

US EPA Wood Fired Appliance Test Report Deficiency Items

SUBPART AAA - Wood Heaters and Pellet Heaters

The following list describes issues discovered during the report review process, along with their corresponding severity levels. Please note that this list is not exhaustive and additional requirements may apply based on the Wood Heater Rule and applicable testing methods.

Version 2, 8/28/2023

Test Type	Irregularity	Type of Irregularity	Applicable Method Reference	Applicable Rule
All Appliances	1st hour particulate matter (PM) must be measured, calculated and reported for every test run. Results must be in a summary table in the report. Additionally, the 1st hour PM value must not be reported as a negative value. Zero values must be discussed and justified.	Major: Data cannot be produced. Minor: Data not found originally in the test report but produced upon request.		40 CFR 60.534(d)
All Appliances	The dilution tunnel used for sampling must be built per American Society for Testing and Materials (ASTM) E2515 specifications, and the diagram of that system in the test report must reflect that the tunnel meets the method design requirements outlined in ASTM E2515 section 6.1.6.	Major	ASTM E2515 (6.1.6) (Figure 4)	
All Appliances	For testing not being performed inside the ISO 17025 accredited laboratory, a listing of all equipment not owned by the test laboratory and used for testing, as well as calibration documentation, must be included in the test report. Additionally, the test lab must verify and provide attestation that the dilution tunnel meets ASTM E2515 section 6.1.6 design requirements, for example a photo of the appliance on the test stand with the dilution tunnel pictured.	Major: Data cannot be produced. Minor: Data not found originally in the test report but produced upon request.	ASTM E2515 (6.1.6) (Figure 3 and 4)	
All Appliances	Leak test information including leakage rate and any meter system volume adjustments must be documented for any filter change during the test, and for system leak check following the test run.	Moderate/Major	ASTM E2515 (9.6.5)	
All Appliances	Required proportional sampling means that filters must be changed to maintain proportional sampling should a filter plug. This is not a reason to abort the test. Filters that plug during the first hour need to be replaced and again swapped out at the 1 hr mark to measure 1st hr emissions.	Major	ASTM E2515 (9.8.1)	
All Appliances	Negative probe weight may not be greater than 5% of particulate catch weight (excluding probe) and must be marked as an invalid run.	Major	ASTM E2515 (10.2.2.2)	
All Appliances	Negative probe values or negative room air values are not handled appropriately. Proper procedures need to be followed per the method.	Minor	ASTM E2515 (10.2.2.1), (10.2.2.2), (10.2.2.3)	
All Appliances	For filters or filter assemblies with negative tare values, present the data in the test report with the negative mass included in the sample and the negative mass counted as zero. Calculate and report the particulate matter emissions both ways.	Minor		
All Appliances	Ambient background filter information was not found in the report, or it was not done at all. This must be in the report.	Minor	ASTM E2515 (9.5.2), (9.8.1), (9.8.5), (11.4.2)	
All Appliances	Stack pressure (Ps) – refer to EPA Method 2 for correct definition of absolute stack pressure. When calculating Ps you need to determine the local atmospheric pressure (in corresponding units, millimeters or inches of Hg) and add the duct static pressure to determine Ps. (Typically this will result in a value below atmospheric pressure, as the duct is under negative pressure).	Moderate/Minor	ASTM E2515 (11.2)	
All Appliances	Dual train comparison (precision) must be calculated, and both comparisons (% and g/kg) must be included in the report. The criteria for acceptance is either/or, but both must be presented in the report.	Major: Data cannot be produced. Major: Both comparisons are outside criteria. Minor: Data not found originally in the test report but produced upon request.	ASTM E2515 (11.7)	
All Appliances	The owner's manual must include what is required per the rule. Typically, this consists of improper fuel warning, proper air controls, and proper operation of low burn, among other requirements. All owner manual requirements must be in the report per the rule.	Minor		40 CFR 60.536(g)(1) 40 CFR 60.536(g)(2) 40 CFR 60.536(g)(3) 40 CFR 60.536(g)(3)(i) 40 CFR 60.536(g)(3)(ii) 40 CFR 60.536(g)(3)(iii) 40 CFR 60.536(g)(3)(iv) 40 CFR 60.536(g)(3)(v) 40 CFR 60.536(g)(3)(vi) 40 CFR 60.536(g)(3)(vii) and (viii)

All Appliances	The report must contain all required data for all test runs, partial, incomplete, invalidated, or complete.	Minor		40 CFR 60.533(b)(5)
All Appliances	The test report must contain reported values for Carbon Monoxide (CO) and efficiency measurement per test run, for all test run data submitted. Test runs that are incomplete due to broken sampling pieces, loss of power to the lab, or other extenuating circumstances must include the collected data for reporting these values and an explanation of why the calculations could not be performed to report those values.	Minor		40 CFR 60.534 (e)
All Appliances	Failure to document lowest burn rate. This must be included in the test report.	Major: Data cannot be produced. Minor: Data not found originally in the test report but produced upon request.		40 CFR 60.533(b)(5)
All Appliances	Test report must include complete summary tables, individual and overall emissions, efficiencies and heat outputs.	Minor		40 CFR 60.533(b)(5)
All Appliances	Preliminary tests were conducted to "ensure that the unit reaches the limit of the standard," but no data was provided in the report. All data must be included in the report.	Minor		40 CFR 60.534(a)(1)
All Appliances	Appropriateness, validity, and anomalies discussion must be included in the report. All anomalies must be discussed in the report and explained per test run.	Minor		40 CFR 60.533(b)(5)
All Appliances	Lab technician notes, raw data sheets, calculations, test results, and calibration sheets for all calibrated equipment (in English) must be included in the report. All of the items referenced in the rule must be included in the report.	Minor		40 CFR 60.533(b)(5)
All Appliances	Manufacturer's instructions must not override the requirements of the rule or the test method. Manufacturer's instructions must be included in report. Additionally, the manufacturer's instructions need to be consistent with the owner's manual, and the testing must be consistent with the instructions provided to the lab and the owner's manual. If no instructions were provided to the test lab, the report must state that there were no manufacturer's instructions provided to the test lab and the source of testing parameters used for certification testing (e.g. owner's manual)	Major: Data cannot be produced. Minor: Data not found originally in the test report but produced upon request.		40 CFR 60.534(h) 40 CFR 60.536(g)(1)
All Appliances	CO must be reported to two significant figures (0.0 has no significant figures).	Minor	CSA B415.1-10 Section 6.3	40 CFR 60.534(e)
Catalytic Appliances	The manufacturer's instructions provided to the test lab and test lab operations of the catalyst bypass during	Major: Data cannot be produced.		40 CFR 60.532(h) 40 CFR 60.536(g)(1)
	testing must agree with the bypass instructions described in the owner's manual. The manufacturer must provide evidence (schematic or statement) in the non-CBI test report that the wood heater is equipped with a temperature sensor that can monitor combustor gas stream temperatures within or immediately downstream [within 2.54 centimeters (1 inch)] of the catalytic combustor surface.	Minor: Data not found originally in the test report but produced upon request.		
ASTM E2515	Calibration frequency for the volume metering system, temperature sensors (thermocouples), barometer, and the analytical balance must be adhered to. Calibration documentation must be included in the report for all relevant equipment. Calibration documentation must be current for the time period that the test was conducted and must show that "as found" conditions were within	Major: Data cannot be produced. Minor: Data not found originally in the test report but produced upon request.	ASTM E2515 (8.1), (8.2), (8.3), (8.4)	
Method 28R/ASTM E2780	Complete conditioning data with all applicable sections referenced must be included in the test report. Medium burn rate, fuel moisture, timing, flue gas temperature, and catalytic combustor exit temperature (if catalyst-equipped) must be specified and reported.	Minor	M 28R (2.1.4) ASTM E2780 (9.1.3), (9.1.4), (9.1.5), (9.1.6)	40 CFR 60.533(b)(5)
Method 28R/ASTM E2780	Overall firebox calculations and dimensions as well as usable firebox dimensions and calculations that result in the listed firebox volume used for certification testing, must be calculated and shown in the report. These must not conflict with diagrams, drawings, or firebox descriptions elsewhere in the report or user manual.	Minor	ASTM E2780 (9.3)	40 CFR 60.533(b)(3) 40 CFR 60.533(b)(5)
Method 28R/ASTM E2780	Fuel moisture content must be per the method.	Major	ASTM E2780 (9.4.1.2.(1))	
	Failure to document the lowest burn rate. This must be included in the test report.	Major: Data cannot be produced.		

		Minor: Data not found originally in the test report but produced upon request.		
Method 28R/ASTM E2780			M28 (8.1.1) via M28R (2.1.1)	40 CFR 60.537(a)(2)
Method 28R/ASTM E2780	Fuel type must be specified in the report—Douglas fir for this method.	Minor	ASTM E2780 (9.4.1.1)	40 CFR 60.533(b)(5)
Method 28R/ASTM E2780	Test fuel density and test fuel crib loading density must fall within the range specified in the test method.	Major	ASTM E2780 (9.4.1.3), (9.4.1.5)	
Method 28R/ASTM E2780	For square or rectangular fireboxes, the test fuel length targets 5/6ths of the defined firebox length (section 3.2.8) and may be shorter only to meet the test fuel crib loading density range requirements. Fireboxes that are not square or rectangular (i.e., trapezoidal) are best tested with a crib design that matches the geometry of the firebox and includes one or more firebox lengths (section 3.2.8) to determine the appropriate crib geometry.	Major	ASTM E2780 (9.4.1.6)	
Method 28R/ASTM E2780	Calibration frequency for the wood moisture meter, platform scale, test fuel scale, and temperature sensors (thermocouples) must be adhered to. Calibration documentation must be included in the report for all relevant equipment. Calibration documentation must be current for the time period that the test was conducted and must show that “as found” conditions were within specification.	Major: Data cannot be produced. Minor: Data not found originally in the test report but produced upon request.	ASTM E2780 (8.1), (8.2), (8.3), (8.4)	
ASTM E3053	Cordwood fuel shape not per the method. Fuel shape must be consistent with the method definition.	Major	ASTM E3053 (3.2.3)	
ASTM E3053	Test fuel length used must be per the method. Usually, the manual gives the max log length, but the length used for testing is significantly smaller. Test fuel length must be in accordance with the manufacturer’s instructions and shall be a nominal length of +/- 1 inch. 1 nominal fuel length per appliance is allowed. ASTM 3053 allows a single nominal fuel length.	Major	ASTM E3053 (8.4.2.8)	
ASTM E3053	Type of cord wood test fuel burned must meet fuel density requirements.	Major	ASTM E3053 (8.4.2.1)	
ASTM E3053	Cord wood test fuel species must be documented in the test report.	Minor	ASTM E3053 (8.4.2.1)	
ASTM E3053	Complete conditioning data with all applicable sections referenced must be included in the test report. Combustion air setting, time, weight and moisture content for fuel added must be reported, flue gas temperature, catalytic combustor exit temperature (if catalyst-equipped) must be specified and reported.	Major: Data cannot be produced. Minor: Data not found originally in the test report but produced upon request.	ASTM E3053 (8.1.4), (8.1.5), (8.1.6), (8.1.7)	
ASTM E3053	Failure to document the lowest burn rate. This needs to be included in the test report.	Major: Data cannot be produced. Minor: Data not found originally in the test report but produced upon request.	ASTM E3053 (8.7.1)	40 CFR 60.537(a)(2)
ASTM E3053	Overall firebox calculations and dimensions as well as usable firebox dimensions and calculations that result in the listed firebox volume used for certification testing, must be calculated and shown in the report. These must not conflict with diagrams, drawings, or firebox descriptions elsewhere in the report or user manual.	Minor	ASTM E3053 (3.2.5), (3.2.6), (3.2.7), (8.3)	40 CFR 60.533(b)(3) 40 CFR 60.533(b)(5)
ASTM E3053	Filter media must be Teflon coated glass fiber, and all filters must be weighed in pairs.	Major	EPA ALT-125 & EPA ALT-127	
ASTM E3053	Clear and representative (close-up) photos must be in the report (not photos from across the room or illegible signs).	Minor	ASTM E3053 (8.2.7), (8.5.9.2), (8.5.9.3), (8.5.9.5), (8.6.8), (8.6.9.1) among other references in the method	40 CFR 60.533(b)(5)
ASTM E3053	The medium burn rate must be greater than the low burn rate. Documentation must be provided in the report for the primary air settings used.	Major	ASTM E3053 (8.7.1), (8.7.1.1), (8.8.1), (8.8.1.1)	40 CFR 60.537(a)(2)
ASTM E3053	Calibration frequency for the wood moisture meter, platform scale, test fuel scale, and temperature sensors (thermocouples) must be adhered to.	Major: Data cannot be produced.	ASTM E3053 (7.1), (7.2), (7.3), (7.4)	
ASTM E3053	Calibration documentation must be included in the report for all relevant equipment, it must be current for the time period that the test was conducted and must show that “as found” conditions were within specification.	Minor: Data not found originally in the test report but produced upon request.		
ASTM E3053	For the high fire test, the average heater surface temperature and the flue-gas temperature at the start of the test run shall be less than 10 °F (5°C) above ambient.	Major	ASTM E3053 (8.5), (8.5.1)	
	Complete conditioning data with all applicable sections referenced must be included in the test report. Run hours at medium burn rate,	Major: Data cannot be produced.		

	time, and weight of all fuel added and flue gas temperature.	Minor: Data not found originally in the test report but produced upon request.	ASTM E2779 (9.1.3), (9.1.4), (9.1.5)	
ASTM E2779	Report must include assay of pellet fuel analysis by certified 3rd party laboratory.	Minor		40 CFR 60.532(e)
ASTM E2779	Maximum burn rate criteria must be documented in the test report, showing that the unit was operated per manufacturers rating for maximum output (highest feed rate).	Minor	ASTM E2779 (9.4.1.1)	
ASTM E2779	Per ASTM E2779, the medium burn rate must be <50% of the maximum burn rating. Per EPA ALT-146, the Medium Burn Rate Category may be determined as the level below 50% of the span between the Maximum Burn Rate and the Low Burn Rate (a non-zero value).	Moderate/Major	ASTM E2779 (9.4.1.2) EPA ALT-146	
ASTM E2779	Verify that additional test runs use proper averaging per the test method. If 2 tests are done, then both need to be included in the average, but if 3 tests are done, then 2/3 need to be included in the average, and all of the data must be reported.	Moderate/Major	ASTM E2779 (9.4.8)	
ASTM E2779	Pre-ignition data must be included in the report.	Minor	ASTM E2779 (9.4.2)	
ASTM E2779	If another fuel is listed in the manual (e.g., corn pellets), then one test run with each alternate fuel must be conducted, and the data must be included in the test report.	Minor	ASTM E2779 (9.4.9)	40 CFR 60.532(f)(14)
ASTM E2779	Calibration frequency for the platform scale and the temperature sensors (thermocouples) must be adhered to. Calibration documentation must be included in the report for all relevant equipment. Calibration documentation must be current for the time period that the test was conducted and must show that "as found" conditions were within specification.	Major: Data cannot be produced. Minor: Data not found originally in the test report but produced upon request.	ASTM E2779 (8.1), (8.2)	

SUBPART QQQQ - Hydronic Heaters and Forced Air Furnaces

Test Type	Issue	Additional Irregularity	Applicable Method Reference	Applicable Rule Reference
All Appliances	1st hour PM must be measured, calculated and reported for every test run. Results must be in a summary table in the report. Additionally, the 1st hour PM value must not be reported as a negative value. Zero values must be discussed and justified.	Major: Data cannot be produced. Minor: Data not found originally in the test report but produced upon request.		40 CFR 60.5476(c)(6)
All Appliances	The dilution tunnel used for sampling must be built per ASTM E2515 specifications, and the diagram of that system in the test report must reflect that the tunnel meets the method design requirements outlined in ASTM E2515 section 6.1.6.	Major	ASTM E 2515 (6.1.6) (Figure 4)	
All Appliances	For testing not being performed inside the ISO 17025 accredited laboratory, a listing of all equipment not owned by the test laboratory and used for testing, as well as calibration documentation, must be included in the test report. Additionally, the test lab must verify and provide attestation that the dilution tunnel meets ASTM E2515 section 6.1.6 design requirements and a photo of the appliance on the test stand with the dilution tunnel must be included in the test report.	Major: Data cannot be produced. Minor: Data not found originally in the test report but produced upon request.	ASTM E 2515 (6.1.6) (Figure 4)	Minor
All Appliances	Leak test information, including leakage rate and any meter system volume adjustments, must be documented for any filter change during the test and for system leak check following the test run.	Major/Moderate	ASTM E2515 (9.6.5)	
All Appliances	Required proportional sampling means that filters must be changed to maintain proportional sampling should a filter plug. This is not a reason to abort the test. Filters that plug during the first hour need to be replaced and again swapped out at the 1 hr mark to measure 1st hr emissions.	Major	ASTM E2515 (9.8.1)	
All Appliances	Failure to document lowest burn rate. This must be included in the test report.	Major: Data cannot be produced. Minor: Data not found originally in the test report but produced upon request.		40 CFR 60.5475(b)(5)
All Appliances	A negative probe weight greater than 5% of particulate catch weight (excluding probe) must be marked as an invalid run.	Major	ASTM E2515 (10.2.2.2)	
All Appliances	Negative probe values or negative room air values must be handled appropriately, per procedures in the method.	Minor	ASTM E2515 (10.2.2.1), (10.2.2.2), (10.2.2.3)	

All Appliances	For filters or filter assemblies with negative tare values, present the data in the test report with the negative mass included in the sample and the negative mass counted as zero. Calculate and report the particulate matter emissions both ways.	Minor		
All Appliances	Ambient background filter information must be in the report. Ambient background sampling is required, per the method.	Minor	ASTM E2515 (9.5.2), (9.8.1), (9.8.5), (11.4.2)	
All Appliances	Stack pressure (Ps) – refer to EPA Method 2 for correct definition of absolute stack pressure. When calculating Ps you need to determine the local atmospheric pressure (in corresponding units, millimeters or inches of Hg) and add the duct static pressure to determine Ps. (Typically this will result in a value below atmospheric pressure, as the duct is under negative pressure).	Moderate/Minor		
All Appliances	Dual train comparison (precision) must be calculated, and both comparisons (% and g/kg) must be included in the report. The criteria for acceptance is either/or, but both must be presented in the report.	Major: Data cannot be produced. Major: Both comparisons are outside criteria. Minor: Data not found originally in the test report but produced upon request.	ASTM E2515 (11.7)	
All Appliances	Owner's manual must include what is required per the rule. Typically, the improper fuel warning is missing, proper air controls and proper operation of lowest burn rate, among other requirements. All of the owner manual requirements must be in the report per the rule.	Minor		40 CFR 60.5478(f)(1) 40 CFR 60.5478(f)(2) 40 CFR 60.5478(f)(3) 40 CFR 60.5478(f)(3)(i) 40 CFR 60.5478(f)(3)(iii) 40 CFR 60.5478(f)(3)(iv) 40 CFR 60.5478(f)(3)(v) 40 CFR 60.5478(f)(3)(vi) 40 CFR 60.5478(f)(3)(vii) and (viii)
All Appliances	The report must contain a discussion of each test run and its appropriateness and validity, as well as a discussion of anomalies observed. Additionally, whether all burn rate categories were achieved and discussion on any test runs not completed.	Minor		40 CFR 60.5475(b)(5)
All Appliances	The report must contain all required data for all test runs, partial, incomplete, invalidated, or complete.	Minor		40 CFR 60.5475(b)(5)
All Appliances	Each output rate category must be below the PM emission limit for the applicable appliance type. No weighted averaging is needed for compliance with this subpart.	Major		40 CFR 60.5474(b)(2) 40 CFR 60.5474(b)(3) 40 CFR 60.5474(b)(6)
All Appliances	Preliminary tests that are conducted once the heater is in the lab generate data that must be included in the report.	Minor		40 CFR 60.5475(b)(5)
All Appliances	The test report must include complete summary tables, individual and overall emissions, efficiencies, and heat outputs.	Minor		40 CFR 60.5475(b)(5)
All Appliances	Lab technician notes, raw data sheets, calculations, test results, and calibration sheets for all calibrated equipment must be included in the report. All items referenced in the rule must be included in the report.	Major: Data cannot be produced. Minor: Data not found originally in the test report but produced upon request.		40 CFR 60.5475(b)(5)
All Appliances	The manufacturer's instructions must not override the requirements of the rule or the test method. Manufacturer's instructions must be included in the report. Additionally, the manufacturer's instructions need to be consistent with the owner's manual, and the testing must be consistent with the instructions provided to the lab and the owner's manual. If no instructions were provided to the test lab, the report must state that there were no manufacturer's instructions provided to the test lab and the source of testing parameters used for certification testing e.g., owner's manual).	Major: Data cannot be produced. Minor: Data not found originally in the test report but produced upon request.		40 CFR 60.6476(i) 40 CFR 60.5478(f)(1)
All Appliances	CO must be reported to two significant figures (0.0 has no significant figures).	Minor	CSA B415.1-10 Section 6.3	40 CFR 60.5476(a)
Catalytic Appliances	The manufacturer's instructions provided to the test lab and test lab operations of the catalyst bypass during testing must agree with the bypass instructions described in the owner's manual.	Major		40 CFR 60.5474(h) 40 CFR 60.5478(f)(1)

	The manufacturer must provide evidence (schematic or statement) in the non-CBI test report that the wood heater is equipped with a temperature sensor that can monitor combustor gas stream temperatures within or immediately downstream [within 2.54 centimeters (1 inch)] of the catalytic combustor surface.			
Hydronic Heaters & Forced Air Furnaces	Operation software settings for hydronic heaters for the low burn category must not change after the certification test and the testing must be conducted while operating the appliance at the lowest test setting available to any user.	Major		40 CFR 60.5479(a)(2)
EPA Method 28 WHH	When the CSA B415.1-10 efficiency is found to be lower than the overall efficiency based on load side measurements, an explanation and discussion of the reasons for this result must be provided in the test report.	Minor	Method 28WHH (13.5.5.1)	
EPA Method 28 WHH	Calibration frequency for the water temperature sensors (thermocouples), heat exchanger load side water flow meter, scales, Calibration documentation must be included in the report for all relevant equipment. Calibration documentation must be current for the time period that the test was conducted and must show that "as found" conditions were within specification.	Major: Data cannot be produced. Minor: Data not found originally in the test report but produced upon request.	Method 28WHH (10.1), (10.2.1), (10.3), (10.4), (10.5)	
EPA Method 28 WHH PTS	If the CSA B415.1-10 overall efficiency is found to be lower than the overall efficiency based on the load side measurements, the test report must include a discussion of the reasons for this result. If a test has a CSA B415.1-10 overall efficiency (SLM) that is less than 2 percentage points lower than the overall efficiency based on load side measurements, the efficiency based on load side measurements shall be considered invalid.	Major	Method 28WHH - PTS (13.6.5.1)	
EPA Method 28 WHH PTS	Calibration frequency for the water temperature sensors (thermocouples), heat exchanger load side water flow meter, scales, and flue gas analyzers must be adhered to. Calibration documentation must be included in the report for all relevant equipment. Calibration documentation must be current for the time period that the test was conducted and must show that "as found" conditions were within specification.	Major: Data cannot be produced. Minor: Data not found originally in the test report but produced upon request.	Method 28WHH - PTS (10.1), (10.2.1), (10.3), (10.4)	
ASTM E2618	Complete conditioning data with all applicable sections referenced must be included in the test report. Usually, the duration is not long enough, or the medium heat draw rate is not specified. Fuel moisture must be specified and reported also.	Major: Data cannot be produced. Minor: Data not found originally in the test report but produced upon request.	ASTM E2618 (11.1)	
ASTM E2618	Cordwood fueled appliances - Overall firebox calculations and dimensions as well as usable firebox dimensions and calculations that result in the listed firebox volume used for certification testing, must be calculated and shown in the report. These must not conflict with diagrams, drawings, or firebox descriptions elsewhere in the report or user manual.	Minor	ASTM E2618 (12.2.2)	40 CFR 60.5475(b)(3)
ASTM E2618	Fuel loading density (wet basis) must be greater than 10 lb/ft ³ and the fuel loading density must be provided in the test report.	Major: Data cannot be produced. Minor: Data not found originally in the test report but produced upon request.	ASTM E2618 (12.2.3)	
ASTM E2618	A full compliance test is only needed for wood fuels; however, other fuels listed and intended to be used in the unit as sold (corn, nut hulls, etc.) must be burned in the test lab, and particulate measurements made, and those test data submitted with the compliance test report.	Minor	ASTM E2618 (12.3.3)	
ASTM E2618	Cordwood fueled appliances - the pre-burn must meet the method specification, and that documentation must be included in the test report.	Major: Data cannot be produced. Minor: Data not found originally in the test report but produced upon request.	ASTM E2618 (12.2.6)	
ASTM E2618	Pellet fueled appliances - the pre-burn must meet the method specification, and that documentation must be included in the test report.	Major: Data cannot be produced. Minor: Data not found originally in the test report but produced upon request.	ASTM E2618 (12.3.2)	
ASTM E2618	Calibration frequency for the temperature sensors (thermocouples), water flow meter, scales, and moisture meter must be adhered to. Calibration documentation must be included in the report for all relevant equipment. Calibration documentation must be current for the time period that the test was conducted and must show that "as found" conditions were within specification.	Major: Data cannot be produced. Minor: Data not found originally in the test report but produced upon request.	ASTM E2618 (10.1), (10.2), (10.3), (10.4)	

ASTM E2618	When the CSA B415.1-10 overall efficiency (SLM) is found to be lower than the delivered efficiency, the test report must discuss the reasons for this result.	Minor	ASTM E2618 (13.4.5.1)	
CSA B415	Overall firebox calculations and dimensions, as well as usable firebox dimensions and calculations that result in the listed firebox volume used for certification testing, must be calculated and shown in the report. These must not conflict with diagrams, drawings, or firebox descriptions elsewhere in the report or user manual.	Minor	CSA B415.1-10 Section 8.2	40 CFR 60.5475(b)(3)
CSA B415	The test fuel loading density must adhere to the requirements described in CSA Method B415.1-10 section 8.3.4. The test fuel loading density must be equal to or greater than 10.0 lb/ft ³ .	Major	#REF!	
CSA B415	Preliminary tests conducted to "ensure that the unit reaches the limit of the standard," but no data was provided in the report. This data must be included in the report.	Minor		40 CFR 60.5475(b)(5)
CSA B415	Pre-burn fuel load must meet method specifications and must be documented.	Major: Data cannot be produced. Minor: Data not found originally in the test report but produced upon request.	CSA B415.1-10 Section 8.5.1	
CSA B415	For forced air furnaces with thermostatic or electronic controls, use CSA B415.1-10 section 7.2 to determine burn rate settings and operation of the appliance during the test. Must meet the requirements in ALT-134 on the EPA website and the applicable sections in CSA B415.	Major	EPA ALT-134	
CSA B415	Calibration frequency must be adhered to. Calibration documentation must be included in the report for all relevant equipment. Calibration documentation must be current for the time period that the test was conducted and must show that "as found" conditions were within specification.	Major: Data cannot be produced. Minor: Data not found originally in the test report but produced upon request.	CSA B415.1-10 Section 6.8 and Section B.8	