polyurethane topcoat. The topcoat color will be specified in the Contract Documents.

(1) Spot Primer:

- Total solids, % by weight ..... 86 minimum
- Pigment, Zinc dust & Micaceous Iron Oxide ..... 3.5 lb/gal minimum

(2) Intermediate Coat:

- Total solids, % by weight ..... 82 minimum
- Pigment, Micaceous Iron Oxide ..... 6 lb/gal minimum
- Color ..... Tint to distinguish from primer and topcoat

(3) Topcoat:

- Total solids, % by weight ..... 77 minimum
- Pigment, Micaceous Iron Oxide ..... 3 lb/gal minimum

(4) Paint System, Cyclic Corrosion/UV Exposure Test, 15 cycles (one cycle = 2 weeks; one week of UV exposure and one week in the Cyclic Corrosion Tester.):

- Scribe Corrosion ..... 7 minimum
- Unscribed Area ..... 9 minimum

1807.3 TEST METHODS

a. Total Solids ..... ASTM D 1644, except heat the sample for 72 hours at 100ºF.

b. Cyclic Corrosion/UV Exposure ..... ASTM D 5894

- Scribe Corrosion ..... ASTM D 1654
- Unscribed Area ..... ASTM D 1654

c. Zinc in the Dried Film.

- Pigment ..... ASTM D 2371
- Total Solids of the Whole Paint, Non-Volatile ..... ASTM D 2369
- Zinc Oxide ..... ASTM D 3280

Calculations:
ZnO x 0.8034 = Total Zinc
(% Pigment x Total Zinc)/Total Solids = Zinc in Dried Film

1807.4 PREQUALIFICATION

a. Prequalification of the moisture-cure urethane system is required. Manufacturers desiring prequalification should submit a 1 pint sample of each component to the Engineer of Tests. Manufacturers will be notified of results when testing is complete. The Bureau of Construction and Materials will maintain a list of prequalified materials.

b. All applicable liquid components will be fingerprinted using infrared spectroscopy for use in screening future verification samples to verify that materials submitted for use are of an identical formulation as originally approved.

1807.5 BASIS OF ACCEPTANCE

Prequalification as required by **subsection1807.4**.
Receipt and approval of a Type C certification as specified in **DIVISION 2600**.
Visual observation of performance on the project.

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Oct-17 Letting

KANSAS DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION TO THE
STANDARD SPECIFICATIONS, 2015 EDITION

Delete SECTION 1808 and replace with the following:

SECTION 1808

CALCIUM SULFONATE ALKYD SYSTEM

1808.1 DESCRIPTION

This specification covers a calcium sulfonate alkyd paint system for use on structural steel including weathering steel. The system may also be used for encapsulation or overcoating.

1808.2 REQUIREMENTS

a. General.

(1) The coating system consists of 3 materials: rust penetrating sealer, spot primer, and topcoat. The sealer is for use on pack rusted steel associated with and around rockers, riveted flanges and joints. The spot primer is for use where the existing coating has been removed. The topcoat is for use over existing paint, penetrating sealer, and spot primer. The coating can be used over a variety of existing paints including but not limited to lead based paint, inorganic/organic zinc, epoxy, vinyl, and alkyd. Supply each coating as a single component material. All coatings must be well ground, free of caking, skins, gelation, and excessive settling with a shelf life of not less than 12 months. Provide pigmentation that contains no toxic heavy metals. Comply with the EPA Federal Register 40 CFR, Part 59, Subpart D, Table 1 for industrial maintenance coatings concerning VOC content.

(2) The manufacturer is responsible for the formulation. Once established, no change in the formulation is permitted without prior notification to and approval of the KDOT.

b. Vehicle: Use a modified overbased calcium sulfonate alkyd resin.

c. Rust Penetrating Sealer:

- Total solids, % by weight ..... 40 minimum

d. Spot Primer:

- Total solids, % by weight ..... 70 minimum

e. Topcoat:

- Total solids, % by weight ..... 70 minimum

f. Paint System,

- Cyclic Corrosion/UV Exposure Test, 15 cycles (one cycle = 2 weeks; one week of UV exposure and one week in the Cyclic Corrosion Tester.):
  - Scribe Corrosion ..... 7 minimum
  - Unscribed Area ..... 9 minimum

1808.3 TEST METHODS

a. Total Solids ..... ASTM D 1644, except heat the sample for 72 hours at 100°F.

b. Cyclic Corrosion/UV Exposure ..... ASTM D 5894

- Scribe Corrosion ..... ASTM D 1654
- Unscribed Area ..... ASTM D 1654

1808.4 PREQUALIFICATION

a. Prequalification of the calcium sulfonate paint system is required. Manufacturers desiring prequalification should submit a 1-pint sample of each component to the Engineer of Tests. Manufacturers will be notified of results when testing is complete. The Bureau of Construction and Materials will maintain a list of prequalified materials.

b. Testing by KDOT may be waived if testing has been performed on the identical product by another state within the past 12 months. Results must satisfy the requirements contained within this specification. Forward a copy of the test report to the Engineer of Tests for evaluation, along with evidence that the product referenced in the test report is identical to that submitted for prequalification.

c. All applicable liquid components will be fingerprinted using infrared spectroscopy for use in screening future verification samples to verify that materials submitted for use are of an identical formulation as originally approved.

1808.5 BASIS OF ACCEPTANCE

Prequalification as required by **subsection 1808.4**.
Receipt and approval of a Type C certification as specified in **DIVISION 2600.**
Visual observation of performance on the project.

06-28-17 C&M (CFN)
Oct-17 Letting

KANSAS DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION TO THE
STANDARD SPECIFICATIONS, 2015 EDITION

Delete SECTION 2214 and replace with the following:

SECTION 2214

EPOXY PAVEMENT MARKING MATERIAL

2214.1 DESCRIPTION

This specification covers epoxy resin and glass beads suitable for use as reflective pavement markings on portland cement concrete or asphalt pavement.

2214.2 REQUIREMENTS

a. Epoxy Pavement Marking Material.

(1) General. Provide white, yellow and black epoxy resin material that is toxic heavy metal free, 2-component, 100% solids, and is formulated and tested to perform as a pavement marking material with glass beads applied to the surface. The 2 components are an epoxy resin and an amine curing agent. Provide complete manufacturer's specifications and material safety data sheets to the Engineer for all material provided.

Provide a material that does not exude toxic fumes when heated to application temperature.

Provide a material that, when mixed in the proper ratio and applied at 0.02 inch film thickness at 75ºF with the proper saturation of glass beads, has a no tracking time of less than 40 minutes for slow curing material and less than 10 minutes for rapid curing material. Provide a material that is capable of fully curing under a constant surface temperature of 32ºF or above.

(2) Properties of Cured Material.

(a) Color. Provide white and yellow material that complies with the requirements of ASTM D 6628 and the following Daylight Reflectance values:

TABLE 2214-1 DAYLIGHT REFLECTANCE	
Color	**45 Degrees-0 Degrees, % Min.**
White	75
Yellow	45

(b) Retroreflectivity. Provide white and yellow epoxy pavement marking material that meets the following minimum retroreflectivity requirements using an acceptable 30-meter retroreflectometer:

TABLE 2214-2: EPOXY RETROREFLECTIVITY REQUIREMENTS	
Color	**millicandelas/sq m/lux (min.)**
White	400
Yellow	300

(c) Hardness. Provide material with Shore D hardness of 75 minimum.

(d) Bond Strength to Concrete. Provide material that when catalyzed, has such a high degree of adhesion to the specified concrete surface that there is a 100% concrete failure. Apply the material at a film thickness of 0.01 ± 0.001 inch to concrete with a minimum compressive strength of 4000 psi. Allow the material to cure for 72 hours at 77ºF before the test is performed.

(e) Yellowness Index. White only. Value after 72 hours in QUV – 30 maximum when tested at 0.01 ± 0.001 inch and a 72-hour cure.

b. Glass Beads For Drop-On Application. Provide glass beads according to the epoxy pavement marking manufacturer's recommendations that comply with AASHTO M 247 or specification provided by the manufacturer. Beads will be submitted by the manufacturer and tested at the MRC lab according to type before use on KDOT projects.

c. Verification testing. The Engineer will take verification samples. Take a ½ pint sample of each color and a ½ pint sample of the hardener used on the project. Send the samples to MRC for testing and evaluation. Lots previously tested by MRC will be exempt from testing, and may be exempt from sampling if coordinated with MRC.

Testing will include infrared spectroscopy. Deviations as determined by comparison with the prequalification sample will be cause for removal from the prequalified list.

2214.3 TEST METHODS

a. Epoxy Material.

(1) Bond Strength to Concrete. AASHTO T 237
(2) Hardness. ASTM D 2240
(3) Yellowness Index. ASTM E 313

b. Glass Beads.

(1) AASHTO T 346

2214.4 PREQUALIFICATION

a. Manufacturers interested in prequalifying material under this specification must provide a 1-quart sample of each color plus 1 quart of hardener to the Engineer of Tests. Also include a copy of the quality control test report for each lot of material, an infrared spectroscopy analysis for each component, material safety data sheets and a complete set of installation recommendations and instructions.

b. The material will be evaluated for compliance with all requirements of this specification, and the manufacturer will be notified of the results. Each color and the hardener will be analyzed and "fingerprinted" using infrared spectroscopy for use in screening future verification samples to verify that materials submitted for use are of an identical formulation as originally approved.

c. If the material complies with all laboratory requirements, the manufacturer will be contacted to arrange for the field evaluation. The field evaluation will consist of 2 or 3 test projects at times and locations as determined by the Bureau of Transportation Safety and Technology. Manufacturers must specify if the material may be used on both asphalt and concrete surfaces or only on asphalt or concrete surfaces.

Duration of the test project will be dependent on the submittal of test data from the AASHTO National Transportation Product Evaluation Program (NTPEP). Forward an official copy of the test data along with evidence that the material referenced is identical to that submitted for prequalification to the Engineer of Tests for evaluation. Materials with no test data will have a test project duration of 18 months; materials with test data will have a test project duration of 12 months. Materials will be evaluated initially and every 3 to 6 months throughout the duration of the test project for retroreflectivity, color and durability.

d. The Bureau of Construction and Materials will maintain a list of qualified materials and installation instructions.

e. Products will remain on the prequalified list as long as the results of verification testing and field performance are satisfactory. Any changes in formulation should be reported to the Engineer of Tests for review and evaluation to determine if requalification is necessary.

2214.5 BASIS OF ACCEPTANCE

a. Epoxy Material.

(1) Prequalification as required by **subsection 2214.4**.
(2) Receipt and approval of a Type C certification as specified in **DIVISION 2600**.

b. Glass Beads for Drop-on Application.

(1) Receipt and approval of a Type D certification as specified in **DIVISION 2600**.

(2) Copy of the MRC test report for each lot of beads used on the project that shows compliance with the specification.

03-20-19 TST (JM)/C&M (KJS))
Jun-19 Letting

KANSAS DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION TO THE
STANDARD SPECIFICATIONS, 2015 EDITION

Delete SECTION 2216 and replace with the following:

SECTION 2216

MULTI-COMPONENT LIQUID PAVEMENT MARKING MATERIAL

2216.1 DESCRIPTION

This specification covers multi-component, liquid materials* suitable for use as retroreflecting pavement markings on portland cement concrete or asphalt pavements. Glass beads or other reflective elements are dropped at a specified rate on the surface of the liquid material immediately after it is applied to the pavement surface. Upon curing, it produces an adherent retroreflective marking of specified thickness and width, capable of resisting deformation by traffic.

*These can be modified urethanes, polyureas, methylmethacrylates, special epoxies or other applicable materials.

2216.2 REQUIREMENTS

a. Color. Provide material that complies with the requirements of ASTM D 6628. Provide white and yellow material that complies with the following Daylight Reflectance values:

TABLE 2216-1: DAYLIGHT REFLECTANCE	
Color	**45 Degrees-0 Degrees, % Min.**
White	75
Yellow	45

b. Provide material that is a homogeneous blend of liquid resins, pigments, and fillers and is also free of lead and other toxic heavy metals.

c. Provide one of the above-mentioned liquid marking materials or a material as approved by KDOT. The burden of proof of a product rests with the producer. Provide all supporting technical data, including test reports, field test data, etc. for consideration of the product.

d. Retroreflectivity. Provide multi-component pavement marking material that meets the following minimum retroreflectivity requirements using an acceptable 30-meter retroreflectometer:

TABLE 2216-2: MULTI-COMPONENT RETROREFLECTIVITY REQUIREMENTS	
Color	**millicandelas/sq m/lux (min.)**
White	400
Yellow	300

e. Hardness. Provide material with Shore D hardness of 75 minimum.

f. Bond Strength to Concrete. Provide material that when catalyzed, has such a high degree of adhesion to the specified concrete surface that there is a 100% concrete failure. Apply the material at a film thickness of 0.01 ± 0.001 inch to concrete with a minimum compressive strength of 4000 psi. Allow the material to cure for 72 hours at 77ºF before the test is performed.

g. Yellowness Index. White only. Value after 72 hours in QUV – 30 maximum when tested at 0.01 ± 0.001 inch and a 72-hour cure.

h. Glass Beads For Drop-On Application. Provide glass beads according to the multi-component manufacturer's recommendations that comply with AASHTO M 247 or specification provided by the manufacturer. Beads will be submitted by the manufacturer and tested at the MRC lab according to type before use on KDOT projects.

i. Verification testing. The Engineer will take verifcation samples. Take a ½ pint sample of each color and a ½ pint sample of the hardener used on the project. Send the samples to MRC for testing and evaluation. Lots previously tested by MRC will be exempt from testing, and may be exempt from sampling if coordinated with MRC.

2216.3 TEST METHODS

a. Multi-component material.

(1)Bond Strength to Concrete. AASHTO T 237
(2)Hardness. ASTM D 2240
(3)Yellowness Index. ASTM E 313

b. Glass Beads.

(1) AASHTO T 346

2216.4 PREQUALIFICATION

a. Manufacturers interested in prequalifying material under this specification must provide a 1-quart sample of each color plus 1 quart of hardener to the Engineer of Tests. Also include a copy of the quality control test report for each lot of material, an infrared spectroscopy analysis for each component, material safety data sheets and a complete set of installation recommendations and instructions.

b. The material will be evaluated for compliance with all requirements of this specification, and the manufacturer will be notified of the results. Each color and the hardener will be analyzed and "fingerprinted" using infrared spectroscopy for use in screening future verification samples to verify that materials submitted for use are of an identical formulation as originally approved.

c. If the material complies with all laboratory requirements, the manufacturer will be contacted to arrange for the field evaluation. The field evaluation will consist of 2 or 3 test projects at times and locations as determined by the Bureau of Transportation Safety and Technology. Manufacturers must specify if the material may be used on both asphalt and concrete surfaces or only on asphalt or concrete surfaces.

Duration of the test project will be dependent on the submittal of test data from the AASHTO National Transportation Product Evaluation Program (NTPEP). Forward an official copy of the test data along with evidence that the material referenced is identical to that submitted for prequalification to the Engineer of Tests for evaluation. Materials with no test data will have a test project duration of 18 months; materials with test data will have a test project duration of 12 months. Materials will be evaluated initially and every 3 to 6 months throughout the duration of the test project for retroreflectivity, color and durability.

d. The Bureau of Construction and Materials will maintain a list of qualified materials and installation instructions.

e. Products will remain on the prequalified list as long as the results of verification testing and field performance are satisfactory. Any changes in formulation should be reported to the Engineer of Tests for review and evaluation to determine if requalification is necessary.

2216.5 BASIS OF ACCEPTANCE

a. Multi-Component Liquid Material

(1) Prequalification as required by **subsection 2216.4**.

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

b. Glass Beads/Reflective Elements for Drop-on Application.

(1) Receipt and approval of a Type D certification as specified in **DIVISION 2600**.

(2) Copy of the MRC test report for each lot of beads used on the project that shows compliance with the specification.

03-20-19 TST (JM)/C&M (KJS)
Jun-19 Letting

KANSAS DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION TO THE
STANDARD SPECIFICATIONS, 2015 EDITION

Delete SECTION 2215 and replace with the following:

SECTION 2215

PAVEMENT MARKING PAINT

2215.1 DESCRIPTION

This specification covers water-borne pavement marking paint and glass beads suitable for use as retroreflective pavement markings on portland cement concrete or asphalt pavement.

2215.2 REQUIREMENTS

a. Paint. Use white or yellow paint that is specifically manufactured for use as pavement markings. Formulate the paint to consist of acrylic resin, lead free pigments and water as the solvent. The paint must comply with volatile organic compound (VOC) requirements, be lead and other toxic heavy metal free, and exhibit the following qualities:

(1) Formulation:

Yellow paint- The pigment of the Yellow paint shall consist of the following for each 100 gallons of paint:

A. 30 lbs. of approved Hansa Yellow
B. 17 lbs. of Rutile Titanium Dioxide
C. Other such extender pigments as necessary to produce a close match to the yellow color requirement.

White and yellow paint shall be composed of 100% acrylic polymer, which shall be Rohm and Haas HD-21 acrylic resin or Dow Chemical's DT400.

(2) Hiding Power: A contrast ratio of not less than 0.96 when the paint is applied with a 0.020 inch film applicator.

(3) Daylight Reflectance: Daylight Reflectance of the white and yellow paints shall not be less than 80% and 45%, respectively.

(4) Color: Provide paint that meets the requirements of ASTM D 6628.

(5) Bead Embedment: At least 90% of the glass beads must be embedded between 50 and 70%.

(6) No Pick-up Time: Maximum 5 minutes.

b. Glass Beads for Pavement Marking Paint (Double Drop System).
Provide glass beads according to the pavement marking paint manufacturer's recommendations that comply with AASHTO M 247 or specification provided by the manufacturer. Beads will be submitted by the manufacturer and tested at the MRC lab according to type before use on KDOT projects.

c. Paint Sampling and Testing. The Engineer will take (2) one quart samples of each color of paint used on the project. Send the samples to MRC for testing and evaluation.

2215.3 TEST METHODS

a. Paint.

(1) Hiding Power. ASTM D 2805.

(2) Daylight Reflectance. ASTM E 1347.

(3) Bead Embedment. Apply paint to a Leneta plain white paper chart at a wet film thickness of 0.025 inch followed immediately by an application of glass beads (AASHTO M 247, Type 3) dropped onto the surface of the paint. After drying for at least 24 hours observe the amount of bead embedment with a 30-power microscope.

(4) No Pick-Up Time. ASTM D 711.

b. Glass Beads.
(1) AASHTO T 346

2215.4 PREQUALIFICATION
None Required.

2215.5 BASIS OF ACCEPTANCE
a. Paint.
(1) Receipt and approval of a Type D certification as specified in **DIVISION 2600**.
(2) Satisfactory results of tests conducted by the MRC on each color of paint used on the project.
(3) Visual inspection for color and retroreflectivity of in-place pavement markings (paint + beads).

b. Glass Beads.
(1) Receipt and approval of a Type D certification as specified in **DIVISION 2600**.
(2) Copy of the MRC test report for each lot of beads used on the project that shows compliance with the specification.

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Dec-18 Letting

KANSAS DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION TO THE
STANDARD SPECIFICATIONS, 2015 EDITION

Delete SECTION 2211 and replace with the following:

SECTION 2211

THERMOPLASTIC PAVEMENT MARKING MATERIAL

2211.1 DESCRIPTION

This specification covers thermoplastic materials suitable for use as retroreflective pavement markings on asphalt and portland cement concrete pavements. Material will be prequalified for use on both asphalt and portland cement concrete surfaces or for use only on asphalt surfaces. The material is applied to the pavement in molten form. Glass beads are pre-mixed into the material furnished, and also dropped on the surface of the molten material immediately after it is applied to the pavement surface, at a rate specified. Upon cooling to normal pavement temperature, it produces an adherent retroreflectorized stripe of specified thickness and width, capable of resisting deformation by traffic.

2211.2 REQUIREMENTS

a. General.

(1) Provide the material in white and/or yellow as specified.

(2) A binder-sealer is required for applications involving asphalt over 2 years old, or for asphalt surfaces that are worn or oxidized to a condition where 50% or more of the wearing surface is exposed aggregate.

(3) Do not commingle materials from different manufacturers.

b. Thermoplastic Material and Premix Beads. Provide thermoplastic material that complies with AASHTO M 249 with the following restrictions:

(1) Only maleic modified glycerol ester alkyd based resins will be allowed for the binder system.

(2) Yellow pigments must comply with the latest OSHA standards for toxic heavy metals.

c. Glass Beads for Drop-on Application. Provide glass beads according to the thermoplastic manufacturer's recommendations that comply with AASHTO M 247 or specification provided by the manufacturer. Beads will be submitted by the manufacturer and tested at the MRC lab according to type before use on KDOT projects.

d. Binder-Sealer. When a binder-sealer is specified, provide one that is recommended by the manufacturer of the thermoplastic material, and apply it according to the manufacturer's instructions. The binder-sealer must be compatible with the pavement material, and form a tight bond between the pavement and the thermoplastic material.

e. Color. Provide thermoplastic that complies with the requirements of ASTM D 6628. The yellow lines must also display a nighttime presence of yellow when viewed under automobile headlights.

f. Retroreflectivity. Provide thermoplastic that complies with the minimum retroreflectivity requirements in **TABLE 2211-2** using an acceptable 30-meter retroreflectometer:

TABLE 2211-2: THERMOPLASTIC RETROREFLECTIVITY REQUIREMENTS

Color	millicandelas/sq m/lux (min.)
White	350
Yellow	250

g. Verification Testing. The Engineer will take verifiation samples. Verification samples of thermoplastic will be taken from 1 lot of each color per project, using KT-30.. Send the samples to MRC for testing and evaluation. Lots previously tested by MRC will be exempt from testing, and may be exempt from sampling if coordinated with MRC.

2211.3 TEST METHODS

a. Thermoplastic Material.

(1) AASHTO T 250, plus,

(2) Verify the material is alkyd using KTMR-6, Determination of Alkyd Base in Thermoplastic Material.

(3) Glass Bead Content. ASTM D 4797.

(4) Titanium Dioxide. KTMR-40, Titanium Dioxide Content in Thermoplastic and Sprayed Thermoplastic Pavement Marking Material.

(5) Specific Gravity. AASHTO T 228.

b. Glass Beads.

(1) AASHTO T 346

2211.4 PREQUALIFICATION

a. Manufacturers interested in prequalifying material under this specification must provide a 10-lb sample of each color and a sealer (if required by the mfg.) to the Engineer of Tests. Also include a copy of the quality control test report for each lot of material, material safety data sheets, and a complete set of installation recommendations and instructions.

b. If the material complies with all laboratory requirements, the manufacturer will be contacted to arrange for the field evaluation. The field evaluation will consist of 2 or 3 test projects at times and locations as determined by the Bureau of Transportation Safety and Technology. Manufacturers must specify if the material may be used on both asphalt and concrete surfaces or only on asphalt or concrete surfaces.

Duration of the test project will be dependent on the submittal of test data from the AASHTO National Transportation Product Evaluation Program (NTPEP). Forward an official copy of the test data along with evidence that the material referenced is identical to that submitted for prequalification to the Engineer of Tests for evaluation. Materials with no test data will have a test project duration of 18 months; materials with test data will have a test project duration of 12 months. Materials will be evaluated initially and every 3 to 6 months throughout the duration of the test project for retroreflectivity, color and durability.

c. The material will be evaluated for compliance with all requirements of this specification, and the manufacturer will be notified of the results. The Bureau of Construction and Materials will maintain a list of qualified materials and installation instructions. The list will differentiate between products prequalified for use on asphalt and concrete surfaces, or for use on asphalt surfaces only.

d. Products will remain on the prequalified list as long as the results of verification testing and field performance are satisfactory. Any changes in formulation should be reported to the Engineer of Tests for review and evaluation to determine if requalification is necessary.

2211.5 BASIS OF ACCEPTANCE

a. Thermoplastic Material.

(1) Prequalification as required by **subsection 2211.4**.

(2) Receipt and approval of a Type C certification as specified in **DIVISION 2600** for each lot of material used.

b. Glass Beads for Drop-on Application.

(1) Receipt and approval of a Type D certification as specified in **DIVISION 2600**.

(2) Copy of the MRC test report for each lot of beads used on the project that shows compliance with the specification.

c. Binder-Sealer. If binder-sealer is required, it will be accepted on the basis of brand name as recommended by the thermoplastic material manufacturer, and visual observation of performance in the field.

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KANSAS DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION TO THE
STANDARD SPECIFICATIONS, 2015 EDITION

Delete SECTION 2212 and replace with the following:

SECTION 2212

PREFORMED THERMOPLASTIC PAVEMENT MARKING MATERIAL

2212.1 DESCRIPTION

This specification covers preformed thermoplastic materials suitable for use as reflecting pavement markings on either asphalt or concrete pavements. A manufacturer recommended heat source fuses the markings to the asphalt or concrete pavements. Glass beads are pre-mixed into the material furnished, and also must be applied to the surface either before or after fusion to the pavement. Upon cooling, the material produces an adherent reflectorized marking of specified thickness and width, capable of resisting deformation by traffic.

2212.2 REQUIREMENTS

a. General.

(1) Provide the material in white and/or yellow as specified.

(2) Provide material with a minimum thickness of 90 mil (0.09 inch) as supplied by the manufacturer, without any additional drop-on beads.

(3) Provide material that is resistant to deterioration due to exposure to sunlight, water, oil, gasoline, salt, or adverse weather conditions.

(4) After application, the material must exhibit no appreciable deformation or discoloration, remain tack free, and not lift from the pavement under normal traffic conditions within a road temperature range of 20 to 150ºF.

(5) Provide material that is capable of conforming to pavement contours, breaks, and faults through the action of traffic at normal pavement temperatures.

b. Color. Provide thermoplastic that meets the requirements of ASTM D 6628.

c. Retroreflectivity. Provide preformed thermoplastic that meets the minimum retroreflectivity requirements in **TABLE 2212-1**, using an acceptable 30-meter retroreflectometer.

TABLE 2212-1: PREFORMED THERMOPLASTIC RETROREFLECTIVITY REQUIREMENTS

COLOR	millicandelas/sq m/lux (min.)
White	350
Yellow	250

d. Thermoplastic Material and Premix Beads.

(1) Provide thermoplastic material that complies with AASHTO M 249 with exception of the relevant differences due to the material being supplied in a preformed state.

(2) All pigments must be heavy metal free, including, but not restricted to lead, cadmium, and mercury.

e. Glass Beads for Drop-on Application. Provide glass beads according to the thermoplastic manufacturer's recommendations that comply with AASHTO M 247 or specification provided by the manufacturer. Beads will be submitted by the manufacturer and tested at the MRC lab according to type before use on KDOT projects

f. Verification Testing The Engineer will take verification samples.Verification samples of thermoplastic will be taken from 1 lot of each color per project. Send the samples to MRC for testing and evaluation. Do not sample

preformed symbols. Lots previously tested by MRC will be exempt from testing, and may be exempt from sampling if coordinated with MRC.

2212.3 TEST METHODS

a. Thermoplastic Material and Premix Beads. AASHTO T 250

b. Glass Beads. AASHTO T 346

2212.4 PREQUALIFICATION

a. Manufacturers interested in prequalifying material under this specification must provide at least 50 linear feet of each color to the Engineer of Tests. Also, include a copy of the quality control test report for each lot of material, material safety data sheets, and a complete set of installation recommendations and instructions.

b. If the material complies with all laboratory requirements, the manufacturer will be contacted to arrange for the field evaluation. The field evaluation will consist of 2 or 3 test projects at times and locations as determined by the Bureau of Transportation Safety and Technology. Manufacturers must specify if the material may be used on both asphalt and concrete surfaces or only on asphalt or concrete surfaces.

Duration of the test project will be dependent on the submittal of test data from the AASHTO National Transportation Product Evaluation Program (NTPEP). Forward an official copy of the test data along with evidence that the material referenced is identical to that submitted for prequalification to the Engineer of Tests for evaluation. Materials with no test data will have a test project duration of 18 months; materials with test data will have a test project duration of 12 months. Materials will be evaluated initially and every 3 to 6 months throughout the duration of the test project for retroreflectivity, color and durability.

c. The material will be evaluated for compliance with all requirements of this specification, and the manufacturer will be notified of the results. The Bureau of Construction and Materials will maintain a list of qualified materials and installation instructions.

d. Products will remain on the prequalified list as long as field performance is satisfactory, and the results of verification testing are consistently acceptable. Report any changes in formulation to the Engineer of Tests for review and evaluation to determine if requalification is necessary.

2212.5 BASIS OF ACCEPTANCE

a. Thermoplastic Material.

(1) Prequalification as required by **subsection 2212.4**.

(2) Receipt and approval of a Type C certification as specified in **DIVISION 2600** for each lot of material used.

b. Glass Beads for Drop-on Application.

(1) Receipt and approval of a Type D certification as specified in **DIVISION 2600.**

(2) Copy of the MRC test report for each lot of beads used on the project that shows compliance with the specification.

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Delete SECTION 2213 and replace with the following:

SECTION 2213

SPRAYED THERMOPLASTIC PAVEMENT MARKING MATERIAL

2213.1 DESCRIPTION

This specification covers thermoplastic materials suitable for use as retroreflecting pavement markings on asphalt pavement. The material is applied to the pavement in molten form by spray means. Glass beads are pre-mixed into the material furnished, and also dropped on the surface of the molten material immediately after it is applied to the pavement surface, at a rate specified. Upon cooling to normal pavement temperature, the material produces an adherent retroreflective marking of specified thickness and width, capable of resisting deformation by traffic.

2213.2 REQUIREMENTS

a. General.

(1) Provide the material in white and/or yellow as specified.

(2) Provide 100% solids thermoplastic material that is homogeneously composed of pigment, filler, resins and glass beads. The material must have a minimum binder content of 25% by mass composition and be free of foreign objects that would cause bleeding, staining, or discoloration. Upon heating to application temperature, the material will not exude fumes that are toxic, or injurious to persons or property.

b. Pigment.

(1) Use high-grade titanium dioxide as the pigment for the white material. The material must contain a minimum of 10% titanium dioxide by mass.

(2) Use heat resistant and colorfast yellows, golds, or oranges to produce a material to comply with color requirements.

(3) Yellow pigments must comply with the latest OSHA standards for toxic heavy metals.

(4) Use a filler consisting of white calcium carbonate, silica, or an approved substitute.

c. Glass Beads. Provide glass beads according to the thermoplastic manufacturer's recommendations that comply with AASHTO M 247 or specification provided by the manufacturer. Beads will be submitted by the manufacturer and tested at the MRC lab according to type before use on KDOT projects.

d. Thermoplastic Material. Provide thermoplastic material that complies with the following:

(1) Specific Gravity--2.0 maximum

(2) Daylight Reflectance (Y)

(a) White—75% minimum

(b) Yellow—45% minimum

(3) Color—meets the requirements of ASTM D 6628. Yellow lines must display a nighttime presence of yellow when viewed under automobile headlights.

(4) Retroreflectivity—Provide sprayed thermoplastic that meets the following minimum retroreflectivity requirements using an acceptable 30-meter retroreflectometer:

TABLE 2213-2: SPRAYED THERMOPLASTIC RETROREFLECTIVITY REQUIREMENTS

Color	Millicandelas/sq m/lux (min.)
White	350
Yellow	250

(5) Softening Point--180°F minimum
(6) Cracking Resistance at Low Temperature--No visible cracks when observed from a distance of one foot.

e. Binder-Sealer. When a binder-sealer is specified, provide one that is recommended by the manufacturer of the thermoplastic material, and apply it according to the manufacturer's instructions. The binder-sealer must be compatible with the pavement material, and form a tight bond between the pavement and the thermoplastic material.

f. Verification Testing. The Engineer will take verification samples. Verification samples of thermoplastic will be taken from 1 lot of each color per project, using KT-30. Send the samples to MRC for testing and evaluation. Lots previously tested by MRC will be exempt from testing, and may be exempt from sampling if coordinated with MRC.

2213.3 TEST METHODS

a. Thermoplastic Material. Use AASHTO T 250 except for:
(1) Softening Point-Heat the material for 4 hours ± 5 minutes at 375 ± 2ºF.
(2) Cracking Resistance at Low Temperature-Heat the material for 4 hours ± 5 minutes at 375 ± 2ºF.
(3) Glass Beads content. ASTM D 4797. ~~and AASHTO T 247.~~
(4) Titanium Dioxide. KTMR-40, Titanium Dioxide Content in Thermoplastic and Sprayed Thermoplastic Pavement Marking Material.

b. Glass Beads.
(1) AASHTO T 346

2213.4 PREQUALIFICATION

a. Manufacturers interested in prequalifying material under this specification must provide a 10-lb sample of each color and a sealer (if required by the mfg.) to the Engineer of Tests. Also include a copy of the quality control test report for each lot of material, material safety data sheets, and a complete set of installation recommendations and instructions.

b. If the material complies with all laboratory requirements, the manufacturer will be contacted to arrange for the field evaluation. The field evaluation will consist of 2 or 3 test projects at times and locations as determined by the Bureau of Transportation Safety and Technology. Manufacturers must specify if the material may be used on both asphalt and concrete surfaces or only on asphalt or concrete surfaces.
Duration of the test project will be dependent on the submittal of test data from the AASHTO National Transportation Product Evaluation Program (NTPEP). Forward an official copy of the test data along with evidence that the material referenced is identical to that submitted for prequalification to the Engineer of Tests for evaluation. Materials with no test data will have a test project duration of 18 months; materials with test data will have a test project duration of 12 months. Materials will be evaluated initially and every 3 to 6 months throughout the duration of the test project for retroreflectivity, color and durability.

c. The material will be evaluated for compliance with all requirements of this specification, and the manufacturer will be notified of the results. The Bureau of Construction and Materials will maintain a list of qualified materials and installation instructions.

d. Products will remain on the prequalified list as long as the results of verification testing and field performance are satisfactory. Any changes in formulation should be reported to the Engineer of Tests for review and evaluation to determine if requalification is necessary.

2213.5 BASIS OF ACCEPTANCE

a. Thermoplastic Material.
(1) Prequalification as required by **subsection 2213.4**.
(2) Receipt and approval of a Type C certification as specified in **DIVISION 2600** for each lot of material used.

b. Glass Beads for Drop-on Application.

(1) Receipt and approval of a Type D certification as specified in **DIVISION 2600**.

(2) Copy of the MRC test report for each lot of beads used on the project that shows compliance with the specification.

c. Binder-Sealer. If binder-sealer is required, it will be accepted based on brand name as recommended by the thermoplastic material manufacturer, and visual observation of performance in the field.

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SECTION 2207

COLD PLASTIC PAVEMENT MARKING MATERIAL

2207.1 DESCRIPTION

This specification covers cold plastic pavement marking materials for use on both concrete and asphalt surfaces.

2207.2 REQUIREMENTS

Provide cold plastic pavement marking material that complies with ASTM D4505, Reflectivity Level II.

2207.3 TEST METHODS

ASTM D4505

2207.4 PREQUALIFICATION

Submit a sample of at least 20 linear feet of each color of material to the Engineer of Tests.

If the material complies with all laboratory requirements, the manufacturer will be contacted to arrange for the field evaluation. The field evaluation will consist of 2 or 3 test projects at times and locations as determined by the Bureau of Transportation Safety and Technology. Manufacturers must specify if the material may be used on both asphalt and concrete surfaces or only on asphalt or concrete surfaces.

Duration of the test project will be dependent on the submittal of test data from the AASHTO National Transportation Product Evaluation Program (NTPEP). Forward an official copy of the test data along with evidence that the material referenced is identical to that submitted for prequalification to the Engineer of Tests for evaluation. Materials with no test data will have a test project duration of 18 months; materials with test data will have a test project duration of 12 months. Materials will be evaluated initially and every 3 to 6 months throughout the duration of the test project for retroreflectivity, color and durability.

The material will be evaluated for compliance with this specification, and the manufacturer will be notified of the results. The Bureau of Construction and Materials will maintain a list of qualified materials and installation instructions. Products will remain on the prequalified list as long as field performance is satisfactory and the results of verification testing are consistently acceptable. Report any changes in formulation to the Engineer of Tests for review and evaluation to determine if requalification is necessary.

2207.5 BASIS OF ACCEPTANCE

a. Long Line Markings.

(1) Prequalification as stated in **subsection 2207.4**.

(2) Satisfactory results of Verification Testing. Except for symbols, the Engineer will sample each lot or batch. Collect samples of each lot in accordance with KT-81.

b. Preformed Symbols.

(1) Prequalification as stated in **subsection 2207.4**.

(2) Receipt and approval of a Type C certification as specified in **DIVISION 2600.** Include all lot numbers from the material used to fabricate the symbols.

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SECTION 2208

PATTERNED COLD PLASTIC PAVEMENT MARKING MATERIAL

2208.1 DESCRIPTION

This specification covers patterned cold plastic pavement marking material for use on both concrete and asphalt surfaces.

2208.2 REQUIREMENTS

Provide patterned cold plastic pavement marking material that complies with ASTM D4505, Reflectivity Level I with the following additions:

a. Dimensions. Provide material with a thickness of not less than 0.02 in. at the thinnest portion of the cross section. Provide material whose thickest portion of the cross section is 0.07 – 0.13 inches. All measurements are exclusive of the adhesive.

2208.3 TEST METHODS

ASTM D4505

2208. 4 PREQUALIFICATION

Submit at least 20 linear feet of each color of material to be prequalified to the Engineer of Tests.

If the material complies with all laboratory requirements, the manufacturer will be contacted to arrange for the field evaluation. The field evaluation will consist of 2 or 3 test projects at times and locations as determined by the Bureau of Transportation Safety and Technology. Manufacturers must specify if the material may be used on both asphalt and concrete surfaces or only on asphalt or concrete surfaces.

Duration of the test project will be dependent on the submittal of test data from the AASHTO National Transportation Product Evaluation Program (NTPEP). Forward an official copy of the test data along with evidence that the material referenced is identical to that submitted for prequalification to the Engineer of Tests for evaluation. Materials with no test data will have a test project duration of 18 months; materials with test data will have a test project duration of 12 months. Materials will be evaluated initially and every 3 to 6 months throughout the duration of the test project for retroreflectivity, color and durability.

The material will be evaluated for compliance with this specification, and the manufacturer will be notified of the results. The Bureau of Construction and Materials will maintain a list of qualified materials and installation instructions. Products will remain on the prequalified list as long as field performance is satisfactory and the results of verification testing are consistently acceptable. Report any changes in formulation to the Engineer of Tests for review and evaluation to determine if requalification is necessary.

2208.5 BASIS OF ACCEPTANCE

a. Long Line Markings.

(1) Prequalification as stated in **subsection 2208.4**.

(2) Satisfactory results of Verification Testing. Except for symbols, the Engineer will sample each lot or batch. Collect samples of each lot in accordance with KT-81.

b. Preformed Symbols.

(1) Prequalification as stated in **subsection 2208.4**.

(2) Receipt and approval of a Type C certification as specified in **DIVISION 2600.** Include all lot numbers from the material used to fabricate the symbols.

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SECTION 2209

HIGH DURABILITY PAVEMENT MARKING MATERIAL

2209.1 DESCRIPTION

This specification covers white or yellow high durability pavement markings designed to be used in severe wear conditions such as repeated shear actions from crossover or encroachment traffic and turning, stopping or starting traffic. This includes material for use on both portland cement concrete and asphalt surfaces.

2209.2 REQUIREMENTS

Provide high durability pavement marking material that complies with ASTM D4505, Reflectivity Level II with the following exceptions and additions:

a. The material must have a strong topcoat with glass and/or ceramic beads distributed to provide immediate and continuing retroreflection. Bond ceramic particles to the top layer to provide a skid resistant surface.

b. Tensile Strength. The material must have a minimum tensile strength of 500 psi when measured in the direction of the roll.

c.. Dimensions. With the exception of patterned, provide material with a 0.05 inch minimum thickness. Provide patterned material with a thickness of not less than 0.02 inch at the thinnest portion of the cross section and 0.07 – 0.13 inches at the thickest portion of the cross section. All measurements are exclusive of the adhesive.

2209.3 TEST METHODS

ASTM D638 with the following exception:

- Test a 1 by 6 inch sample at a temperature between 70 and 80ºF using a jaw speed of 10 - 12 inches per minute.

ASTM D4505.

2209.4 PREQUALIFICATION

Submit at least 20 linear feet of each color, and a complete set of installation recommendations and instructions to Engineer of Tests.

If the material complies with all laboratory requirements, the manufacturer will be contacted to arrange for the field evaluation. The field evaluation will consist of 2 or 3 test projects at times and locations as determined by the Bureau of Transportation Safety and Technology. Manufacturers must specify if the material may be used on both asphalt and concrete surfaces or only on asphalt or concrete surfaces.

Duration of the test project will be dependent on the submittal of test data from the AASHTO National Transportation Product Evaluation Program (NTPEP). Forward an official copy of the test data along with evidence that the material referenced is identical to that submitted for prequalification to the Engineer of Tests for evaluation. Materials with no test data will have a test project duration of 18 months; materials with test data will have a test project duration of 12 months. Materials will be evaluated initially and every 3 to 6 months throughout the duration of the test project for retroreflectivity, color and durability.

The material will be evaluated for compliance with this specification, and the manufacturer will be notified of the results. The Bureau of Construction and Materials will maintain a list of qualified materials and installation instructions. Products will remain on the prequalified list as long as field performance is satisfactory and the results of verification testing are consistently acceptable. Report any changes in formulation to the Engineer of Tests for review and evaluation to determine if requalification is necessary.

2209.5 BASIS OF ACCEPTANCE

a. Long Line Markings.

(1) Prequalification as required by **subsection 2209.4** above.

(2) Satisfactory results of Verification Testing. Except for symbols, the Engineer will sample each lot or batch. Collect samples of each lot in accordance with KT-81.

b. Preformed Symbols.

(1) Prequalification as required by **subsection 2209.4** above.

(2) Receipt and approval of a Type C certification as specified in **DIVISION 2600**, which also includes all lot numbers of material used to fabricate the symbols.

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Delete SECTION 2601 and replace with the following:

SECTION 2601

MATERIALS CERTIFICATIONS

2601.1 DESCRIPTION

This specification governs the requirements for the content and distribution of certifications when dictated, in part or in whole, as the basis of acceptance for a material.

2601.2 REQUIREMENTS

a. General

(1) The contractor is responsible for obtaining all certifications and arranging for their delivery to the proper destinations prior to use of the material and allowing sufficient time for review as stated herein.

(2) **Provide the following information on all certifications regardless of type.**

(a) Identification of the organization submitting the certification.

(b) KDOT project number and KDOT contract number.

(c) Name of contractor.

(d) Identification markings on the shipment. As a minimum, this must include the name of the manufacturer. Also include the lot or heat number, the serial number if applicable, and the date of manufacture if available. This information is not required for Type "F" and "G" certifications (described below) since it is likely not known at the time of certification submittal.

(e) Quantity of material represented by the certification. If multiple lot/heat numbers are submitted, the quantity should be listed per lot/heat number. This information is not required for Type "F" and "G" certifications.

(f) KDOT Contract line number (bid item) and item code number of the material represented by the certification.

(g) Statement that all material complies with the applicable specifications. List the specifications by responsible organization, number, section reference or other appropriate identification.

(h) Additional information as required in the specification for the material, or as added requirements for the various types of certifications in **subsection 2601.2b** below.

(i) "Buy America" statement on domestic iron or steel products as required by **SECTION 106**.

(3) The general information outlined above must be provided by the material supplier on a cover sheet to the manufacturer's certification(s). **Please note:** An example of a cover sheet is included at the end of this specification. Verify that the cover sheet and certification(s) are so well cross referenced and identified as a unit that they can be reunited if accidently separated.

(4) When lot or heat numbers are required in a certification, the manufacturer is required to provide information with regard to the typical quantity of material and production time intervals represented by these numbers. Also include the dates of manufacture for the lots or heats involved. This information will be evaluated by the KDOT and may constitute a basis for rejection if the quantities or time intervals are considered excessive.

(5) A signature is not required on laboratory reports or manufacturer's certifications unless specifically required by other applicable specifications. However, the document must clearly identify the organization submitting the report or certification. The organization submitting certifications, reports, and related written statements is responsible for the contents of these documents whether they are signed or not.

b. Types of Certifications.

(1) Type "A" certification. This certification is to include a copy of the results of tests conducted by the manufacturer's or other qualified laboratory on samples obtained from the lot or lots of material in the shipment.

When a mill test report is submitted as the laboratory report, the quantity in the shipment does not need to be included on the report, provided that the identifying heat or lot numbers involved are roll stamped, embossed, or

durably affixed to each item of material in the shipment represented by the report. Provide the necessary quantity information on a cover sheet, clearly identifying the quantity of each heat or lot in the shipment.

(2) Type "B" certifications. This certification is to include a current summary of the maximum to minimum range of the manufacturer's quality control test results as determined by the manufacturer's or other qualified laboratory. These summaries must provide data on all major specification requirements. Also include the range of lots and manufacture dates represented by the data. When combining multiple components into a single item, submit a detailed parts summary indicating the lot/heat number, part description and quantity for each part. Summary reports dated more than six months prior to the date of manufacture or shipment of the product will not be accepted. The Engineer of Tests may also request copies of detailed test reports for material produced during a specified time interval for verification of the certification.

(3) Type "C" certifications. This certification is to include a statement certifying that the material in the shipment is essentially the same as material that is prequalified.

(4) Type "D" certifications. This certification is to comply with **subsection 2601.2a**.

(5) Type "E" certifications. This certification applies to assemblies or structures that are composed of two or more components or materials. These components or materials have been approved previously on an individual basis for KDOT projects, but lose their identity when they are incorporated into an assembly or structure. This certification would apply to structural panel signs (excluding retroreflective sheeting), and cantilever type lighting and traffic signal structures, etc. The certification is to state that all the components or materials used in the fabrication of the represented assembly or structure were previously approved for KDOT use.

(6) Type "F" or Type "G" blanket certifications. As permitted by **TABLE 2601-1**, submit Type "F" and "G" certifications covering material provided throughout the present calendar year. In addition to the requirements described above, clearly denote the covering year. Submit type "F" and "G" for each manufacturer, producer, fabricator, plant, production facility, or supplier; and for each unique product, design, model, mix design, or formulation, If the previous critieria is satisfied, multiple pipe sizes of the same type can be covered by one certification, but each size must be clearly listed. Certification may cover multiple contracts and identical materials supplied under multiple line items, provided the contracts and associated line items are clearly listed. For multi-year contracts submit blanket certifications for each calender year that material is supplied. Submit the certifcation in the covering year prior to the material's first use, not in advance of the covering year. Unanticipated changes in any of the critieria listed above during the course of a year requires submittal of an additional blanket certification.

(a) Type "F" certifications. This certification is to include a statement certifying that the material supplied during the covering calendar year is essentially the same as material that is prequalified.

(b) Type "G" certifications. This certification is to comply with **subsection 2601.2a**.

c. Responsibility for Preparation. The manufacturer of the individual item is responsible for preparing certifications of Type "A", Type "B", Type "C", Type "D", "F" and "G" certifications. The fabricator or assembler of individual items is responsible for preparing a Type "E" certification.

d. The Engineer reserves the right to sample and test any material or product that is governed by a certification. If deviations from the applicable specifications are found, the results will be reviewed by the Engineer to determine the final disposition of the material or product. Serious deviations may be cause for removal from prequalified status.

e. Distribution of Certifications.

(1) Types "A" and "B" certifications.

(a) Submit one copy of the certification via hard copy or e-mail to:

Materials and Research Center
Attn: Materials Certification Technician
2300 Van Buren
Topeka, KS 66611
E-mail address: KDOT#CM.TypeABCerts@ks.gov

These certifications will be evaluated for compliance with the applicable specifications as well as this section. The appropriate personnel will be notified of a certification's disposition status through the issue of a hardcopy or electronic report, whichever is most expedient.

(b) Submit one copy to the Field Engineer responsible for the project construction.

(2) Types "C," "D", "E", "F" and "G" certifications.

(a) Issue one copy to the Field Engineer(s) responsible for each of the listed project(s) construction.

(b) Do not issue these certifications to the Bureau of Construction and Materials, the Materials Certification Technician, or the Engineer of Tests unless they are specifically requested.

f. Certification of Aggregates. Provide the Engineer a certification for each classification of aggregate utilized in a project.

(1) Aggregates Delivered to the Site: Certify each classification of aggregate delivered to a project or product preparation site. Prepare these certifications under the signature of the aggregate producer or their designated representative.

(a) Certify aggregates that are tested at their destination to determine final disposition as to the locations of the deposits from which they were produced.

(b) Certify aggregates that are tested at their production site to determine final disposition. These certifications state that the aggregates were removed from a KDOT tested and approved stockpile at the production site, or that they were removed from a plant while it was producing aggregate that was in compliance with the applicable specifications.

(2) Aggregates Incorporated into the Project: At locations where aggregates and products that incorporate aggregates are produced for KDOT **and** non-KDOT use, provide certifications stating that only KDOT tested and approved aggregate was provided for the KDOT projects.

(3) Frequency of Certification:

(a) Prior to the initial delivery of aggregates to a project or product preparation site, provide the Engineer a certification. This certification is to be under the signature of the aggregate producer or their designated representative and state that all aggregates to be provided for the project are in compliance with all the applicable KDOT specifications.

(b) Upon completion of the project, provide certifications as specified in **subsection 2601.2f.(1) and (2)** of this specification to the Engineer. These certifications apply to all aggregates that were delivered to the project or product preparation site and ultimately used in the project.

These certifications are to indicate the approximate quantities in tons or cubic yards of each aggregate delivered to the project and the approximate quantities in tons or cubic yards of each aggregate delivered to the product preparation site and incorporated into a product that was utilized in the project.

TABLE 2601-1: REFERENCE CHART FOR MATERIAL RELATED SPECIFICATIONS

2015 SECTION	TITLE	PQL LIST #	BLANKET CERT (YES/--)	CERT TYPE
1101	GENERAL REQUIREMENTS FOR AGGREGATES			Aggregate
1102 (15-11003-R02)	AGGREGATES FOR CONCRETE NOT PLACED ON GRADE	OFQ & 3.1		SEE 1101
	LIGHTWEIGHT AGGREGATES	3.2		SEE 1101
1103 15-11002-R01)	AGGREGATES FOR HOT MIX ASPHALT (HMA)	OFQ		SEE 1101
1104	AGGREGATES FOR AGGREGATE BASE CONSTRUCTION	OFQ		SEE 1101
1105	AGGREGATES FOR CEMENT TREATED BASES	OFQ		SEE 1101
1106	AGGREGATES FOR GRANULAR BASE	OFQ		SEE 1101
1107	AGGREGATES FOR BACKFILL	OFQ		SEE 1101
1108	AGGREGATES FOR COVER MATERIAL	OFQ		SEE 1101
	LIGHTWEIGHT AGGREGATES	3.3		SEE 1101
1109	AGGREGATE FOR MICROSURFACING	OFQ		SEE 1101
1110	AGGREGATES FOR SUBGRADE MODIFICATION OR RECONSTRUCTION	OFQ		SEE 1101
1111	AGGREGATES FOR SURFACING OR RESURFACING	OFQ		SEE 1101
1112	AGGREGATES FOR SURFACING OR SUBGRADE MODIFICATION FOR COUNTY SECONDARY ROADS	OFQ		SEE 1101
1113	AGGREGATES FOR SHOULDER CONSTRUCTION	OFQ		SEE 1101

TABLE 2601-1: REFERENCE CHART FOR MATERIAL RELATED SPECIFICATIONS (cont.)				
2015 SECTION	**TITLE**	**PQL LIST #**	**BLANKET CERT (YES/--)**	**CERT TYPE**
1114	STONE FOR RIPRAP, DITCH LINING AND OTHER MISCELLANEOUS USES	3.5		SEE 1101
1115	TEST METHODS FOR DIVISION 1100, AGGREGATES			
1116	AGGREGATES FOR CONCRETE PLACED ON GRADE	3.1 & 3.4		SEE 1101
1201	GENERAL REQUIREMENTS FOR DIVISION 1200 - ASPHALT MATERIALS	4.1		Manufacturer's
1202	PERFORMANCE GRADED ASPHALT BINDER	4.1		SEE 1201
1203	EMULSIFIED ASPHALT	4.1		SEE 1201
1204	CUTBACK ASPHALT	4.1		SEE 1201
1205	ASPHALT REJUVENATING AGENT	4.1		SEE 1201
1206	POLYMER MODIFIED ASPHALT CEMENT FOR CHIP SEALS	4.1		SEE 1201
1207	WARM MIX ASPHALT ADDITIVES			
	FOAMING PROCESSES	4.3		Field Obs.
	OTHER ADDITIVES	4.3		C & Field Obs.
1301	MASONRY BRICK			
	SEWER & MANHOLE BRICK, BUILDING BRICK			Test Results
	ADA PAVING BRICK			A & Test Results
1302	CONCRETE MASONRY UNITS			Test Results
1303	HOLLOW LOAD-BEARING CONCRETE MASONRY UNITS			Test Results
1304	SOLID INTERLOCKING PAVING UNITS		YES	G
1401	AIR-ENTRAINING ADMIXTURES FOR CONCRETE	1		C
1402	CHEMICAL ADMIXTURES FOR CONCRETE	2		C
1403	PRECURE/FINISHING AID	36	YES	F
1404	LIQUID MEMBRANE FORMING COMPOUNDS	30	YES	F
1405	BURLAP (NEW or USED)			Visual
1406	SHEET MATERIALS FOR CURING CONCRETE (NEW or USED)			Visual
1501	HOT JOINT SEALING COMPOUND	15.4		Manufacturer's
1502 (15-15004)	COLD APPLIED CHEMICALLY CURED JOINT SEALANT	15.3		A
1503	PREFORMED EXPANSION JOINT FILLER FOR CONCRETE (TYPE A or TYPE B)			Visual
1504	PREFORMED ELASTOMERIC COMPRESSION JOINT SEALS FOR CONCRETE			
	SEALS	15.1	YES	F
	ADHESIVES, LUBRICANTS & CEMENTING AGENTS	15.2	YES	F
1505	MATERIALS FOR FILLING AND SEALING JOINTS IN PIPE			
	COMPOUND TYPE			Test Results
	FLEXIBLE GASKET, JOINT RINGS, MATERIALS FOR CAST IRON		YES	G
	RUBBER SEALS			Visual
	CLOSED-CELLULAR RUBBER GASKETS		YES	G
1506	POLYVINYL CHLORIDE (PVC) WATERSTOP		YES	G
1507	PRESSURE RELIEF JOINT FILLER		YES	G

TABLE 2601-1: REFERENCE CHART FOR MATERIAL RELATED SPECIFICATIONS (cont.)				
2015 SECTION	**TITLE**	**PQL LIST #**	**BLANKET CERT (YES/--)**	**CERT TYPE**
1508	ELASTOMERIC CONCRETE	37	YES	F
1509	MEMBRANE SEALANT		YES	G
1510	STRIP SEAL ASSEMBLY		YES	G
1511	BRIDGE JOINT SYSTEM - PREFORMED PRESSURIZED ELASTOMERIC NEOPRENE		YES	G
1512 (15-07006)	BRIDGE JOINT SYSTEM – PREFORMED ELASTOMERIC PANEL		YES	G
1601	STEEL BARS FOR CONCRETE REINFORCEMENT	28		A
1602	EPOXY COATED STEEL FOR CONCRETE REINFORCEMENT			
	UNCOATED REINFORCING STEEL			See 1601 or 1603
	COATINGS	10.1		See 1602
	PATCH MATERIALS FOR COATINGS	10.2		See 1602
	APPLICATOR PLANTS	10.3		See 1602
1603	WELDED STEEL WIRE FABRIC FOR CONCRETE REINFORCEMENT	29	YES	F
1604	HELICAL REINFORCEMENT	28, 29		A
1605	REINFORCING STEEL SPLICES	32	YES	F
1606	STRAND FOR PRESTRESSED CONCRETE			Test Results
1607	STRUCTURAL STEEL			
	SHAPES, PLATES, SHEETS, BARS, PINS, ETC.			A
	MERCHANT QUALITY			Visual
1608	STRUCTURAL STEEL TUBING			A
1609	STEEL PILING AND PILE POINTS			A
1610	STEEL FOR BRIDGE DRAIN SYSTEMS			
	ALL STAINLESS STEEL COMPONENTS			A
	HOT-DIPPED GALV or WEATHERING STEEL COMPONENTS (exc. PIPE)			A
	HOT-DIPPED or WEATHERING STEEL PIPE			D
1611	PIPES FOR SONIC TESTING		YES	G
1612	GRAY-IRON CASTINGS			A
1613	MALLEABLE CAST IRON PRODUCTS			D
1614	CAST STEEL PRODUCTS		YES	G
1615	ANCHOR BOLTS FOR STRUCTURAL USES			A
1616	STEEL FASTENERS			A
1617	WELDED STUD SHEAR CONNECTORS	22.1		A
1618	STEEL PLATE GUARDRAIL			
	THREADED FASTENERS			See 1616
	WOOD COMPONENTS			See 2301
	BEAMS, TRANSITIONS, END TERMINALS, STEEL, TUBING, PIPE, WIRE ROPE, ETC.	13.1	YES	F
	PROPRIETARY ENERGY DISSIPATING END TERMINAL SYSTEMS	13.2	YES	F
1619	STEEL PIPE			
	OTHER THAN ENCASEMENT			A
	ENCASEMENT			D

TABLE 2601-1: REFERENCE CHART FOR MATERIAL RELATED SPECIFICATIONS (cont.)				
2015 SECTION	**TITLE**	**PQL LIST #**	**BLANKET CERT (YES/--)**	**CERT TYPE**
1620 (15-16004)	MATERIALS FOR FENCING			
	ALL WIRE, CHAIN LINK FENCE (SPECIAL), DUPLEX/PVC			B
	ALL OTHER COMPONENTS		YES	G
1621	STEEL SIGN POSTS			
	CHANNEL OR 'U' TYPE			A
	PSST			A
1622	STEEL POSTS FOR DELINEATOR MARKERS			Visual
1623	STEEL PERMANENT DECK FORMS		YES	G
1624	ZINC COATINGS			Visual
1625	CAST BRONZE PRODUCTS		YES	G
1626	ALUMINUM ALLOYS			B
1627	ALUMINUM SIGNING MATERIALS		YES	E (structural panel) or G (flat sheet)
1628	HEADED REINFORCING ANCHORS	31		C
1701	BEARINGS AND PADS FOR STRUCTURES			
	PLAIN ELASTOMERIC PADS		YES	G
	POT, DISC, SPHERICAL BEARINGS			A
	STEEL REINFORCED ELASTOMERIC BEARINGS (w/ or wo/PTFE)			A & Producer's
	STEEL BEARINGS			A & Visual
1702	CALCIUM CHLORIDE			D
1703	ELECTRIC LIGHTING AND TRAFFIC SIGNAL EQUIPMENT			
	TRAFFIC SIGNALS	24.1		See 1703
	ROADWAY LIGHTING	24.2		See 1703
	ELECTRICAL CONDUIT		YES	G
1704	WARNING LIGHTS	16	YES	F
1705	EPOXY-RESIN-BASE BONDING SYSTEMS FOR CONCRETE	10.5	YES	F
1706	ABUTMENT STRIP DRAIN	42	YES	F
1707	MANHOLE STEPS			
	TYPE 1		YES	G
	TYPE 2	26	YES	F
1708	BRIDGE BACKWALL PROTECTION SYSTEM	33	YES	F
1709	SUBSTRUCTURE WATERPROOFING	41	YES	F
1710	GEOSYNTHETICS	48	YES	F
1711	GABIONS	12	YES	F
1712	PREFABRICATED VERTICAL DRAIN			Test Results
1713	INERTIAL BARRIER SYSTEM AND REPLACEMENT MODULES	13.3	YES	F
1714	CEMENTITIOUS GROUT	5.4	YES	F
1715	CONCRETE MASONRY COATING	35	YES	F
1716	RAPID-SET CONCRETE PATCHING MATERIAL	5.3	YES	F
1717	PRECAST PANEL BEDDING MATERIALS	40.3	YES	F

TABLE 2601-1: REFERENCE CHART FOR MATERIAL RELATED SPECIFICATIONS (cont.)				
2015 SECTION	**TITLE**	**PQL LIST #**	**BLANKET CERT (YES/--)**	**CERT TYPE**
1718	BOND-BREAKER FOR PORTLAND CEMENT CONCRETE PAVEMENT DOWEL BARS	38	YES	F
1719	RELEASE COMPOUND FOR ASPHALT MIXES	27		Field Perf.
1720	MODULAR EXPANSION DEVICES	22.2		A & C
1721	FABRIC TROUGH			B
1722	FIBROUS REINFORCEMENT FOR CONCRETE	43	YES	F
1723	NON-METALLIC OFFSET BLOCKS FOR GUARDRAIL	13.4	YES	F
1724	SILICONE RUBBER SURFACE CRACK SEALANT	15.5	YES	F
1725	DETECTABLE WARNING SURFACE PANELS FOR CURB RAMPS AND MEDIANS	49	YES	F
1726	IMPACT ATTENUATORS AND REPLACEMENT MODULES	13.5	YES	F
1727	SHOTCRETE CONCRETE	5.6	YES	G
1728	EXPANDED FOAM FOUNDATION MATERIAL FOR SIGN POSTS	46		C
1729	ANTI-GRAFFITI COATINGS	18.9		C
1730	POLYMER RESINS FOR POLYMER CONCRETE OVERLAY SYSTEMS	10.6		C
1731	GROUT USED IN POST-TENSIONING	5.8		C
1732	GEOFOAM	51		C
1733	GEOMEMBRANE			D
1735	POLYURETHANE	50		C
15-17009	PORTABLE REUSABLE TEMPORARY RUMBLE STRIPS	23.3		C
15-17001	PORTABLE CHANGEABLE MESSAGE SIGNS		YES	G
1801	INORGANIC ZINC PRIMER FOR STRUCTURAL STEEL	18.1	YES	F
1802	ORGANIC ZINC PRIMER FOR STRUCTURAL STEEL	18.3	YES	F
1803	ORGANIC ZINC RICH PAINT FOR REPAIRING DAMAGED SPELTER COATING			Visual
1804	RESERVED			
1805	RESERVED			
1806	WATER BORNE ACRYLIC FINISH COAT	18.6	YES	F
1807	MOISTURE-CURE URETHANE SYSTEM	18.8	YES	F
1808	CALCIUM SULFONATE ALKYD SYSTEM	18.7	YES	F
1901	USES OF PIPE			
1902	QUALITY CONTROL PROGRAM FOR PRECAST CONCRETE PRODUCTS	40.1		C
1903	CAST IRON AND DUCTILE IRON PIPE		YES	G
1904	CORRUGATED METAL PIPE AND END SECTIONS			A
1905	STRUCTURAL PLATE FOR PIPE, PIPE ARCHES AND ARCHES			A

TABLE 2601-1: REFERENCE CHART FOR MATERIAL RELATED SPECIFICATIONS (cont.)				
2015 SECTION	**TITLE**	**PQL LIST #**	**BLANKET CERT (YES/--)**	**CERT TYPE**
1906	ASPHALT COATED CORRUGATED METAL PIPE, PIPE ARCHES, COUPLING BANDS AND STRUCTURAL PLATE			
	ASPHALT COATED PRODUCT		YES	G
	BASE METAL PIPE, PIPE-ARCH & STRUCT. PLATE			See 1904 or 1905
1907	PLASTIC PIPE FOR UNDERDRAINS, EDGE DRAINS, OUTLETS AND DRAIN TILE			Visual
1908	POLYETHYLENE (PE) PIPE	47.1		C
1909	POLYVINYL CHLORIDE (PVC) PIPE	47.2		C
1910	POLYPROPYLENE PIPE	47.3		C
1911	STEEL REINFORCED POLYETHYLENE PIPE			A
15-19001	FIBERGLASS PIPES AND FITTINGS		YES	G
2001	PORTLAND CEMENT AND BLENDED HYDRAULIC CEMENT	5.1		Manufacturer's
2002	HYDRATED LIME			
	HYDRATED LIME			D
	PEBBLE QUICKLIME			Purity Cert.
2003	PEBBLE QUICKLIME			D
2004	FLY ASH FOR USE IN CONCRETE	7.2		Manufacturer's
2005	FLY ASH FOR STABILIZATION, MODIFICATION, AND COLD RECYCLE ASPHALT MATERIAL	7.1		C
2006	SILICA FUME	5.7		C
2007	SLAG CEMENT FOR USE IN CONCRETE AND MORTARS	5.2		C
2008	BLENDED SUPPLEMENTARY CEMENTITIOUS MATERIALS FOR USE IN CONCRETE			Manufacturer's
15-20003	RAPID HARDENING HYDRAULIC CEMENT	5.9		Manufacturer’s
2101	TOPSOIL			Visual
2102	PLANTS			Manufacturer's
2103	SEEDS			See 2103
2104	SODS			Visual
2105	SOIL COMPOST			Test Results
2106	NITROGEN FIXING BACTERIA			Visual
2107	AGRICULTURAL LIMESTONE			See 2107
2108	FERTILIZERS			See 2108
2109	PEAT MOSS			Visual
2110	MULCH			
	EXCELSIOR			Test Results
	STRAW OR HAY			See 2110
	WOOD CELLULOSE FIBER			C & Visual
	ALL OTHER TYPES			Visual
2111	MULCH TACKING SLURRY			D
2112	WEED CONTROL FABRIC			Visual
2113	EROSION CONTROL MATERIALS	34	YES	F
2114	TEMPORARY SEDIMENT BARRIERS		YES	G

TABLE 2601-1: REFERENCE CHART FOR MATERIAL RELATED SPECIFICATIONS (cont.)				
2015 SECTION	**TITLE**	**PQL LIST #**	**BLANKET CERT (YES/--)**	**CERT TYPE**
2201	RETROREFLECTIVE SHEETING			
	PERMANENT	20.1		See 2201
	TEMPORARY TRAFFIC CONTROL	20.2		
2202	IMAGE SYSTEMS FOR RETROREFLECTIVE SHEETING	14		C
2203	ROLL-UP SIGNS	20.5		C (on sheeting)
2204	CENTER MOUNT REFLECTORS			See 2204
2205	FLEXIBLE DELINEATOR POSTS AND ANCHORING DEVICES	19.4	YES	F
2206	RAISED PAVEMENT MARKERS		YES	G
2207	COLD PLASTIC PAVEMENT MARKING MATERIAL			
	LONG LINE	19.3		Test Results
	SYMBOLS		YES	F
2208	PATTERNED COLD PLASTIC PAVEMENT MARKING MATERIAL			
	LONG LINE	19.5		Test Results
	SYMBOLS		YES	F
2209	HIGH DURABILITY PAVEMENT MARKING MATERIAL			
	LONG LINE	19.8		Test Results
	SYMBOLS		YES	F
	INTERSECTION GRADE (LING LINE)	19.14		Test Results
	INTERSECTION GRADE (SYMBOLS)		YES	F
2210	TEMPORARY PAVEMENT MARKING TAPE		YES	G + Field Perf.
2211	THERMOPLASTIC PAVEMENT MARKING MATERIAL			
	THERMOPLASTIC MATERIAL	19.6	YES	F
	GLASS BEADS FOR DROP-ON APPLICATION			D + Test Results
	BINDER-SEALER (if specified)			Field Perf.
2212	PREFORMED THERMOPLASTIC PAVEMENT MARKING MATERIAL			
	THERMOPLASTIC MATERIAL	19.9	YES	F
	GLASS BEADS FOR DROP-ON APPLICATION			D + Test Results
	INTERSECTION GRADE	19.14	YES	F
2213	SPRAYED THERMOPLASTIC PAVEMENT MARKING MATERIAL			
	THERMOPLASTIC MATERIAL	19.10	YES	F
	GLASS BEADS FOR DROP-ON APPLICATION			D + Test Results
	BINDER-SEALER (if specified)			Field Perf.
2214	EPOXY PAVEMENT MARKING MATERIAL			
	EPOXY MATERIAL	19.11	YES	F
	GLASS BEADS FOR DROP-ON APPLICATION			D + Test Results
2215	PAVEMENT MARKING PAINT			
	PAINT		YES	G
	GLASS BEADS		YES	D + Test Results
2216	MULTI-COMPONENT LIQUID PAVEMENT MARKING MATERIAL			
	MULTI-COMPONENT LIQUID MATERIAL	19.13	YES	F
	GLASS BEADS FOR DROP-ON APPLICATION			D + Test Results
	INTERSECTION GRADE	19.14	YES	F

TABLE 2601-1: REFERENCE CHART FOR MATERIAL RELATED SPECIFICATIONS (cont.)				
2015 SECTION	**TITLE**	**PQL LIST #**	**BLANKET CERT (YES/--)**	**CERT TYPE**
15-22010	INTEGRATED MULTI-POLYMER PAVEMENT MARKING MATERIAL			
	MULTI-POLYMER MATERIAL	19.15	YES	F
	GLASS BEADS FOR DROP-ON APPLICATION			D + Test Results
	INTERSECTION GRADE	19.14	YES	F
2301	WOOD POSTS	45		See 2301
2302	WOOD FENCE POSTS			See 2302
2303	FIELD HANDLING AND PRESERVATIVE TREATMENT OF WOOD PRODUCTS			A
2401	WATER FOR USE WITH CEMENT			See 2401
2402	WATER FOR MISC USES			See 2402

2601.3 TEST METHODS

Not applicable.

2601.4 PREQUALIFICATION

Not applicable.

2601.5 BASIS OF ACCEPTANCE

When certifications are incorporated into a material or product specification, acceptance will be based on the following:

a. All applicable requirements are complied with. This includes the requirements of this section as well as the requirements of specifications unique to the product or material.

b. The final disposition of any product or material will be completed at the final destination as the result of inspection for the quality of workmanship and the delivery condition.

NOTE: See example cover sheet at the end of this specification.

04-23-21 C&M (RAB)
Sept-21 Letting

Date:

Submitted by: (include name, address, phone number, email address)
(Note, as per the specification, although the Contractor is responsible to submit certifications, the party submitting them is responsible for the contents of this certification packet.)

Kansas Department of Transportation
Materials Certifications
2300 Van Buren
Topeka, Kansas

Project Number:

Contract Number:

Line Number: **Item Code:**

Contractor Name:

ID Markings on Shipment:

Additional Information:

This is to certify that the following items furnished by our firm for use on the reference project meet or exceed the requirements of section of the edition of the Kansas Department of Transportation Standard Specification.

or

This is to certify that the following items furnished by our firm for use on the reference project meet or exceed the requirements of special provision of the edition of the Kansas Department of Transportation Standard Specification.

Quantity	Description	Heat/Lot	Manufacturer

Total quantity if applicable

SECTION 1801

INORGANIC ZINC PRIMER FOR STRUCTURAL STEEL

1801.1 DESCRIPTION

This specification covers inorganic zinc primer for use on structural steel.

1801.2 REQUIREMENTS

a. General.

(1) The coating is either a single component or multi-component type that cures without the use of a separate curing solution. It must be well ground, free of caking, skins, gelation and excessive settling with a shelf life for each component of no less than 12 months. Formulate the paint with a tint that provides distinct color contrast with the blast cleaned metal surfaces and the finish coat. The VOC content of the coating must comply with the EPA Federal Register 40 CFR, Part 59, Subpart D, Table 1for industrial maintenance coatings.

(2) The manufacturer is responsible for the formulation. Once established, the formulation may not be changed without prior notification to and approval of the KDOT.

b. Pigment. Use a finely divided zinc powder as the pigment. Zinc dust must comply with ASTM D 520, Type II and contain no toxic heavy metals.

c. Vehicle Component. Use a liquid component consisting of partially hydrolyzed silicate with appropriate extenders and solvents.

d. Mixed Paint.

(1) Zinc in the dried film, % by weight ..... 75 minimum

(2) Cyclic Corrosion/UV Exposure Test, 15 cycles (one cycle = 2 weeks; one week of UV exposure and one week in the Cyclic Corrosion Tester.)

(a) Scribe Corrosion ..... 7 minimum

(b) Unscribed Area ..... 9 minimum

e. Packaging. Package the inorganic zinc primer such that when mixed according to the manufacturers instructions, a complete container of each component is utilized.

1801.3 TEST METHODS

a. Zinc in the Dried Film.

(1) Single Component Primer

Pigment ..... ASTM D 2371

Total Solids of the Whole Paint, Non-Volatile Zinc Oxide ..... ASTM D 2369

Calculations:

ZnO x 0.8034 = Total Zinc

(% Pigment x Total Zinc)/Total Solids = Zinc in Dried Film

(2) Multi-Component Primer

Total Solids of Liquid Portion, Non-Volatile Zinc Oxide ..... ASTM D 2369

The manufacturer will provide percent pigment by the mix ratio.

Calculations:

ZnO x 0.8034 = Total Zinc

(100 - %Pigment)(Non-volatile) + %Pigment = Total Solids

(%Pigment x Total Zinc)/Total Solids = Zinc in Dried Film

b. Cyclic Corrosion/UV Exposure ..... ASTM D 5894 and KTMR-30

(1) Scribe Corrosion ..... ASTM D 1654

(2) Unscribed Area ..... ASTM D 1654

1801.4 PREQUALIFICATION

a. Prequalification of the inorganic zinc primer is required. Manufacturers desiring prequalification should submit a 1 pint sample of each component to the Engineer of Tests. Manufacturers will be notified when testing is completed. The Bureau of Construction and Materials will maintain a list of prequalified materials.

b. 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) or another state DOT. 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.

c. All liquid components will be fingerprinted using infrared spectroscopy for use in screening future verification samples to ensure that materials submitted for use are of an identical formulation as originally approved.

1801.5 BASIS OF ACCEPTANCE

Prequalification as specified in **subsection 1801.4**.
Receipt and approval of a Type C certification as specified in **DIVISION 2600**.
Visual observation of performance on the project.

SECTION 1802

ORGANIC ZINC PRIMER FOR STRUCTURAL STEEL

1802.1 DESCRIPTION

This specification covers organic zinc primer for use on structural steel.

1802.2 REQUIREMENTS

a. General.

(1) The coating is either a single component or multi-component type that cures without the use of a separate curing solution. It must be well ground, free of caking, skins, gelation and excessive settling with a shelf life for each component of no less than 12 months. Formulate the paint with a tint that provides distinct color contrast with the blast cleaned metal surfaces and the finish coat. The VOC content of the coating must comply with the EPA Federal Register 40 CFR, Part 59, Subpart D, Table 1for industrial maintenance coatings.

(2) The manufacturer is responsible for the formulation. Once established, the formulation may not be changed without prior notification to and approval of the KDOT.

b. Pigment. Use a finely divided zinc powder as the pigment. Pigments must contain no toxic heavy metals.

c. Mixed Paint.

(1) Zinc in the dried film, % by weight ..... 77 minimum

(2) Cyclic Corrosion/UV Exposure Test, 15 cycles (one cycle = 2 weeks; one week of UV exposure and one week in the Cyclic Corrosion Tester.)

(a) Scribe Corrosion 7minimum

(b) Unscribed Area 9minimum

d. Packaging. Package the organic zinc primer such that when mixed according to the manufacturer's instructions, a complete container of each component is utilized.

1802.3 TEST METHODS

a. Zinc in the Dried Film.

(1) Single Component Primer

Pigment ..... ASTM D 2371

Total Solids of the Whole Paint, Non-Volatile Zinc Oxide ..... ASTM D 2369

Calculations:

ZnO x 0.8034 = Total Zinc

(% Pigment x Total Zinc)/Total Solids = Zinc in Dried Film

(2) Multi-Component Primer

Total Solids of Liquid Portion, Non-Volatile Zinc Oxide ..... ASTM D 2369

The manufacturer will provide percent pigment by the mix ratio.

Calculations:

ZnO x 0.8034 = Total Zinc

(100 - % Pigment)(Non-volatile) + % Pigment = Total Solids

(% Pigment x Total Zinc)/Total Solids = Zinc in Dried Film

b. Cyclic Corrosion/UV Exposure. ..... ASTM D 5894 and KTMR-30

(1) Scribe Corrosion ..... ASTM D 1654

(2) Unscribed Area ..... ASTM D 1654

1802.4 PREQUALIFICATION

a. Prequalification of the organic zinc primer is required. Manufacturers desiring prequalification should submit a 1 pint sample of each component to the Engineer of Tests. Manufacturers will be notified when testing is completed. A list of prequalified materials will be maintained by the Bureau of Construction and Materials.

b. 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) or another state DOT. 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.

c. All liquid components will be "fingerprinted" using infrared spectroscopy for use in screening future verification samples to ensure that materials submitted for use are of an identical formulation as originally approved.

1802.5 BASIS OF ACCEPTANCE

Prequalification as specified in **subsection 1802.4.**
Receipt and approval of a Type C certification as specified in **DIVISION 2600**.
Visual observation of performance on the project.

SECTION 1806

WATER-BORNE ACRYLIC FINISH COAT

1806.1 DESCRIPTION

This specification covers water-borne acrylic finish coat intended for use with organic and inorganic zinc primers and epoxy mastic primer on structural steel.

1806.2 REQUIREMENTS

a. General.

(1) The coating is a single component, water-borne acrylic formulated to display compatibility with and adhesion to the cured organic and inorganic zinc primers, acrylics and epoxy mastic primers. It is used as a protective color finish coat. The pigment must be finely ground, and the mixed paint must not be caked, gelled, skinned nor exhibit hard settling in the container. The coating cures to a tough, semi-gloss, abrasion resistant surface. The shelf life of this paint is no less than 24 months. The VOC content of the coating must comply with the EPA Federal Register 40 CFR, Part 59, Subpart D, Table 1for industrial maintenance coatings.

(2) The manufacturer is responsible for the formulation. Once established, the formulation may not be changed without prior notification to and approval of the KDOT.

b. Pigment. Use titanium dioxide and color retentive tinting pigments and selected extender pigments.

c. Paint.

(1) Total Solids, % by weight ..... 45 minimum

(2) Cyclic Corrosion/UV Exposure Test, 15 cycles (one cycle = 2 weeks; one week of UV exposure and one week in the Cyclic Corrosion Tester.)

(a) Scribe Corrosion ..... 7 minimum

(b) Unscribed Area ..... 9 minimum

1806.3 TEST METHODS

a. Total Solids ..... ASTM D 1644, except that the procedure is modified to a dry time of 72 hours at 100°F rather than 3 hours at 221ºF.

b. Cyclic Corrosion /UV Exposure ..... ASTM D 5894 and KTMR-30

(1) Scribe Corrosion ..... ASTM D 1654.

(2) Unscribed Area ..... ASTM D 1654.

1806.4 PREQUALIFICATION

a. Prequalification of the water-borne acrylic finish coat is required. Manufacturers desiring prequalification should submit a 1 pint sample to the Engineer of Tests. Manufacturers will be notified of results when testing is completed. A list of prequalified materials will be maintained by the Bureau of Construction and Materials.

b. 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) or another state DOT. 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.

c. All liquid components will be fingerprinted using infrared spectroscopy for use in screening future verification samples to verify that materials submitted for use are of an identical formulation as originally approved.

1806.5 BASIS OF ACCEPTANCE

Prequalification as specified in **subsection 1806.4**.

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

Visual observation of performance on the project.

SECTION 2204

CENTER MOUNT REFLECTORS

2204.1 DESCRIPTION

This specification covers plastic center mount reflectors.

2204.2 REQUIREMENTS

a. General. Provide reflectors that are plastic reflector discs with a mounting hole in the center, and a nominal diameter of 3 inches. Provide the reflectors in 3 colors; white, amber and red. Provide amber and red reflectors that comply with the limits set by the Highway Yellow and Red Color Tolerance Charts of the U. S. Department of Transportation.

b. Construction and Materials.

(1) Plastic Reflector Unit. Provide reflectors that consist of 2 circular pieces of plastic, hermetically sealed together at the edges and at the center mounting hole. Provide units with an air space between the two sealed pieces and permanently sealed against dust, water and vapor.

(a) Front (Lens). Provide reflectors whose front piece of plastic consists of a clear and transparent acrylic plastic of the color shown in the Contract Documents. Provide reflectors whose outer surface of the front piece is smooth and highly polished, free from cracks, checks, projections or indentations. This surface may contain a mounting hole and trademark identification. Legibly mold the manufacturer's name and identification into the face near the edge. Form the inner surface into numerous small reflector elements to affect "cubecorner" retroreflection.

(b) Back. Provide a plastic back that is either transparent or opaque, but sealed to the front to form an airtight seal in order to protect the reflector elements.

(2) Housing and Mounting. Provide reflectors with a center mounting hole with a grommet that uses either of two designs. A Type I grommet is formed as part of the backing and projects through the reflector and beyond the lens by about 1/32 in. The backing, including the grommet, is hermetically sealed to the lens. A Type II grommet is formed from nonferrous metal and applied after the reflector is assembled and sealed. Provide either type of grommet with an inside diameter of 0.19 – 0.24 inches, inclusive.

c. Performance. Provide reflectors with the following minimum Reflective Intensity per reflector at a divergence angle of 0.2º:

TABLE 2204-1: MINIMUM REFLECTIVE INTENSITY

Angle of Incidence	Reflective Intensity (cd/ft-c)		
	White	Amber	Red
-4º	90	54	25
20º	45	27	12

2204.3 TEST METHODS

Center mount reflectors will be sampled by a representative of KDOT and submitted to the Engineer of Tests. A sample consists of 18 reflectors per each 5000 reflectors for each color. For each additional 5000, or fraction thereof, add 4 reflectors to the sample size. Lightly wash the reflectors with a mild detergent and dry with a clean cloth before testing as follows:

a. Coefficient of Luminous Intensity per Reflector. Determine the reflective intensity of center mount reflectors according to ASTM E 809. Measure each reflector individually at a divergence angle of 0.2º and incidence angles of -4º and 20º. Average readings taken at every 45º rotation.

b. Heat Test. After measuring the reflective intensity per reflector, place a minimum of 9 reflectors face up in a horizontal position on the central rack of a forced draft oven maintained between 148º and 150°F for 4 hours.

Remove the reflectors from the oven and place them face up on a table to cool. Allow the reflectors to return to room temperature, wipe the reflectors with a clean chamois and measure the reflective intensity of each reflector as described in **subsection 2204.3a**. The reflective intensity of each reflector must not be less than the minimum values shown in **subsection 2204.2c**.

c. Leakage Test. After measuring the reflective intensity per reflector, immerse a minimum of 9 reflectors face down in water in a vacuum desiccator under a coarse bronze or stainless steel screen to keep them beneath the water. Cover the desiccator and slowly reduce the air pressure in the desiccator until a vacuum of 20 inches of mercury is obtained. Hold this reduced pressure for 5 minutes and then allow air to slowly enter the desiccator until the pressure is equal to atmospheric pressure. Allow the reflectors to remain under water for an additional 5 minutes. Remove the reflectors from the water and wipe off the excess water with a clean cloth. Measure the reflective intensity of each reflector as described in **subsection 2204.3a**. Any reflectors that have filled with any water will be marked as failures and the reflective intensity will not be measured. The reflective intensity of each reflector must not be less than the minimum values shown in **subsection 2204.2c**.

d. Resampling. When only 1 reflector per sample fails **subsection 2204.3a.**, **b.** or **c.**, the entire sample will be accepted for use on KDOT projects. A failure of 2 reflectors per sample will require resampling and testing. A failure of 3 or more will cause the entire sample to be rejected without resampling.

2204.4 PREQUALIFICATION

None required.

2204.5 BASIS OF ACCEPTANCE

Each lot or batch will be sampled by a representative of KDOT and tested as necessary to verify compliance with the specification.

Satisfactory performance in the field.

5.9.26 SAMPLING ASPHALT MATERIALS (Kansas Test Method KT-26)

1. SCOPE

This test method covers the procedures for sampling asphalt, cutback, and emulsifier materials, at the point of production and at destination. **KT-26** reflects testing procedures found in **AASHTO R 66**.

2. REFERENCED DOCUMENTS

2.1. AASHTO R 66; Standard Practice for Sampling Asphalt Materials

3. APPARATUS

3.1. Sampling containers used shall conform to the following:

3.1.1. Performance Graded Asphalt Binders: Friction lid 1 qt (1 L) cans.

3.1.2. Cutback Asphalts: Friction lid 1 qt (1 L) cans.

3.1.3. Emulsified Asphalts and Asphalt Rejuvenating Agents: Wide mouth plastic 1 gal (4 L) containers. The containers must be free of solder flux or other material that might contaminate the sample.

3.2. Holding device for lowering the sampling containers through the entire depth of material to be sampled.

4. SAMPLING PROCEDURES

4.1. Samples received at the M & R Center that are over 14 days old will be discarded without testing.

4.2. Asphalt materials are currently accepted on the basis of a producer's certification of compliance for each shipment. To verify the certifications and to evaluate the producer's product control procedures, State representatives obtain random samples from shipping containers consigned to State work. Therefore, these sampling methods cover procedures for obtaining samples from shipping containers only.

4.3. Safety precautions are mandatory at all times when sampling and handling asphaltic materials.

4.3.1. Do not hold the container in the hand during sampling by the valve method. Tongs or some other device must be used to hold the container while the sample is being taken.

4.3.2. The sampler must stand above and away from sampling valves as far as practical and on the windward side.

4.3.3. The sample must be taken slowly to prevent splashing of the hot material.

4.3.4. Place the container on a firm, level surface to prevent splashing, dropping or spilling the material during sealing.

4.3.5. Watch for asphalt products which have been spilled onto the loading platform of the truck or tank car. Walking on this material can be hazardous.

4.4. Thief method. (This is the preferred method for sampling).

4.4.1. Attach a new clean friction lid can to the holding device.

4.4.2. Remove the lid and slowly lower the holding device through the full depth of material being sampled. The rate at which the device is lowered should be such that the container will be filled when it reaches the bottom of the material.

4.4.3. Withdraw the device from the liquid, clean the outside of the container with dry wiping rags and transfer the contents to a clean, new container. Never use solvents or solvent saturated rags for cleaning sample containers.

4.5. Sampling Valve Method. The contents of shipping containers equipped with an approved submerged sampling valve may be sampled by this method.

4.5.1. Drain off and discard not less than 5 gal (20 L) of the material before taking the sample.

4.5.2. When practical, fill the sample container by holding it under the valve discharge pipe. If this procedure is not practical, permit the material to flow into a large, clean container and transfer a portion into a friction lid can for transportation and storage.

4.6. Repeat steps in **Sections 4.4** or **4.5** of this test method for a second sample.

4.5.4. Carefully clean the outside of the sample containers with dry wiping rags. Never use solvents or solvent saturated rags for this purpose.

5. SHIPPING INFORMATION

5.1. Label each quart of material with at least the following:

5.1.1. Grade of material.

5.1.2. Producer.

5.1.3. Producer's location.

5.1.4. Sample ID number.

5.1.5. Pack and ship two (2) one quart samples to the Materials and Research Center, 2300 SW Van Buren, Topeka, KS 66611.

5.9.28 SAMPLING BRIDGE PAINT (Kansas Test Method KT-28)

1. SCOPE

This method covers the procedures for sampling paint materials in warehoused and in the field.

2. APPARTUS

2.1. Supply of clean, one pint and one quart friction top containers (metal or plastic) for single component paint, paste and pigment.

2.2. Wide-mouth screw-top plastic containers or plastic –lined cans for the liquid components of multi-component inorganic zinc paints. Never place samples of these materials in unlined metal screw or friction top cans.

2.3. Stirring paddles.

2.4. Mechanical agitator (for mixing paint in storage tanks).

3. SAMPLING PROCEDURES

3.1. Mixed paints.

3.1.1. Paint sampled from storage tanks at the factory must be thoroughly mixed by mechanical agitation just prior to taking the sample. If sample is taken from a spigot or valve at the bottom of the tank, draw off 2 gallons or more and return to the tank before collecting the sample.

3.1.2. Sample paint packaged in 1 gallon cans by selecting one can at random from the lot and submitting the unopened can to the laboratory for test.

3.1.3. Sample paint packaged in containers larger than one gallon in accordance with the following procedure:

3.1.3.1. Mix the paint thoroughly prior to taking the sample. Stirring with a paddle or a mechanical stirring device, or with a mechanical shaker will not ensure complete mixing and the removal of all pigment from the sides and bottom of the container. Therefore, the following operations must be performed to properly mix the paint before a sample is taken:

3.1.3.1.1. Secure an empty, clean, dry, metal container the same size as the paint container.

3.1.3.1.2. Pour the liquid portion into the second container.

3.1.3.1.3. Work the semi-solid material remaining in the first container with a paddle until it becomes a smooth homogeneous paste. Loosen any pigment or cake that adheres to the sides of the container. Continue mixing and stirring the paste until it is smooth and free from lumps.

3.1.3.1.4. Add the liquid from the second container to the paste in small increments, mixing well after each addition.

3.1.3.1.5. After the liquid has been added and mixed into the paste, pour in small increments, mixing well after each addition.

3.1.3.1.6. Leave the paint in the second container and examine the inside of the original container. If caked or settled pigment is present, work it into a smooth paste and mix with the paint in the second can. If the paint is so badly caked or livered" that it cannot be properly mixed by the above procedure, reject it without sampling.

3.1.3.2. After proper mixing, take two separate one quart samples in clean, friction top cans for submission to the laboratory.

3.2. Two-Component Paints.

3.2.1. Sample paint packaged in one gallon containers by selecting one package at random from the lot and submitting the unopened package to the laboratory. This will enable the laboratory to mix the vehicle and pigment or paste in the exact ratio recommended by the manufacturer.

3.2.2. Sample two-component paints in packages larger than one gallon by taking a one quart sample of the vehicle and one pint of paste or pigment. If the vehicle component contains pigment, mix the material thoroughly in accordance with **Section 3.1.3** of this manual of this method before taking the sample.

3.3. Dry pigment: Sample dry pigment by opening the package and taking at random, sufficient material to fill a one pint can. Do not mix the pigment before taking the sample.

3.4. Liquid paint materials: (Varnish, thinners, clear vehicles, drying oils, solvents and similar materials).

3.4.1. Prior to taking samples of liquid paint materials, check for the presence of water and suspended matter or sediment and take necessary steps to ensure that the sample will contain a representative portion of the materials.

3.4.2. Before taking samples of liquids containing a high proportion of volatile materials, rinse out the sample container several times with a portion of the liquid to be sampled.

3.4.3. Screw-top containers having tight fitting lids with seals that are not soluble in the liquid being sampled should be used for shipping the samples to the laboratory.

3.5. Field sampling;

3.5.1. Samples of paint and paint materials are to be taken, in accordance with the instructions set forth above, from the manufacturer's sealed containers immediately after they are opened on the project. Samples of two component paints should include a sample of the pigment or paste and a sample of the vehicle. Samples should never be taken after the paint has been thinned, from a paint pot of the spraying system or from a spray nozzle as such sample are not representative of the paint as it was originally tested and accepted.

4. SHIPPING INFORMATION

4.1. Label all samples of vehicle, pigment or paste with at least the following:

4.1.1. Producer.

4.1.2. Product name or number.

4.1.3. Producer's recommended mix ratio, if available.

4.1.4. Sample ID number.

4.1.5. Pack and ship samples of vehicle, paste or pigment to the Materials and Research Center, 2300 SW Van Buren, Topeka, KS 66611.

5.9.30 FIELD SAMPLING OF THERMOPLASTIC PAVEMENT MARKING MATERIAL
(Kansas Test Method KT-30)

1. SCOPE

This procedure outlines the proper method for sampling Thermoplastic Pavement Marking Materials on the roadway.

2. APPARATUS

2.1. Metal gallon-can lids.

2.2. Protective barrier to keep material from overflowing the lid on to the roadway. Two possible suggestions are cardboard and sheet metal.

2.3. Core sample bag (or equivalent) to keep material clean for shipping.

3. SAMPLING PROCEDURES

3.1. Avoid obtaining a sample immediately on startup of the striping contractor. The sampler should wait until the unit has been operating for one hour prior to obtaining the sample.

3.2. Obtain a representative sample from individual lots of material when possible. If the contractor is using multiple lots in the melter from a single manufacturer, then verify proper certifications are available for the lots and secure a sample from that blended quantity. **Mixing multiple manufacturers' lots is not permitted.**

3.3. Once **Section 3.1 and 3.2** of this test method have been satisfied, place a metal gallon can lid under the spray nozzle, so the lid lip is up (see **Figure 1**), with a protective barrier beneath the lid.

3.4. Do not permit any drop-on beads to come in contact with the representative sample during the sampling process or while it is cooling. It is necessary to determine the amount of beads in the thermoplastic mix itself. Drop-on beads will provide a false value for the quantity of beads in the thermoplastic.

3.5. While the material is still at the proper temperature to be in a molten state, have the contractor dispense enough thermoplastic from the melter to fill the lid completely to the top of the lip. Permit the thermoplastic to cool (see **Figure 2**). Place the sample in a location out of the way so as not to allow it to get dirty. **Do not write on the sample or allow it to get fingerprints, splatter from other samples, dirt, debris, etc.**

3.6. Once the thermoplastic has cooled, and keeping the sample clean and free from dirt, finger prints, and other foreign matter, break excess material off the outer edge of the lid and place in a plastic bag to keep clean for shipping to MRC (see **Figure 3 and 4**). Shipped sample should be clean, smooth, and filled to the top lip of the gallon can lid.

4. SHIPPING INFORMATION

4.1. Label each sample with at least the following (write on the bag or a separate piece of paper, NOT on the sample itself):

4.1.1. Manufacturer.

4.1.2. Lot number.

4.1.3. Sample ID.

4.2. Pack and ship samples to the Materials and Research Center, 2300 SW Van Buren, Topeka, KS 66611.

FIGURE 1

Metal can lid with protective material underneath handle

FIGURE 2

Lid after thermoplastic has cooled to

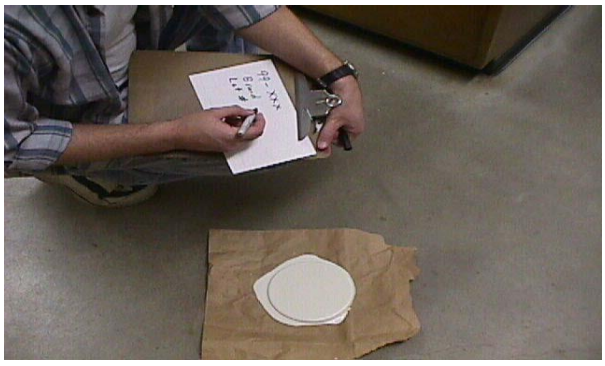
FIGURE 3

Removal of excess thermoplastic from lid

FIGURE 4

Sample placed in bag for shipment

FIGURE 5



Shipping documentation

5.9.66 SAMPLING EPOXY PAVEMENT MARKING/MULTI-COMPONENT PAVEMENT MARKING (Kansas Test Method KT-66)

1. SCOPE

This method covers the procedures for field sampling of epoxy pavement marking and multi-component pavement marking.

2. **APPARATUS**

2.1. Supply of clean, 1/2 pint wide mouth friction top metal cans.

2.2 Duct or packing tape.

2.3. Hammer.

3. SAMPLING PROCEDURES

3.1. Have the contractor load the application equipment and allow the truck to apply the epoxy or multi-component pavement marking for approximately one-half hour prior to collecting samples.

3.2. Coordinate the sampling site with the contractor.

3.3. Using a clean 1/2 pint wide mouth metal can, take a sample for the resin component prior to mixing. Fill the can completely.

3.4. Remove the can. Tap the lid securely on with a hammer. Seal the lid with duct or packing tape.

3.5. Using a second clean 1/2 pint wide mouth metal can, take a sample for the hardener component prior to mixing. Fill the can completely.

3.6. Remove the can. Tap the lid securely on with a hammer. Seal the lid with duct or packing tape.

3.7. DO NOT MIX THE RESIN AND THE HARDENER SAMPLES.

4. SHIPPING INFORMATION

4.1. Label each 1/2 pint containers with at least the following:

4.1.1. Epoxy or Multi-Component producer (Epoxy or Multi-Component Brand Name).

4.1.2. Epoxy or Multi-Component Manufacturer Product ID.

4.1.3. Epoxy resin or Multi-Component batch number or Epoxy hardener batch number.

4.1.4. Project number.

4.1.5. Sample ID Number. Each component must have a different Sample ID Number.

4.1.6. Pack and ship samples of the resin component and the hardener component to the Materials & Research Center, 2300 SW Van Buren, Topeka, KS 66611.

5.9.68 SAMPLING TRAFFIC PAINT (Kansas Test Method KT-68)

1. SCOPE

This method covers the procedures for sampling traffic paint in the field.

2. APPARATUS

2.1. Supply of clean, one quart friction top plastic-lined metal cans.

2.2 Hammer.

3. SAMPLING PROCEDURES

3.1. Have the contractor load the application equipment and agitate. Allow the truck to apply paint for approximately one-half hour.

3.2. Coordinating with the contractor, fill completely two clean one quart plastic-lined metal cans from the paint tank drain. Always fill the can completely as air in the can could affect the sample.

3.3. Remove the can. Tap the lid securely on with a hammer.

3.4. Take a second sample following the above procedures **Sections 3.2** and **3.3** of this test method**.**

4. SHIPPING INFORMATION

4.1. Label each quart of paint with at least the following:

4.1.1. Paint Producer.

4.1.2. Paint batch number.

4.1.3. Sample ID number.

4.1.4. Pack and ship two (2)- one quart samples to the Materials and Research Center, 2300 SW Van Buren, Topeka, KS 66611.