



**Windows as Renewable Energy Sources for Europe
Window Energy Data Network**

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WIS DATABASE

Verification Procedures for Glass and Coatings (non-scattering) Glazing Products Data

Version 1.0

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1. Introduction

WinDat is a European RTD Thematic Network (2001-2004). It aims to make available and freely distribute a European software tool (WIS) for the calculation of the thermal and solar properties of commercial and innovative window systems on the basis of known component properties and thermal and solar/optical interactions between the components. It is intended that this tool will be collectively supported and used in research, industry, standardisation, education and design throughout Europe. WIS will be used to compare, select and promote innovative windows and window components for the optimum use of renewable energy and maximised energy savings and indoor comfort.

This verification procedure sets out the steps for acceptance and publishing of optical and thermal data and related information into a European public database of glazing properties (WIS). The document provides a description of the procedures for verification of the quality of the spectral optical properties data for non-scattering glass and coated glass products whose optical properties are held within the WIS database and procedures for reviewing and approval the data by the GCNS Peer Review Group (WinDat Glass and Coatings (non scattering) Subgroup –WP2.1). The current membership of this group is given in Appendix 1.

In Section 2 administrative procedures are covered which concern Technical Review, Peer Review, Resolving matters arising from the peer review and database maintenance, e.g. Inclusion of data in the Database, Deletion of data from the Database .

The qualification of the data submitters is discussed in Section 3.
Known legal issues are covered in Section 4.

The verification procedure is designed to be compatible with the verification procedure for the International Glazing Database (IGDB), maintained by the Lawrence Berkeley National Laboratory (LBNL) [2].

Data submission to the International Glazing Database (IGDB), maintained by the Lawrence Berkeley National Laboratory (LBNL), USA, can be done directly to LBNL or through Oxford Brookes University. Brookes acts as the European Data Reception Institute for IGDB. Data submission to IGDB through Brookes is explained in Section 5

These WinDat verification procedures should be read together with the associated WIS Database Data Submission Procedure for Glass and Coatings (non –scattering) glazing products [1].

All communications or queries concerning the contents and use of this document should be addressed directly to:

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2. Administrative Procedures

2.1. Data Submission

- All optical properties data for submission by manufacturers shall be supplied to Oxford Brookes University (the Coordinator). Datashall be prepared in accordance with the WIS Database Data Submission Procedure for Glass and

Coatings (Non-Scattering) [1]. The information in the compulsory fields in the file header should be given in full.

- It is entirely the manufacturer's decision to supply information for the fields that are optional. No information is required about proprietary designs of coatings or formulation of bulk materials.
- All optical properties data files shall be accompanied by a Data Submission Form conforming to the format prescribed in [1], providing some basic information about the tests and calculations that were performed.
- The derivation of calculated data if any shall be clearly specified.

2.2. Technical Review

- Oxford Brookes University (the Coordinator) acts as technical reviewer for the data supplied from European Manufacturers for inclusion in the Database.
- The technical review shall involve the following:
 - An initial review of format and content for compliance with [1] will be performed for each new file.
 - Data will be checked for conspicuous errors such as discontinuity, excessive noise, non-physical values, incorrect wavelength intervals and completeness of the file.
- The initial review shall normally occur within 2 weeks of submission. If problems are discovered, the technical review stage will be extended until the problems are resolved.
- Upon completion of the technical review Oxford Brookes University (the Coordinator) will:
 - Pre-calculate integrated visible and solar optical properties to CEN standards and prepare spectral curves.
 - Distribute the data files, a table of pre-calculated values and the respective spectral curves for review by the appointed members of the GCNS Peer Review Group and for information to all members of the group.

2.3. Peer Review

- Two members of the GCNS Peer Review Group will be appointed to act as principal peer reviewers for each data set supplied from a European manufacturer. The principal peer reviewers have primary responsibility for examining the data set. Each principal peer reviewer must respond to the coordinator within the required time period. Other members of the peer review group may also respond to the coordinator within the required time period but this is not compulsory. The responsibility for appointment of the principal peer reviewers will rest with the coordinator. All members of the peer review group are invited in turn to act as principal peer reviewers.
- The peer review shall involve the following:
 - Review of format and content for compliance with the WIS Database Data Submission Procedure for Glass and Coatings (non –scattering) glazing products [1] for each new file.
 - Data will be checked for conspicuous errors such as discontinuities, excessive noise, non-physical values, incorrect wavelength intervals, integrated luminous, solar and where possible thermal optical properties and completeness of the file.
- The peer-review phase shall last for 4 weeks. If no questions are raised during this time, then the data automatically pass.

2.3.1. *Resolving matters arising from the peer review*

- Oxford Brookes University (the Coordinator) acts as Chair to facilitate resolution of any matters arising from the Peer Review.
- If a question is raised, the questioner must provide the following information in writing:
 - The name of the product and data file in question.
 - A clear statement of the suspected problem.
 - Any supporting evidence for the question. This evidence might include purely technical data, such as a measurement on a similar sample, or it might be non-technical such as a reference to contradictory product literature.
- The question is submitted to the Coordinator and copied to all other members of the GCNS Peer Review Group and the originator of the data.
- The data supplier will be given the opportunity to resolve a misunderstanding or otherwise demonstrate that the question is not valid. If the agreement is not reached, the data supplier may choose to either withdraw the data from consideration or resubmit the data.

2.3.2. Finalising the review

- After successful review, the Coordinator will confirm the suitability of data and submit data-set(s) to TNO (Database Manager), for inclusion in the WIS Database.
- The Coordinator will maintain a separate database recording the history of all data submitted for review and transferred to the WIS database.

2.4. Inclusion of data in the Database

- TNO acts as the Database Manager of WIS.
- The Database Manager undertakes the following steps:
 - Includes the data in the WIS Database.
 - Prepares a database update program and posts it on the WinDat database website. Download and execution of this program should automatically add the new data records to the previous WIS software.
 - Notify all reviewers and other interested parties by email.

2.5. Deletion of data from the Database

When the manufacturer wishes to withdraw the data previously published in the WIS Database the procedure is as follows:

- A request from the manufacturer with a list of files for deletion from the Database shall be supplied to Oxford Brookes University (the Coordinator).
- The Coordinator will submit the request to TNO (Database Manager) for deletion of the files from the WIS Database and record the history.
- The Database Manager undertakes the following steps:
 - Deletes the data from the WIS Database.
 - Prepares a database update and posts it on the WinDat database website.
 - Notifies the manufacturer and other interested parties by email.

3. Qualification of Data Suppliers

- Periodically inter-laboratory comparisons of spectral transmittance and reflectance at solar and thermal wavelengths will be organised to check the accuracy of measurements made by laboratories submitting data.
- WinDat will coordinate the selection and distribution of representative glazing products for use in round-robin intercomparisons. Manufacturers submitting data to the WIS database will be invited to participate together with independent research laboratories specialising in optical properties measurements. Precise details of the methodology to be used will be described at the time of the inter-laboratory comparison. WinDat will aim to undertake such activities with a frequency of no less than once in every 5 years.
- Details of laboratory intercomparisons undertaken to date are given elsewhere [5], [6] and [7].

4. Legal issues

4.1. Manufacturer

- a. The Manufacturer submitting data for inclusion in the public database of glazing properties remains the proprietor of all data communicated to that Database.
- b. The Manufacturer retains the right to supplement, modify and delete data relating to the Manufacturer products. WinDat shall not supplement, modify or delete data relating to Manufacturer products without prior written approval from the Manufacturer.
- c. WinDat shall not license access to data communicated by the Manufacturer or transmit data communicated by the Manufacturer to other database managers without prior written approval from the Manufacturer.
- d. The WIS software will not permit the “stripping” of any coating for application to another substrate. Manufacturers will be required to submit separate data files for coated products on substrates of different thickness and different glasses.

4.2. Database Manager

- Neither the European Commission, nor TNO, nor the other members of the WinDat Steering Committee makes any warranty, expressed or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information obtained with the WIS software.

5. Verification Procedure for submitting data to IGDB Database

The International Glazing Database (IGDB) is a public database containing optical properties and other information on more than 1000 glazing products. The maintenance of the Database is undertaken by the Windows and Daylighting Group of the Lawrence Berkeley National Laboratory (LBNL), USA.

Data submission to IGDB from European manufacturers can be done directly to LBNL or through Oxford Brookes University. Oxford Brookes University acts as a Data Reception Institute for IGDB [3].

When submitting data through Brookes it is the responsibility of the data submitter to put the data into the proper format for review and subsequent merging into the IGDB database file. The required format of the data and examples for each type of glazing are specified in detail in the latest IGDB Data Submission Procedures published in the IGDB website [3] and [4].

5.1. Technical and Peer Review

- The technical review of the data submitted for inclusion in IGDB through Brookes will be performed at Oxford Brookes University and shall involve the following:
 - An initial review of format and content for compliance with [3] and [4] will be performed for each new file.
 - Data will be checked for conspicuous errors such as discontinuity, excessive noise, non-physical values, incorrect intervals and completeness of the file.
- The technical review shall normally occur within 2 weeks of submission. If problems are discovered, the technical review stage will be extended until the problems are resolved.
- Upon completion of the technical review Oxford Brookes University will send the data to the IGDB for peer review.
- The peer review and inclusion of data in the IGDB will be in accordance to the latest IGDB Verification Procedure [2] and Data Submission Procedures [3],[4] published at the IGDB website.

6. References

1. WIS Database, Data Submission Procedure for Glass and Coatings (non –scattering) glazing products, Version 1.0, May 2004 (**WinDat_N2.01**)
2. NFRC Verification Procedure , <http://windows.lbl.gov/materials/IGDB/IGDBVerificationProcedure.htm>
3. R. Versluis, R.Powles, M. Yazdanian, M. Rubin, International Glazing Database: Data Submission Procedure
(<http://windows.lbl.gov/materials/IGDB/Documentation/Documentation.htm>)
4. R. Versluis, R.Powles, M. Yazdanian, M. Rubin, International Glazing Database: Data File Format
(<http://windows.lbl.gov/materials/IGDB/Documentation/Documentation.htm>)
5. WinDat -Brookes-2004-02-11 WP21.1Measurement Intercomparison_ Glass and Coatings (non-scattering) Instructions, Oxford Brookes University, February 2004 (**WinDat_N2.05**).
6. WinDat -Brookes-2004-02-11 WP21.1Measurement Intercomparison_ Glass and Coatings (non-scattering) Initial Sample Characterisation, Oxford Brookes University, May 2004 (**WinDat_N2.04**).
7. WinDat -Brookes-2004-02-11 WP21.1Measurement Intercomparison_ Glass and Coatings (non-scattering) Results, Oxford Brookes University, May 2004 (**WinDat_N2.06**).

Appendix 1 Membership of the WinDat GCNS Peer Review Group

The members of the current GSNS Peer Review group are listed in the table below. The list is not constant and will be updated regularly in the WIS website.

Table 1. Members of the GCNS Peer Review Group

Name	Organisation	Acronym
Mr Dick van Dijk	TNO Building and Construction Research	TNO Bouw
Mr Richard Versluis	TNO Building and Construction Research	TNO Bouw
Mr Peter van Nijnatten	TNO Institute of Applied Physics	TNO TPD
Mr Thomas Nussbaumer	Swiss Federal Laboratories for Materials Testing and Research	EMPA
Mr Michael Hutchins	Oxford Brookes University	Brookes
Mrs Neviana Kilbey	Oxford Brookes University	Brookes
Mr Jean Roucour	Glaverbel	Glaverbel
Mr Frank Rubbert	Saint-Gobain Glass Deutschland GmbH	SGGD
Mr Nils-Peter Harder	Saint-Gobain Glass Deutschland GmbH	SGGD
Ms Helen-Rose Wilson	Interpane Entwicklungs- und Beratungs-gesellschaft	Interpane
Mr Karl Haeuser	Interpane Entwicklungs- und Beratungs-gesellschaft	Interpane
Mr Ismael Rodriguez Maestre	Universidad de Cádiz	UCA
Mr Bruno Chevalier	Centre Scientifique et Technique du Bâtiment, the Materials Department	CSTB MD
Mr Franco Geotti-Bianchini	Stazione Sperimentale del Vetro	SSV
Mr Arne Roos	Uppsala University	Upps
Mr Jaap de Nijs	Guardian Luxguard	Guardian
Mr Francesco Tritta	Guardian Luxguard	Guardian
Mr Robert Davies	Pilkington	PKT
Mr Svend Svendsen	Technical University of Denmark	TUD
Mr Jean Rosenfeld	Private Consultant	