



INDIANA DEPARTMENT OF TRANSPORTATION

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Eric Holcomb, Governor
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TESTING MEMORANDUM 19-01

SUBJECT: INDOT HMA Aggregate Bulk Specific Gravity List and Procedures

TO: District Testing Staff Approved Mix Design Labs

FROM: Matthew P. Beeson, Director *MPB*
Division of Materials and Tests

The bulk specific gravity of aggregates to be used in all mix designs will be determined by INDOT and provided to the mix design labs. INDOT will determine the bulk specific gravity of fine aggregates by AASHTO T 84 and coarse aggregates by AASHTO T 85. A list of aggregate Gsb values along with instructions for use will be distributed annually, and addendums will be distributed as needed.

Virgin aggregate bulk specific gravity values supplied with mix design submittals shall be values shown on the INDOT Gsb list. The procedure to determine which bulk specific value to use is as follows:

- If the exact aggregate product is shown on the list, use that value
- If the exact aggregate product is not shown on the list, and values are shown for 8s, 11s, and sand, determine which value to use based on the fineness modulus of the aggregate in accordance with AASHTO T 27:
 - Fineness Modulus ≥ 6.00 – use average value for 8s, or value for 8s from corresponding bench for stone sources if available
 - $3.50 < \text{Fineness Modulus} < 6.00$ – use average value for 11s, or value for 11s from corresponding bench for stone sources if available
 - Fineness Modulus ≤ 3.50 – use average value for sand, or value for sand from corresponding bench for stone sources if available
- If only one size of coarse aggregate (8s or 11s) is shown on the list, use that value for all coarse aggregates
- If only one value is shown for a source or bench for stone sources, use that value for all aggregates from that source or bench



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- When using SF, ACBF, GBF, or Wet Bottom Boiler Slag: The value shown on the list may be used. However, upon request, INDOT will obtain a sample from a stockpile at the Producer's location and determine a bulk specific gravity value. The Producer may use this value for mix designs utilizing that particular stockpile only.
- If no values are shown for a source, please contact the District Testing Engineer or Office of Materials Management

- Bulk specific gravity value of RAP shall be 2.640. However, if a Producer has a RAP stockpile with a bulk specific gravity value greater than or equal to **2.660** or less than **2.620**, upon request, INDOT will obtain a sample from a RAP stockpile at the Producer's location and determine a bulk specific gravity value in accordance with ITM 584. The Producer may use this value for mix designs utilizing that particular RAP stockpile only. Requests for sampling shall be directed to the District Testing Engineer and Asphalt Engineer.
- Bulk specific gravity of RAS material shall be 2.500
- Bulk specific gravity of baghouse fines shall be 2.800
- Bulk specific gravity of mineral fillers shall be 2.800
- Reference designs may be submitted with bulk specific gravities determined by the above procedure. Any affected properties, including VMA, VFA, FAA, and dust/effective binder ratio shall be recalculated based on the new Gsb values. If any recalculated property is outside specification limits, the design cannot be referenced and a new design must be submitted.
 - If a reference design had an established Gsb per ITM 597, the established Gsb will be automatically populated by DMF Entry on the DMF being considered for acceptance. If there is disagreement that it appropriately reflects the DMF being considered for acceptance, this should be noted in the submittal and further discussion will need to take place
- INDOT will conduct aggregate bulk specific gravity testing on plant produced stockpiles at the request of the design lab. The request shall include T84, T85 and gradation data. If it is determined that published INDOT Gsb list is not representative of that specific stockpile, the Department determined stockpile Gsb value may be used on the DMF.

If you have any additional questions, please contact Nathan Awwad at 317-522-9661, or nawwad@indot.in.gov.