Most Commonly Observed Errors for AASHTO T 308 & ASTM D 6307, Asphalt Content By Ignition Furnace

COMMON ERRORS	PROBLEMS CAUSED BY ERROR	SOLUTIONS AND SUGGESTIONS
Correction factors for each mix design are calculated and given to the laboratory by the supplier of the material or a specifying agency.	Since each furnace is unique, correction factors vary from furnace to furnace. Applying a correction factor that is determined for a different ignition oven furnace may lead to further inaccuracies in the test results.	Whenever a laboratory begins testing on a new mix design, raw materials should be obtained from the supplier so that unique correction factors can be obtained for each furnace that will be used during testing.
The correction factor used for a specific mix design is determined using another furnace in the laboratory other than the one currently used to test the mix design.	Even two seemingly identical furnaces that operate in the same location may behave differently. Correction factors can be different for each furnace and are not related to the manufacturer or model number. Applying a correction factor that is determined for a different ignition oven furnace may lead to further inaccuracies.	To avoid having to determine correction factors for each mix design tested for *every* ignition furnace in the laboratory, assign certain furnaces to be used for certain mix designs only. A list of specific mix designs can be posted next to their assigned furnace and used as reference when testing. This can cut down on the time needed to determine correction factors while ensuring that the test results are still accurate.
Correction factors are not determined.	The asphalt content correction factor for a particular combination of furnace and job mix formula may result in the percentage of asphalt reported to be off by as much as 1%. In addition, some aggregates may exhibit extensive breakdown during the ignition procedure, significantly changing gradation results.	Inaccuracies in test results can be avoided by correctly applying correction factors according to AASHTO or ASTM procedures.
While correction factor(s) are determined, they are not correctly applied to the test results.	The loss of fine material in the ventilation system during ignition or the breakdown in aggregate particle size can cause inaccuracies in the asphalt content reported and the gradation of the aggregate sample. It is important not only to determine correction factors correctly, but also to make sure that the correction factors are applied.	Many ignition furnaces have a built-in computer system where the asphalt correction factor is entered manually before testing. These types of furnaces will automatically account for the correction factor when reporting results. For furnaces that do not automatically take the asphalt correction factor into account, a specific location on data and calculation sheets for the correction factor will help technicians to remember to use this data in their calculations.
Correction Factors are Determined from Plant-Mixed Samples	One of the primary purposes of the ignition furnace test is to verify the asphalt content of mixtures produced at a mix plant. The asphalt content of plant-mixed test specimens is not accurate enough to use for correction factor determinations.	Correction factors should always be determined by use of freshly prepared laboratory-mixed samples to ensure accuracy of the asphalt content used in the determination.

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Most Commonly Observed Errors for AASHTO T308 & ASTM D6307, Asphalt Content By Ignition Furnace *(Continued)*

COMMON ERRORS	PROBLEMS CAUSED BY ERROR	SOLUTIONS AND SUGGESTIONS
The same correction factor is used for all mix designs tested.	Variation in the parent material, gradation, and particle size of aggregates used will affect the accuracy of the ignition furnace differently. Unique correction factors must be determined for each mix design tested. Even the slightest modification to a mix design (asphalt content, gradation, source, etc) should trigger the determination of new correction factors.	Whenever a laboratory begins testing a new mix design, raw materials should be obtained from the supplier so that unique correction factors can be obtained. It is important to make sure that the supplier or other involved party alerts the laboratory of any changes in mix design so that the correction factors can be adjusted accordingly.
The "blank" aggregate correction factor sample is not sieved. Sieve analysis data is assumed to be the same at the job mix formula percentages (Aggregate correction factors required by AASHTO T308 Only).	Sieve shakers and sieve analysis procedures may cause some breakdown of aggregate materials. If the "blank" aggregate sample is not sieved, the breakdown of the material from the ignition process cannot be isolated from the breakdown caused by sieving.	Both the "blank" aggregate sample and the two asphalt correction factor samples (the burned samples) must be sieved with the same sieve set and the gradation results compared. An aggregate correction should be applied to the sieve analysis results if the average difference is greater than 5% for the No. 8 sieve and larger, greater than 3% for the No. 200 sieve to No. 8 sieve, and greater than 0.5% for material passing the No. 200 sieve.
New aggregate correction factors are not determined when there is a change in aggregate type or source for a particular mix design.	Aggregate can vary greatly by source, and it is possible that several different types of aggregate may mined out of the same quarry. Each source and type of aggregate can behave differently in the ignition oven furnace. If a new aggregate correction factor is not determined for any change in mix ingredients, further inaccuracies in the gradation test results may occur.	Regular communication between material suppliers and the laboratory is very important. Be sure ask the suppliers to alert the laboratory to any changes in aggregate source or type. If changes in the aggregate type or source occur, a new correction factor should be determined.
The correction factors are calculated incorrectly or the wrong procedure is used to determine the correction factor.	AASHTO and ASTM procedures and calculations for correction factor determinations vary from each other. Applying correction factors determined using the wrong procedure for the version of the test performed may result in nonconformance to the test procedure.	The material specification should indicate whether AASHTO or ASTM procedures should be used for testing. Likewise, the correction factor(s) determined for a specific mix should be determined using the procedure specified. One way to avoid confusion is to create separate data sheets for AASHTO and ASTM correction factor determinations. It is important to communicate clearly with laboratory staff regarding the procedure that should be used to determine the correction factor(s) for each mix design to be tested.
The temperature or burn profile of the furnace is not adjusted if the asphalt correction factor is over 1.0%	It is important to limit the asphalt correction factor to a relatively small percentage to avoid inaccuracies when reporting the test results.	If the correction factor determined is greater than 1.0%, the temperature of convection-type furnaces should be lowered to 482±5°C. For direct IR irradiation-type furnaces, the burn profile may need to be changed to OPTION 1.