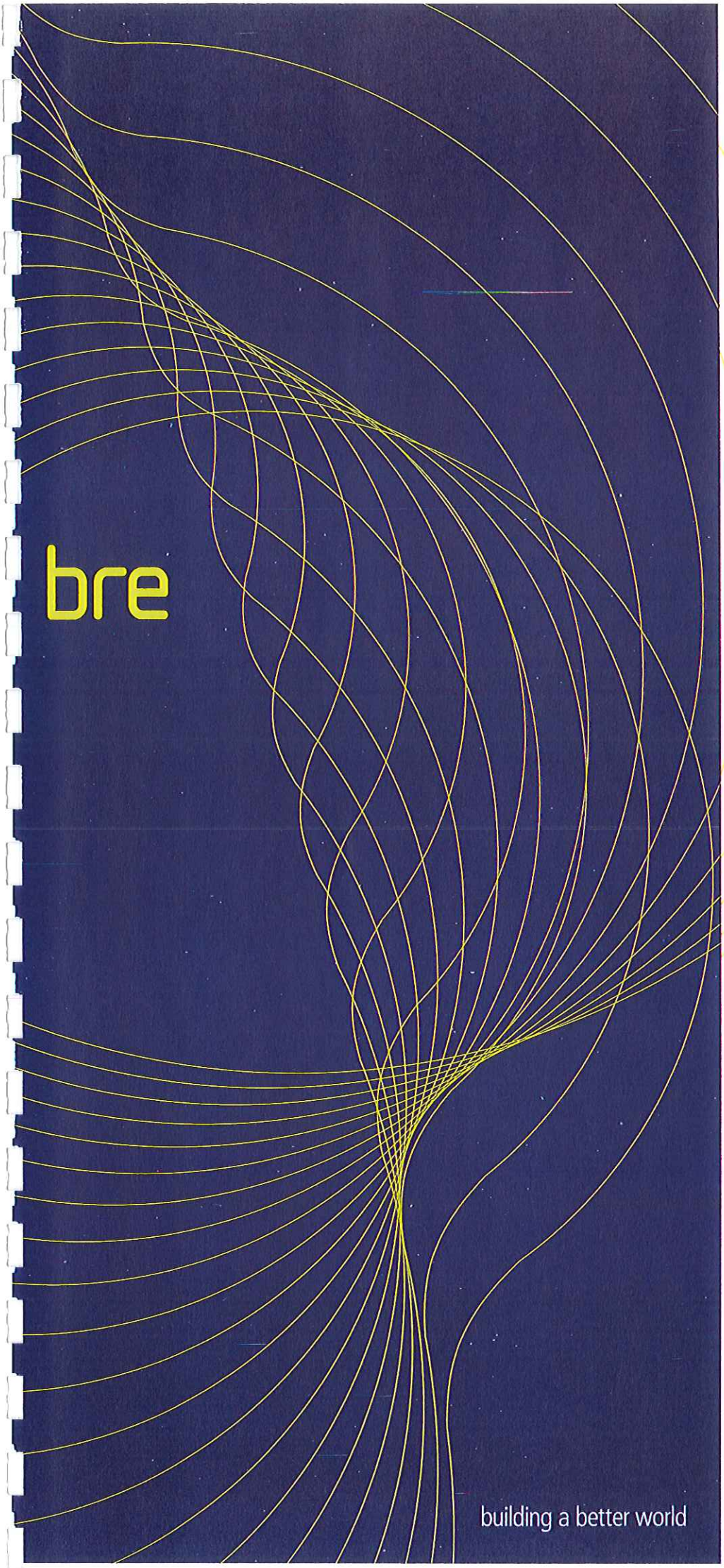


CERT CO_2 savings for 10mm Sempatap Thermal

Prepared for: Steven Leach
Technical Manager
Mould Growth Consultants Ltd.

9 March 2010

Steven Leach
McMillan House
Cheam Common Road
Worcester Park
Surrey, KT4 8RH

24 February, 2010

Our Ref. Proposal job 260292 & 258487

Dear Steven,

CERT CO_2 savings for 10mm Sempatap Thermal

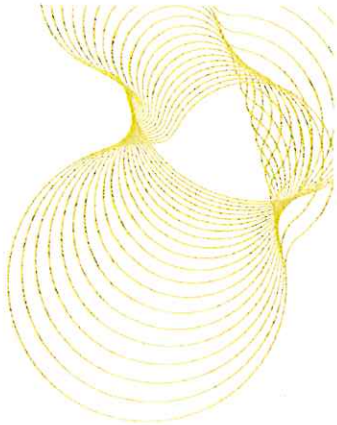
I'm pleased to attach the results from the above studies to calculate the CERT and CO_2 savings per m^2 for 10mm Sempatap Thermal.

The thermal resistance of 10mm Sempatap (Nolam) insulation material has been measured by the National Physical Laboratory. Their test report, reference 2009110310/1", 12 Jan 2010, states the measured thermal resistance to be 0.194 m^2K/W.

The CERT savings in Table 1 are calculated for a single layer of Sempatap Thermal 10mm insulation applied on masonry built solid wall dwellings for the seven standard dwelling types used in CERT. The savings have been calculated using BREDEM (for gas, LPG, electric, oil and solid fuel heating) and a weighted average all fuels, taking a 'before' U-value of 2.1 W/m^2K and an 'after' U-values of 1.49 W/m^2K and following the calculation methodology for CERT.

Yours sincerely

John Hart
Senior Consultant
For and on behalf of BRE
Telephone: +44 (0) 1923 664591
Email: hartj@bre.co.uk



CERT CO_2 savings for 10mm Sempatap Thermal.

		10mm Sempatap Thermal ($kgCO_2/yr$)					
dwelling	no.beds	Gas	LPG	Electric	Oil	Coal	**Wtd ave**
Flat	1	261	293	557	331	691	**289**
Flat	2	314	354	671	399	832	**348**
Flat	3	379	427	811	481	1,005	**420**
Mid-Terrace	2	322	363	689	411	853	**357**
Mid-Terrace	3	361	406	772	460	955	**400**
End-Terrace	2	618	696	1,267	773	1,620	**680**
End-Terrace	3	692	779	1,418	865	1,815	**761**
Semi-bungalow	2	464	522	956	579	1,218	**511**
Semi-bungalow	3	501	564	1,032	626	1,315	**551**
Det-bungalow	2	552	622	1,166	690	1,476	**610**
Det-bungalow	3	596	671	1,258	744	1,593	**658**
Det-bungalow	4	640	721	1,352	800	1,711	**707**
Semi-house	2	674	760	1,380	844	1,769	**742**
Semi-house	3	725	817	1,484	907	1,902	**798**
Semi-house	4	776	874	1,589	971	2,036	**854**
Det-house	2	1,019	1,148	2,176	1,277	2,747	**1,128**
Det-house	3	1,095	1,234	2,339	1,373	2,952	**1,212**
Det-house	4	1,177	1,325	2,513	1,474	3,171	**1,302**

Table 1 Annual carbon savings for CERT and weighted average all fuels kgCO2/yr.

Notes.

1. The savings assume solid masonry wall of U value 2.1 W/m^2K is insulated to U value of 1.49 W/m^2K using a single layer of 10mm Sempatap Thermal.
2. All values include the 15% comfort factor reduction
3. All other assumptions identical to CERT calculations done by BRE for OFGEM in 2007.

	Emissions / kWh	
Fuel	**kgC**	**CO_2**
Gas	0.0518	0.1899
Elect	0.1175	0.4308
Oil	0.0680	0.2493
Coal	0.0817	0.2996
LPG	0.0584	0.2140

Table 2 CERT fuel emission data.

Evaluated by BRE using BREDEM
February 2010

CO_2 saving per m^2 for Sempatap Thermal DIY 10mm insulation

		CO_2 savings for 10mm Sempatap ($kgCO_2$)						Dwelling wall area m^2	Fuel Wtd Ave annual saving $kgCO_2/m^2$	Stock
dwelling	no.beds	Gas	LPG	Electric	Oil	Coal	Wtd ave			
Flat	2	314	354	671	399	832	**348**	37.6	**9.25**	19%
Mid-Terrace	3	361	406	772	460	955	**400**	43.4	**9.21**	18%
End-Terrace	3	692	779	1,418	865	1,815	**761**	77.4	**9.84**	10%
Semi-bungalow	2	464	522	956	579	1,218	**511**	53.2	**9.60**	3%
Det-bungalow	2	552	622	1,166	690	1,476	**610**	65.7	**9.29**	5%
Semi-house	3	725	817	1,484	907	1,902	**798**	81.8	**9.75**	28%
Det-house	3	1,095	1,234	2,339	1,373	2,952	**1,212**	128.3	**9.45**	16%

all values include the 15% comfort factor reduction

Yellow rows above represent base case dwellings.

Stock weighted average saving **9.39** **$kgCO_2/m^2$**

Stock weighted average saving (including allowance for wastage)	
Wastage	5.0%
8.92	$kgCO_2/m^2$

Table 3 Annual CO_2 savings per m^2 for 10mm Sempatap Thermal insulation ($kgCO_2/yr$)

Notes.

1. The m^2 wall areas relate to the seven standard typical dwelling types used in CERT.
2. Housing stock percentages from the Domestic Energy Fact File and English Housing Condition Survey.
3. All values include the 15% comfort factor reduction.
4. All other assumptions identical to CERT calculations done by BRE for OFGEM in 2007