



****THIS IS A NEW IM. – PLEASE READ CAREFULLY.****

RECYCLED ASPHALT SHINGLE SUPPLIERS – NEW

DEFINITIONS

- Deleterious Material: Paper, plastics, wood, metal, and any other material not part of the asphalt shingle.
- End User: One who incorporates processed recycled asphalt shingles into an asphalt mixture.
- RAS: Pre-consumer or post-consumer shingles that have been processed, sized, and ready for incorporation into an asphalt mixture.
- Source: A Supplier’s operational site
- Supplier: One who collects, processes, or distributes pre-consumer or post-consumer shingles for incorporation into an asphalt mixture.

SCOPE

This IM describes requirements for the collection, sorting, sizing, processing, and stockpile management of raw and recycled asphalt shingles (RAS). Secure Iowa DOT approval for each operational site (source) before furnishing RAS to the End User. Approved Suppliers and sources are listed in [Appendix A](#) of this IM.

APPLICATION FOR APPROVAL

Submit applications for approval in writing, to the DOT Office of Materials in Ames. Suppliers within the state of Iowa who are not the End User of the RAS material shall apply for a permit with the Iowa DNR Land Quality Bureau for each source. Submit proof of securing a sanitary disposal project permit or documentation from the IDNR that a permit is not needed. End Users may not collect or process raw shingle material at portable facilities. In addition to the requirements stated in this IM, all Suppliers (both in-state and out-of-state) shall comply with local, state, and federal environmental regulations, and follow IDNR asbestos testing protocols. Once the Office of Materials receives notification that the required permits have been secured, the appropriate District Materials Office may recommend the approval when assured that the Supplier has met all DOT qualifications. The Office of Materials will issue a letter of approval. This letter shall serve as a Supplier’s approval until Appendix A can be updated.

Suppliers seeking source approvals may submit a written application to the District Materials Engineer (DME) in each district of operation. A sample application is provided in [Appendix B](#).

CERTIFICATION REQUIREMENTS

Certified RAS shall meet the following requirements:

- A. Pre-processing
 - 1. Remove all visible materials not part of the shingle, including but not limited to

extra wood, paper, metals, and plastics prior to processing. Unroll or remove shingles found in rolls prior to processing.

2. Follow IDNR protocols for identifying, removing, and reporting Asbestos Containing Materials (ACM).
- B. Processing Operation
Process the raw shingles by ambient grinding or granulating methods such that the following gradation is met:

Sieve Size	Minimum % Passing (by weight)
½ - inch	100
– inch	98
#4	90

Separately process pre-consumer and post-consumer raw material.

Ensure the RAS material does not contain more than 1.5% deleterious content by weight. Notify the Engineer 48 hours prior to processing.

- C. Storage
Separately construct RAS stockpiles based on similarities in source (pre-consumer or post-consumer) and place them on a base with adequate drainage to prevent contamination. Assign each stockpile a unique identification number. Document the size of each stockpile by weight. Notify the Engineer 48 hours prior to adding to or moving an existing stockpile. Properly remove discarded non-shingle material from the site.

- D. Stockpile Uniformity
Take proper measures to ensure a uniform stockpile.

Approval to deliver certified material may be withdrawn for inadequate compliance with these requirements.

QUALITY CONTROL PROGRAM

The Supplier has the overall responsibility of certifying that material being placed in a certified stockpile is produced under and conforms to a Quality Control (QC) Program. The Iowa DOT, through its monitoring activities (sampling/testing, visual observation, etc.), will verify the continued compliance to the program. Any certified stockpile must meet the designated quality before shipment. Intentional shipment of untested or out of specification material will constitute grounds for immediate rejection of material and placement of the source and/or the Supplier on conditional status. Develop a QC program in writing that contains the following aspects:

1. Knowledge of Current Specifications

Maintain up-to-date knowledge of the specifications that apply to RAS products. Maintain copies of the current Standard Specifications, all applicable Supplemental Specifications and all applicable Instructional Memorandums (IMs) at the testing lab. Be aware of any

Special Provisions, which change current RAS specifications. The Supplier shall be responsible for providing these up-to-date publications to their QC representative.

2. RAS Production Log

Maintain a production log when operating under the QC program. This production log shall contain detailed information on test samples that include date, time, stockpile identification number, QC representative information, quantity, gradation results, deleterious content results, moisture content, pass/fail results, corrective actions, etc. Keep the log at a designated location and readily available to the Iowa DOT representative for review.

3. Visual Inspection

Visually inspect the shingle collection, sorting, sizing, and processing operations on a frequent basis. Visual inspection can be defined as observing the processing area, as well as the condition of the RAS in the flow stream or stockpiles. Observe the overall operation to detect oversized and deleterious materials that are detrimental to the quality of the product. Visual inspection does not replace testing, but enhances the quality control program.

4. Production

A. Testing and Reporting

Perform and report testing for deleterious content, gradation, and moisture content of the RAS material. The Engineer may obtain a split sample to verify QC results.

Testing for RAS Certification

The Supplier shall be responsible for performing and reporting the following tests for each sample. The testing laboratory shall be approved by the Engineer.

1. Deleterious Content

Determine the percentage of deleterious material by weight of a 150 gram sample. Calculate deleterious content as follows:

$$P = \frac{C}{W} \times 100\%$$

Where P = percentage of deleterious material
C = Mass of deleterious material, g
W = Mass of test sample, g

No sample shall exceed 1.5% deleterious content.

2. RAS Particle Distribution

Determine the RAS gradation in accordance with [Materials IM 302](#). At least 90% of the samples shall meet gradation requirements described above for the material to be certified (i.e. if 2 out of 3 samples meet requirements, the material would only be 67% compliant and thus would be rejected).

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3. Determine the percentage of moisture by weight within 48 hours of delivery in accordance with [Materials IM 381](#). Results shall be logged and provided to the End User.

Testing for Mix Design

Additional information on the RAS material is required before it may be used in an asphalt mixture. The Supplier may request the additional testing on behalf of the End User to be performed by the Central Materials Laboratory in accordance with DS-09038 Appendix A.

B. Sampling

A minimum of 3 random samples or 1 per 1000 tons, whichever is greater, of each stockpile shall be tested during its construction. Collect a minimum of 20 pounds of RAS per sample. Obtain samples for moisture content within 48 hours of delivery from a cross section of the pile. A certified Level I Aggregate Technician shall obtain the samples.

Test results shall be known before delivery to the End User. All test results will be available at a designated location within 24 hours of sampling when the material is being placed into a certified stockpile.

5. Delivery

Ensure delivery of RAS material from proper stockpiles by verifying the stockpile identification number and associated test results match.

6. Quality Control Structure

In order to ensure quality as a priority, the source QC personnel shall have a line of communication directly to their management, as well as their production operation.

MONITORING ACTIVITIES

Monitoring activities of Suppliers, including inspection of test reports and shipping records will be conducted by the appropriate District Materials Engineer. The Engineer may obtain samples from the source or End User's stockpile to verify compliance to quality standards. Noncompliant verification results may require re-sampling and re-testing.

All District Materials Office monitoring activities shall be reported to the Central Materials Office.

DOCUMENTATION

Documentation shall be required to establish a chain of possession of raw shingle and processed RAS materials. Make all forms available to the Iowa DOT and Iowa DNR upon request.

A. Transactions of raw, unprocessed shingles

Keep on file a signed Form 820010a (See [Appendix C](#)) for each accepted load of unprocessed raw shingles.

B. Transactions of processed RAS

Keep on file a signed Form 820010b (See [Appendix D](#)) for each load of RAS delivered to the End User to certify compliance with DOT specifications. Suppliers who are also End Users should complete this form. Copies of this form shall be furnished to the Engineer and End User at the time of delivery.

C. RAS Stockpile Inventory

The owner of the stockpile shall document accumulation, consumption, and current testing results for each RAS stockpile in Form 820009ras (See DS-09038 [Appendix B](#)). A copy of this form shall be sent to the Engineer within 48 hours each time stockpile testing is completed. Before January 1st of each year, the owner shall update report form 82009ras on the status of each RAS stockpile.

ACCEPTANCE

Properly identified and certified materials may be incorporated into a project. Final acceptance will be based on the certifications and the results of tests on samples secured in accordance with [IM 204](#) or in accordance with special requirements when specified. Verification samples with noncompliant test results may require additional tests. Continued approval of a source will be based on the following:

- A. Ability to consistently supply material meeting specifications
- B. Maintenance of required records
- C. Proper documentation of shipments
- D. Proper handling and storage of the material