

**Specification for Solid Waste Derived Fuel (SWDF)**

- A1.1 The Supplier is responsible for sampling and testing Solid Waste Derived Fuel in accordance with the requirements of this Agreement.
- A1.2 Supplier shall ensure appropriate procedures are developed and implemented with the aim of qualifying the supply of SWDF to Boral and assuring that SWDF does not contain as far as practicable any of the following:
- PCBs (Polychlorinated biphenyls) at a concentration less than 10 mg/kg;
  - PCPs (Phencyclidines) at a concentration less than 100 mg/kg;
  - Iodine, pharmaceutical, pesticide and biocide products in any formulation except as a constituent of another material and at levels, which are minimised as far as is reasonably practical;
  - Radioactive, nuclear, hospital and clinical waste;
  - Explosive materials including propellants and cartridges;
- A1.3 The Supplier shall ensure that the results for each monthly composite sample of SWDF delivered under this agreement as sampled in accordance with A2.2 and tested in accordance with A2.1 complies with the Specification in Table A1.1.

Table A1.1. SWDF Specification

Parameter	Specification
Gross Calorific Value (MJ/kg)	≥15.0
Ash	≤30.0% m/m
Moisture (as H <sub>2</sub> O)	≤30.0% m/m
Chlorine (as Cl)	≤1% m/m
Total Fluorine, Bromine, Iodine (as F, Br, I)	≤0.25% m/m
Sulphur (as S)	≤1.0% m/m
Particle size	≤ 100 mm in any direction
K <sub>2</sub> O (%)	1.0
Na <sub>2</sub> O (%)	0.5
Mercury (Hg) (mg/kg)	≤1.2
Cadmium (Cd) (mg/kg)	≤20
Thallium (Tl) (mg/kg)	≤20
Total Group II metals (mg/kg)	≤30
Cadmium (Cd) + Thallium (Tl)	
Copper (mg/kg)	≤1000
Lead (mg/kg)	≤1000
Total Group III metals (mg/kg)	≤3000
Antimony (Sb) + Arsenic (As) + Cobalt (Co) + Copper (Cu) + Chromium (Cr) + Lead (Pb) + Manganese (Mn) + Nickel (Ni) + Vanadium (V)	

1) All parameters to be reported on as received basis

- A1.4 The supplier is permitted for just two (2) of the gross calorific value or moisture results in any of the twelve (12) consecutive monthly composite samples to be outside the values specified in Table A1.1 but any such result must comply with the following limits:

Gross calorific value	$\geq 10.0$ MJ/kg
Moisture (as H <sub>2</sub> O)	$\leq 35.0\%$ (m/m)

## Part 2

### Quality Assurance for SWDF

#### A2.1 Supplier Test Methods

A2.1.1 The Supplier shall ensure that the test methods in Table below are done according with relevant standards and used to demonstrate compliance with the Specification:

Parameter	Test Method
Gross and Net Calorific Value	[TBA based on Isothermal Calorimetry]
Moisture content	[TBA based on Gravimetric Method]
Chlorine	[TBA based on Potentiometric Titration, XRF or Analysis by IC]
Sulphur	[TBA based on Leco Carbon Sulphur Analyser]
Carbon Content	[TBA]
Ash	[TBA]
K <sub>2</sub> O, Na <sub>2</sub> O	[TBA]
<u>Particle Size</u>	[TBA including % Passing 100 mm sieve]
<u>Metals – Mercury,</u> <u>cadmium, thallium, copper,</u> <u>lead, Total Group II metals,</u> <u>Total Group III metals</u>	[TBA based on ICP]

[TBA = To Be Agreed - The parties will agree detailed sampling and test procedures]

A2.1.2 The Supplier shall agree in writing with Boral any changes to the test methods and procedures for testing and sampling SWDF as specified in A2.1 and A2.2.

A2.1.3 The Supplier shall ensure that testing of all parameters in table A1.1 is undertaken according to the requirements and by a laboratory certified to NATA for the test procedures specified above. This requirement does not apply to samples tested as per A2.2.2 below.

#### A2.2 Supplier Sampling

A2.2.1 The Supplier shall ensure that sampling is carried out in accordance with EN14778:2011 “Solid biofuels – Sampling” or EN15442:2011 “Solid Recovered Fuels - Methods for sampling” as relevant to the specific type of fuel supplied. This will typically mean that for solid biofuels one 3-Litre sample bucket will be taken as a sample from every 125 tonnes of solid biofuel fuel despatched and for solid recovered fuels one 3-Litre sample bucket will be taken as a sample from every 70 tonnes of solid recovered fuel despatched. Every 3-litre sample will be sealed and labelled. All samples will be sent to an external laboratory. Two composite samples will be produced following guidelines from EN14780:2011 “Solid Biofuels – Methods for sample preparation”. One sample will be tested for all parameters specified in Table A1.1. The second sample will be retained as

reference for a period of 3 months stored in a correctly labelled and suitable sealed container.

A2.2.2 The Supplier shall ensure that the particle size analysis test is carried out at least weekly using a representative composite sample made up from the samples taken during that week and shall provide the test result to Boral by the next working day.

A2.2.3 The Supplier shall agree with Boral on the details for final procedures of sampling and testing SWDF as part of Supplier's QA/QC system.

### **A2.3 Supplier Reporting**

A2.3.1 The Supplier shall ensure that tests for all parameters in table A1.1 are carried out on each monthly composite sample of SWDF using the test methods define in A2.1. The Supplier shall provide Boral in writing with the individual monthly composite sample results within 21 days of the collection of the last sample within the month.

A2.3.2 Any dispute as to the quality or specification of the SWDF which cannot be amicably resolved between the Seller and the Buyer within 60 days either party may refer such dispute for determination by an Expert agreed between the parties. Such person shall act as expert and not arbitrator and make such determination within 20 days of his appointment and his determination shall be final and binding on both parties. The expert shall determine the issue of costs, which shall also bind the parties.