



BER Assessors – Dwellings Technical Bulletin

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The archive of previous bulletins is available under
http://www.sei.ie/Your_Building/BER/BER_FAQ/FAQ_BER/Assessors/SEI_BER_Reports.html

DEAP Survey Guide Version 1.1

Some minor modifications have been made to the DEAP Survey Guide.

An updated version (Version 1.1) has been published and is now available under

http://www.sei.ie/Your_Building/BER/BER_Assessors/Technical/DEAP/DEAP_2008/.

Survey Form (Existing Dwellings)

When conducting a site survey, assessors need to ensure that a site survey form is retained as supporting evidence of data entered in the DEAP assessment. The survey guide should be used in conjunction with the DEAP manual (and Appendix S therein) in completing the DEAP survey form. This survey form (or an equivalent containing the same information) must be used on site to gather survey data required to complete a BER assessment for an existing dwelling using the DEAP software and must be retained as supporting evidence.

The survey form is available under www.seai.ie/deap

NAS Notices

When a BER assessment XML file is submitted to the NAS, the NAS performs a number of validation checks on the uploaded XML file:

- an assessment with NAS “errors” cannot be published;
- an assessment with NAS “notices” must not be published until the notices are either resolved (by correcting the data entered in the assessment), or the Assessor has fully understood the notices and accepts that the notices are valid for the assessment in question;
- assessments can only be published when the Assessor is satisfied that they have followed the rules and guidance set out by SEI.

Ventilation – Chimneys and Open Flues

A chimney is specified in DEAP as a duct for combustion gases which has the equivalent open area of a circle with 200mm diameter. If the duct's open area less than a 200mm diameter circle then it is entered as an open flue. Open flues are also specified in the following cases:

- a chimney for solid fuel appliances with controlled flow of the air supply (but not room sealed)
- a chimney with open fireplace having an air supply ducted from outside to a point adjacent to the fireplace;
- a flexible flue liner sealed into a chimney;
- a chimney fitted with a chimney damper;
- a chimney fitted with an open-flue gas fire where the flue products outlet is sealed to the chimney;
- a permanently restricted fireplace fitted with ventilators (if ventilator open area does not exceed equivalent of a 200mm diameter circle).

Temporary restrictions blocking the chimney (i.e restrictions which can be easily removed) do not eliminate the chimney for the purposes of DEAP and it must still be included in the assessment. Permanent air supply vents associated with the chimney or open flue are not counted in addition to the chimney or open flue.

A room heater which is room sealed does not have any direct air exchange with the interior of the dwelling. However, while this would not have any ventilation loss in DEAP it may still need to be entered as a primary or secondary heating system subject to the guidance in Appendix A of the DEAP manual.

Ventilation – Controllable Background Ventilation

The DEAP manual details the types of ventilators which are counted under the “intermittent fans and passive vents” entry in DEAP (Ref. Section 2.2 of the DEAP manual). Vents which can close (such as controllable trickle vents in windows or controllable wall vents) are not counted under this entry in DEAP.

Heating System Efficiency

Where an entry in DEAP is specified in the DEAP data entry screens as being a percentage, Assessors must ensure that the relevant data is entered as a percentage rather than a fraction. For example an 80% efficient boiler should be entered as having an efficiency of 80 not as 0.80. SEI has encountered a number of assessments where heating system efficiency is entered as a fraction rather than a percentage. This error causes the rating to be substantially inaccurate and therefore SEI has had to revoke these ratings.

Water Heating - Water Cylinder Sizing and Insulation Thickness

The water cylinder volume should be calculated by recording both the cylinder height and the diameter of the cylinder. The volume (which applies to hot water storage only) is then calculated as follows:

$$V = (\pi \times d^2 / 4) \times h / 1000$$

Where:

d = diameter of the cylinder (cm)

h = height of the cylinder (cm)

$\pi = 3.142$

V = volume of the cylinder (litres)

Where multiple hot water cylinders are present in a dwelling the average insulation thickness is determined using the weighted volume of each cylinder.

For example if a dwelling has two cylinders heated by a boiler as follows:

- (a) 70 litres with 50mm insulation
- (b) 80 litres with 20mm insulation

The cylinder volume specified under “Water storage volume” is 150L

The insulation thickness specified in DEAP is $[(70 \times 50) + (80 \times 20)] / 150 = 5100 / 150 = 34\text{mm}$

For factory fitted insulation, the insulation thickness should be measured at the pipe connections to the cylinder. If this is not feasible a needle or pin can be used to determine insulation thickness, ensuring, as always, that maximum care is taken and no damage is done to the cylinder.

Energy Requirements - Boiler Identification

Gross seasonal boiler efficiency can be taken from any one of the following sources:

- HARP database (www.sei.ie/harp) - this is the preferred option;
- SEDBUK database (www.sedbuk.com);
- Certified test data (following guidance in Appendix D/J/E of the DEAP manual to convert to gross seasonal efficiency for use in DEAP);
- Defaults in Table 4a and Table 4b in the DEAP manual.

If an Assessor has encountered a boiler which does not have the exact same name as a boiler on HARP/SEDBUK or the full name is not visible on the boiler, then a HARP/SEDBUK entry can be used if one of the following is available and clearly equates the boiler in the dwelling to a HARP/SEDBUK entry:

- Boiler installation manuals or instruction manuals for the dwelling's boiler;
- Statement on printed letterhead (in softcopy or hardcopy) from one of:
 - boiler manufacturer;
 - boiler supplier;
 - boiler service engineer or maintenance firm.

Building Elements - Thermal Bridging Factor

The default value for the thermal bridging factor (y) in DEAP assessments is 0.15. Acceptable substantiation must be used when entering any figure other than 0.15. As per the DEAP manual Appendix K:

1) **$y = 0.08 \text{ W/m}^2\text{K}$** : for new dwellings whose details conform with "Limiting Thermal Bridging and Air Infiltration - Acceptable Construction Details" (www.environ.ie) as referenced in Building Regulations 2008 TGD L. This requires that the relevant drawings clearly show the relevant details and that these details are checked and signed off by the developer/builder, site engineer or architect.

2) **$y = 0.11 \text{ W/m}^2\text{K}$** : Only applies to new dwellings for which the Building Regulations 2005 TGD L apply¹. This value may only be used when sign-off by the developer/builder or site engineer or architect indicates that all details in the dwelling have been constructed in accordance with both

- i. Diagrams 3 and 4, and Sections 1.2.4 and 1.2.5 of Building Regulations 2005 TGD L
- ii. The details set out in the Homebond publication "Right on Site, Issue No. 28" or the 5th or later editions of the Homebond Manual.

3) Alternatively values of ψ can be determined from the results of numerical modelling, or they can be derived from measurement. If the junction detail is as recommended in *Acceptable Construction Details*, the ψ -value associated with that junction can be taken from Table K1 in the DEAP manual or from Introduction Document for Acceptable Construction Details Appendix 1.

Building Elements - Wall and Roof U-Value Calculation

U-values for walls and roofs containing repeating thermal bridges, such as timber joists between insulation, etc, should be calculated using methods based on the upper and lower resistance of elements, given in IS EN ISO 6946.

¹ Note that Building Regulations 2005 TGD L only apply in the following scenario: where planning approval or permission has been applied for on or before 30 June 2008, and substantial work has been completed by 1 July 2009. "Substantial work has been completed" means that the structure of the external walls has been erected.

IS EN ISO 6946 gives the calculation applying to components and elements consisting of thermally homogenous layers (which can include air layers) and is based in the appropriate design thermal conductivity or design thermal resistances of materials and products involved. The standard also gives an approximate method that can be used for inhomogeneous layers, except cases where an insulating layer is bridged by metal.

Thermal conductivity values for common building materials can be obtained from Building Regulations 2008 TGD L (Table A1), IS EN 12524 or the CIBSE Guide, Section A3. For specific insulation products, data should be obtained from accredited test data. Regarding default thermal conductivity for insulation products, Building Regulations 2008 TGD L, Table A2, IS EN 12524 and CIBSE Guide Section A3 may be used for design purposes (such as new dwelling provisional ratings) but not for final BER assessments for new dwellings. These sources may also be used for insulation thermal conductivity for existing dwellings where no further information is available.

U-values for ground floors and basements should be calculated using the procedure described in IS EN ISO 13370, or in the CIBSE Guide, Section A3. Further detail is available in BRE 443 which is available under [www.bre.co.uk/filelibrary/rpts/uvalue/BR_443_\(2006_Edition\).pdf](http://www.bre.co.uk/filelibrary/rpts/uvalue/BR_443_(2006_Edition).pdf).

When using certified data to determine thermal properties of building elements, acceptable data is available on Agreement Certificates from the Irish Agreement Board (IAB) and British Board of Agreement (BBA) websites. Certified data from other sources can also be used, bearing the following text in mind (taken from Building Regulations 2008 TGD L): “For thermally homogeneous materials, declared and design values should be determined in accordance with I.S. EN ISO 10456: 1997. Design values for masonry materials should be determined in accordance with I.S. EN 1745: 2002. For insulation materials, values determined in accordance with the appropriate harmonised European standard should be used.” If this information is not available for the specific product which you are dealing with then the data **cannot** be used in U value calculations.

Certified Data Sources

While there are a number of readily available sources for performance data entered into DEAP (such as HARP, Irish Agreement Board (IAB), British Board of Agreement (BBA)), Assessors may occasionally need to use other sources to substantiate DEAP data entries.

Data on “CE marked” literature is acceptable provided that the literature refers to the relevant test performance standard. Alternatively, if test data is obtained for the product in question then a number of criteria should be borne in mind:

- test certificates must be clearly related to the actual product in question;
- any installation instructions in the test certificate on which the stated performance depends must be adhered to;
- test certificates must be in English or be accompanied by a certified English translation;
- the relevant test performance standard must be stated on the test certificate;
- the test laboratory must be accredited. To determine if a laboratory is accredited, one of the following approaches should be used:
 - the governing accreditation body for the country in which the laboratory is situated can be found under <http://european-accreditation.org/content/mla/scopes.htm> . This governing body may have the test laboratory listed as accredited;
 - the accredited laboratory may be found under <http://ec.europa.eu/enterprise/newapproach/nando/> ;

In cases where there is any doubt, the test certificate should be sent to the BER helpdesk for clarification.

Energy Requirements – Solar Space Heating – Individual Systems

Solar space heating for individual heating systems can be accounted for in DEAP using the method defined under http://www.sei.ie/Your_Building/BER/BER_Assessors/Technical/DEAP/

A method for solar space heating with group heating systems will be made available as soon as possible.