



Bureau of Materials Materials Approval Procedures

MAP Number: **133-15**

Effective Date: April 1, 2015

Approved By: Eileen Sheehy

PROCEDURE FOR APPROVAL OF ASPHALT BINDERS, EMULSIFIED ASPHALTS, AND POLYMER MODIFIED TACK COATS.

PURPOSE:

To establish a procedure to approve sources of Asphalt Binders, Cutback Asphalts, Emulsified Asphalts, and Polymer Modified Tack Coats for addition to the NJDOT Bureau of Material's Qualified Products List (QPL).

REFERENCES:

New Jersey Department of Transportation Standard Specifications for Road and Bridge Construction Sections 902.01.01 through 902.01.04, AASHTO M 332, AASHTO R-26, AASHTO M 140, AASHTO M 208, and AASHTO M 320.

PROCEDURE:

A. Initial Request for Producer's Approval

The producer shall request in writing for the approval of the product. Include the following information the written request:

1. The name, address, and contact information for the producer as well as directions and map to the source.
2. The producer shall submit a Quality Control (QC) plan for the product. The QC plan must include such items as a list of all storage tanks and where they are located, the size of the lot, type of asphalt binder, and whether inline blending is being used. Review the requirements listed in AASHTO R-26 when developing the QC plan. The QC plan must conform to AASHTO R-26. An example QC Plan is available upon request.
3. If the QC plan is deemed acceptable, the New Jersey Dept. of Trans. will sample three randomly selected lots to determine compliance with AASHTO M 332, AASHTO M 320, AASHTO M 140, or AASHTO M 208 and NJDOT Standard Specifications for Road and Bridge Construction 2007 Sections 902.01.01 thru 902.01.04.
4. All three of the lots must pass. If any one of the three lots fails, three new lots must be tested.
5. Once the Producer has submitted a satisfactory QC plan and three consecutive lots have passed, the producer will receive an approval letter from NJDOT. The producer will be listed on the Department's Qualified Products List.

Mail the request for approval to the following:

Mailing Address (USPS):

Manager, Bureau of Materials (Thiokol Bldg. 4)
New Jersey Department of Transportation
P.O. Box 600
Trenton, NJ 08625-0600

Street Address (UPS, FedEx, etc.):

Manager, Bureau of Materials (Thiokol Bldg. 4)
New Jersey Department of Transportation
930 Lower Ferry Road
West Trenton, NJ 08628

B. Annual Renewal of Producer

The Producer must submit a QC plan for approval each year by April 1st. Any revisions or changes must be included in the new QC plan. The producer's product(s) will remain on the QPL if the QC plan is approved.

C. Identify Modifiers and Additives

The supplier must identify all modifiers and additives that they use in each lot they produce on the Bill of Lading and Certificate of Analysis. See the attached list of non-bituminous components identified by the Northeast Asphalt User/Producer Group (NEAUPG). The Supplier must send a Certificate of Analysis to the Bureau of Materials for each lot within 30 days of the lot's completion.

DISQUALIFICATION:

The ME may remove the producer from the QPL for non-conformance with the standard specifications or for a documented history of poor field performance.

The ME will periodically obtain and test samples from the source in an on-going quality assurance program. After two consecutive failures of the same product for any specified test, the ME will notify the producer of possible removal from the QPL for non-compliance. After allowing a minimum of two weeks for the producer to correct the quality problems, the ME will obtain an additional sample for testing. If this sample fails, the ME will disqualify the producer and remove the material from the QPL.

Additionally, the Bureau of Materials must be notified in writing of any change to the quality control plan. Failure to notify the Bureau of Materials of changes will result in disqualification. The Supplier must send a Certificate of Analysis to the Bureau of Materials for each lot within 30 days of the lots completion.

REQUALIFICATION:

The requalification process is identical to the initial approval process with the addition that any product which has been disqualified and removed from the QPL will be considered for reevaluation only after acceptable written evidence has been shown to the ME that the problem causing the disqualification has been resolved and material complying with NJDOT Standard Specifications is being produced.

Additionally, the Bureau of Materials may require the producer to requalify the product for any of the following reasons:

1. If the Department's standard specifications change, the ME may require requalification to ensure that the product meets the new specification.
2. If the producer builds and/or purchases a new plant or moves the existing plant to a new location.
3. If the producer is purchased or merges with another company and/or changes its name.

Attachment

NEAUPG

List of Non-Bituminous Components

At the NEAUPG Steering Committee meeting on March 17, 2015, the committee agreed to require that all non-bituminous components added to a binder must be identified in accordance with the attached list. Reporting shall be as follows:

- Any non-bituminous components added prior to the point where samples are taken for certification purposes must appear on the Certificate of Analysis (COA).
- Any non-bituminous components added after the certification sample point but prior to transport must appear on the Bill of Lading.
- Any non-bituminous components added at the HMA plant must appear on the HMA producer's documentation.
- The reporting of all non-bituminous components shall only disclose their presence and shall **not** disclose their dosage as this is considered proprietary.
- Any "special handling" requirements shall continue to remain on the Bill of Lading.
- The attached list shall **not** be considered as all inclusive but provides some examples of the different types of non-bituminous components.
- The list shall also **not** be considered as any type of an approved list of additives – please consult with each individual agency to insure their acceptance for the additives use.

This list was developed and approved by the binder committee and subsequently presented to the steering committee for their approval.

1. Modified Bituminous Products

Products which are mixtures of bitumen with non-bituminous components can be classified as modified asphalt. Modification methods to improve properties of asphalt for desired end use characteristics have been utilized for about as long as asphalt has been used. Modification techniques are primarily dependent on the desired performance of the final product and product specifications.

1.1. Chemical Modification

- Adhesion Promoters (e.g. fatty amine derivatives, imidazolines)
- Phosphorous Compounds (e.g. phosphorous pentoxide, polyphosphoric acid)
- Elemental Sulphur
- Maleic Anhydride
- Warm Mix systems (e.g. Utilizing surfactants or chemical lubricating additives)
- Oxidized Asphalt
- Oxidants (e.g. manganese salts)
- Antioxidants (e.g. lead compounds, carbon, calcium salts)
- Other (e.g. silicone)

Chemical modifiers are generally utilized at levels below 1 %m, as are many of the warm mix systems based on additives blended into the bitumen.

1.2. Polymer and Rubber modification

- Natural Polymers (e.g. Lignin)
- Thermoplastics/plastomers (e.g. polypropylene, polyethylene, ethylene vinyl acetate, ethylene acrylate copolymer, polyvinyl chloride, ethylene propylene, reactive terpolymer, polyolefin)
- Elastomers (e.g. natural rubber, synthetic rubber, polybutadiene, butyl rubber, polychloroprene latex)
- Thermoplastic Elastomers (e.g. styrenic block copolymers, polyolefin blends, thermoplastic polyurethane, styrene isoprene styrene)
- Ground Tire Rubber (e.g. reclaimed scrap tires)

Polymer additives generally range from 1% to typical levels of 3%, to as much as 7% for some applications. Crumb rubber (Ground Tire Rubber) can range from as little as 5 %m to as much as 20% by weight of the total binder, depending on the properties being targeted.

1.3. Fillers and extending agents

- Waxes (e.g. synthetic such as Fischer-Tropsch, natural such as Montan and amide derivatives such as Ethylene Bis-stearamide)
- Bio-binders (e.g. vegetable based components, animal by-products and waste)

- Warm Mix systems (e.g. synthetic and natural waxes)
- Products from re-refining of lubricating oils (e.g. Re-refined Engine Oil Bottoms (REOB))
- Petroleum Distillates (e.g. naphtha, kerosene, gas oil, aromatic oil, naphthenic oil, paraffinic oil)
- Other non-bituminous additives (organic or inorganic)

1.4. Communication of Additives and Modifiers

Manufacturers of bitumen products should comply with hazard classification and communication regulations for the product and, as appropriate, identify any hazardous additives used in the product, in addition to any hazards or risks arising from the non-bituminous component(s). If appropriate, any risk transferred to the bitumen product should be identified. The non-bitumen blend components identified above are added at varying dosage levels depending on the additive.

All non-bituminous components added to the binder prior to the sampling point for binder certification shall be included on the asphalt binder certificate of analysis identifying their presence but shall not include actual dosage. All non-bituminous components added after the certification sampling point and prior to transport shall be included on the bill of lading. All non-bituminous components added to the binder at the HMA plant shall be identified on the mix plant documentation.

The list above is not all inclusive – any non-bituminous component including those not specifically listed above must be identified appropriately. The list above shall not be considered as an approved product list – check with each individual agency to determine which components are allowed for use.