

Your ref.
Egbert van de Schootbrugge**Our ref.**
FK/MS**Project No. / File code**
Project / File code**Date**
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To whom it might concern,

Efficiency calculation according to B415.1-10

Upon a request from Egbert van de Schootbrugge, the CEO of Norsk Kleber AS, SINTEF Energy have used log data from the latest European type test reports for two stove model series, to calculate the efficiency for each, using an Excel spreadsheet in accordance with the procedure specified in CSA B415.1-10. The efficiencies according to the European type tests and recalculated according to B415.1-10 are:

Stove model series	EN 13240	B415.1-10
Kube (SINTEF report no. 102044.44A)	86.0 %	78.0 %
Octo +/-110, Merethe +/-110 and Babina +/-110 (SINTEF report no. 102044.11A, SINTEF 110-0363)	85.9 %	76.7 %

(See p.2 for CSA B415.1 Calculation reports)

Yours sincerely,
for SINTEF Energi AS

Franziska Kausch, Research Engineer



Morten Seljeskog, Research Scientist



Reports from CSA B415.1 Calculations

Spreadsheet created by: Rick Curkeet, PE, Intertek Testing Services, NA Inc.

Version 2.4 15 April 2010

Kube

Manufacturer:	Granit Kleber		
Model:	Kube		
Date:			
Run:			
Control #:			
Test Duration:	46		
Output Category:	nom		
Test Results in Accordance with CSA B415.1-10			
	HHV Basis	LHV Basis	
Overall Efficiency	78.0%	83.1%	
Combustion Efficiency	99.2%	99.2%	
Heat Transfer Efficiency	79%	83.8%	
Output Rate (kJ/h)	25 908	24 577	(Btu/h)
Burn Rate (kg/h)	1.67	3.69	(lb/h)
Input (kJ/h)	33 226	31 518	(Btu/h)
Test Load Weight (dry kg)	1.28	2.83	dry lb
MC wet (%)	17		
MC dry (%)	20.48		
Particulate (g)	0		
CO (g)	20		
Test Duration (h)	0.77		
Emissions	Particulate	CO	
g/MJ Output	0.00	0.98	
g/kg Dry Fuel	0.00	15.24	
g/h	0.00	25.50	
lb/MM Btu Output	0.00	2.29	
Air/Fuel Ratio (A/F)	11.08		
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Octo

Manufacturer:	Granit Kleber		
Model:	Octo		
Date:			
Run:			
Control #:			
Test Duration:	53.5		
Output Category:	nom		
Test Results in Accordance with CSA B415.1-10			
	HHV Basis	LHV Basis	
Overall Efficiency	76.7%	81.8%	
Combustion Efficiency	99.5%	99.5%	
Heat Transfer Efficiency	77%	82.2%	
Output Rate (kJ/h)	24 187	22 944	(Btu/h)
Burn Rate (kg/h)	1.59	3.50	(lb/h)
Input (kJ/h)	31 518	29 898	(Btu/h)
Test Load Weight (dry kg)	1.42	3.12	dry lb
MC wet (%)	17		
MC dry (%)	20.48		
Particulate (g)	0		
CO (g)	11		
Test Duration (h)	0.89		
Emissions	Particulate	CO	
g/MJ Output	0.00	0.50	
g/kg Dry Fuel	0.00	7.66	
g/h	0.00	12.15	
lb/MM Btu Output	0.00	1.17	
Air/Fuel Ratio (A/F)	13.93		
v2.4	2010-04-15		