

Application Checklist for an Ultra-Low Emission Burner

Part A:

Application for authorisation must be made on and in accordance with the Canterbury Regional Council Application form CON301: Application for Authorisation of a Small Scale Fuel Burning Appliance.

A copy of the following documentation must be included with this application form:

	✓
Laboratory test report for emissions and efficiency	
Design drawings and detailed description of the appliance (and water booster if fitted including part identification numbers) as specified in section 8 of the AS/NZS 4013:2014 which match the specifications of the test model to the production model.	
Sales brochure if available	
Current installation and operating instructions	
Proposed authorisation label (refer CON 301 application form)	

Part B: (From Section 6 of the Canterbury Method)

Laboratory reporting

1. Information to be submitted with burner for test

In submitting a burner for test, the manufacturer shall make available to the laboratory such documents that:

	✓
Identifies the type and model of burner to be tested	
Scaled assembly drawings	
The recommended fuels and specification of the fuels to be used in the burner	
The maximum continuous heat output(s) using fuels recommended by the manufacturer	

2. Laboratory Report

The laboratory report shall include the following:

	✓
The name and address of the testing agency and the name of the person responsible for the test	
A list of the date and times for the test	
Whether the appliance being tested is a prototype or a production model	
A statement that the burner tested complies fully with the scaled assembly drawings	
Whether any variations from the Canterbury Method 1 were required and if so, details of the procedure followed.	
Photographs of the wood used for test showing extent of bark, knots and resin in the wood.	

The following data shall be included in the test report for each output setting:

	✓
The charcoal bed weight at each refuelling	
The weight of each fuel load added, in kg	
The average moisture content of the each fuel load, % wet basis	
The flue gas temperature immediately prior to each refuelling, °C	
The average flue gas temperature for each output setting, °C	
The average burn rate for each output setting, kg/hr	
Heat output measurements before and after any corrections for calorimeter room thermal mass	
The average heat output for each burn phase	
The maximum heat output for each burn phase	
All data relating to the dilution tunnel and particulate measuring train as required in AS/NZS 4013 (or other sampling parameters as appropriate)	
The total particulate emission, in grams, g/kg fuel (dry weight basis) and g/hr for each of start-up, high burn rate, low burn rate, hardwood and partially seasoned softwood phases, and for the mass weighted average of start-up, high burn rate and low burn rate phases combined, for each day of testing.	
The overall efficiency based on gross calorific value for each day of testing and for both days combined.	
The average emission factor expressed as mg/MJ of total useful heat for each day and for both days combined.	
The estimated uncertainty in emission factor measurements and the basis for the estimate	
The use of any convection fans or automatic devices fitted to the appliance or the use of any ancillary features as described in clause 4.2 of Canterbury Method 1.	
Any routine maintenance requirements for the burner	

In an attachment to the main report, the test laboratory shall provide comment on any of the following that are relevant.

	✓
The potential for tampering with components of the burner that may influence emissions, in particular whether it appears easy for an untrained person to adjust the minimum air supply or draught due to the design of the burner;	
Aspects of the burner design that have tight tolerances and may influence emissions (e.g. Narrow slots between two components which are used as primary or secondary air supply);	
The need for routine maintenance of emission reduction components of the burner, in particular cleaning of emission scrubbing devices (if fitted) or replacement of bottled gas supplies used as part of after-burner or start-up features of the burner (if fitted);	
The complexity and potential for failure or incorrect use of automatic controls; and	
Other features of the burner that influence emissions and might be subject to failure or poor incorrect use.	

Note: The Canterbury Method 1 does not require the laboratory to review the full operating instructions for the burner. However, Environment Canterbury will require the manufacturer to supply complete instructions as part of the approval process. All aspects of appliance installation and operation with relevance to emissions shall be clearly stated.

Requirements from Section 8 AS/NZS 4013:2014

Information specified in section 8 of AS/NZS 4013:2014 (to be included with the test report for the application).

An appliance submitted for test shall be provided with the following documentation.

	✓
The name and address of the manufacturer.	
A description, including the model name and design identification.	
Design plans of the appliance which shall include:	
Overall dimensions	
Firebox dimensions	
Dimensions of the airways, including the cross sectional area of restrictive inlets and outlets, and the dimensions and location of the methods of control of gas movement through the appliance.	
The total cross-sectional area of all combustion air inlets when the appliance is operating at its maximum and minimum burn rates.	
Dimensions and location of baffle systems.	
Dimensions and location of refractory and insulation materials and details of their heat capacity and thermal resistance.	
The dimensions and location of the flue gas outlet.	
The dimensions, type, fit and location of all gasket materials.	
Details of the outer shielding and coverings, including dimensions and location.	
The dimensions, location, type and manufacturer of the combustor, if the appliance is fitted with a catalytic combustor.	
The location, dimensions, cross-sectional area and gap tolerances of any bypass dampers.	
The position, type and specification of any air circulation fan.	
The position, type and specification of any water heating device.	

All dimensions shall be in millimetres and tolerances shall be stated.

Test Report

The following shall be reported:

	✓
The name and address of the testing agency and the name of the person responsible for the test.	
A chronological listing of the dates, times commenced and duration of each burn cycle used in calculating the results, together with the particulate emission factor for each burn.	
All information required in the above section on documentation (clause 8.2 of AS/NZS 4013:2014), together with a photograph of the appliance under test.	
The post conditioning and the post burn air flow test flow rates, in cubic metres per minute (corrected to 20 deg C and 101.3 kPa).	
The calculated appliance particulate emission factor, in grams per kilogram.	
One of the following statements as appropriate:	
<ul style="list-style-type: none">• This appliance complies with AS/NZS 4013.	
<ul style="list-style-type: none">• This appliance does not comply with AS/NZS 4013.	

Retention of Records

Test reports and all documentation submitted with the appliance shall be retained by the test laboratory for a period of at least ten years.

Published Results

If results are publicly reported as being carried out in accordance with AS/NZS 4013, the fuel type and all the results reported in relation to the calculated particulate emission factor and compliance with AS/NZS 4013 shall be included in this publication.