

BS 8541-6:2015+A1:2023



BSI Standards Publication

Library objects for architecture, engineering and construction

Part 6: Product and facility declarations – Code of practice



Publishing and copyright information

The BSI copyright notice displayed in this document indicates when the document was last issued.

© The British Standards Institution 2023

Published by BSI Standards Limited 2023

ISBN 978 0 539 22892 2

ICS 03.100.50

The following BSI references relate to the work on this document:

Committee reference B/555

Drafts for comment 14/30294759 DC; 22/30458024 DC

Amendments/corrigenda issued since publication

Date	Text affected
March 2023	A.1 See Foreword for details

Contents

	Page
Foreword	III
<i>Figure 1 — Core maturity model – deleted</i>	III
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 Declaration processes	2
4.1 Preparation and publication	2
4.2 Use	3
5 Principles for the exchange of declarations	3
5.1 Construction objects	3
<i>Figure 2 — Construction object</i>	3
<i>Table 1 — Quantity set definition</i>	3
<i>Table 2 — Quantity definitions</i>	4
<i>Figure 3 — Declaration property set</i>	4
5.2 Property set	4
<i>Table 3 — Property set naming</i>	4
<i>Table 4 — Description</i>	5
5.3 Identification properties	5
<i>Table 5 — Properties used for product declaration identification</i>	6
<i>Table 6 — Declaration values for a property [Property]</i>	8
<i>Table 7 — Scenario properties</i>	9
<i>Table 8 — Regional (for facilities) and date basis</i>	10
<i>Table 9a — Expected declaration properties within construction library objects</i>	10
<i>Table 9b — Expected declaration properties for facilities</i>	10
Annex A (informative) Example product declaration schemes	11
<i>Table A.1 — Environmental product declaration property set definition - deleted</i>	11
<i>Table A.2 — Environmental property definitions - deleted</i>	11
<i>Table A.3 — Example transport scenario properties - deleted</i>	11
<i>Table A.4 — BRE property set definition</i>	11
<i>Table A.5 — BRE property definitions</i>	12
<i>Table A.6 — Carbon data property set definition</i>	14
<i>Table A.7 — Carbon data property definitions</i>	14
<i>Table A.8 — Thermal property set definition</i>	15
<i>Table A.9 — Thermal property definitions</i>	15
<i>Table A.10 — Construction property Set definition</i>	15
<i>Table A.11 — Construction property definitions</i>	16
<i>Table A.12 — WRAP property set definition</i>	18
<i>Table A.13 — WRAP property definitions</i>	18
<i>Table A.14 — WRAP property set definition — Indicative economic impacts</i>	18
<i>Table A.15 — WRAP property definitions — Indicative economic impacts</i>	19
<i>Table A.16 — WRAP property set definition — Environmental impacts</i>	19
<i>Table A.17 — WRAP property definitions — Environmental impacts</i>	19
<i>Table A.18 — WRAP property set definition</i>	19
<i>Table A.19 — WRAP property definitions</i>	20
<i>Table A.20 — DEC property set definition</i>	22
<i>Table A.21 — DEC property definitions</i>	23
<i>Table A.22 — Service life declaration definitions</i>	24

Annex B	(informative) Product declaration attributes	24
	<i>Table B.1 — Attribute</i>	25
	Bibliography	28

Summary of pages

This document comprises a front cover, an inside front cover, pages I to IV, pages 1 to 30, an inside back cover and a back cover.

Foreword

Publishing Information

This part of [BS 8541](#) is published by BSI Standards Limited, under licence from The British Standards Institution, and came into effect on 31 March 2015. It was prepared by Technical Committee B/555, *Construction design, modelling and data exchange*. A list of organizations represented on this committee can be obtained on request to the committee secretary.

Supersession

BS 8541-6:2015+A1:2023 supersedes BS 8541-6:2015, which is withdrawn.

Relationship with other publications

[BS 8541](#) comprises six parts as follows:

- Part 1, Identification and classification;
- Part 2, Recommended 2D symbols of building elements for use in building information modelling;
- Part 3, Shape and measurement;
- Part 4, Attributes for specification and assessment;
- Part 5, Assemblies;
- Part 6 (this part), Product and facility declarations.

[BS 8541-1](#), [BS 8541-3](#) and [BS 8541-4](#) document best practice for the development and application of construction library objects to support Building Information Modelling (BIM) based design, standardization, specification and construction processes. See [BS 8541-1](#) A1 Text deleted A1.

BS 8541-2 documents best practice for the use of 2D symbols for construction objects. [BS 8541-5](#) and BS 8541-6 document best practice for the transmission of assemblies of construction objects and for the transmission of formal performance declarations of products and facilities.

A1 The IFC standard ([BS EN ISO 16739-1](#)) includes recommendations for the association of base quantities and geometry for objects. The use of the IFC standard can be supplemented by using UK specific recommendations, such as are published by buildingSMART UK¹⁾ A1.

Figure 1 — *Core maturity model – deleted*

A1 Figure deleted A1

A1 Note and footnote deleted A1

Information about this document

Text introduced or altered by Amendment No. 1 is indicated in the text by tags A1 A1. Minor editorial changes are not tagged.

Amendment A1 removes conflict with BS EN ISO 22057:2022.

This publication can be withdrawn, revised, partially superseded or superseded. Information regarding the status of this publication can be found in the Standards Catalogue on the BSI website at bsigroup.com/standards, or by contacting the Customer Services team.

¹⁾ A1 This can be viewed at <https://wearenima.im/>. A1

Where websites and webpages have been cited, they are provided for ease of reference and are correct at the time of publication. The location of a webpage or website, or its contents, cannot be guaranteed.

Use of this document

As a code of practice, this part of [BS 8541](#) takes the form of recommendations and guidance. It is not to be quoted as if it were a specification. Users are expected to ensure that claims of compliance are not misleading.

Users may substitute any of the recommendations in this part of [BS 8541](#) with practices of equivalent or better outcome. Any user claiming compliance with this part of [BS 8541](#) is expected to be able to justify any course of action that deviates from its recommendations.

Presentational conventions

The provisions of this standard are presented in roman (i.e. upright) type. Its recommendations are expressed in sentences in which the principal auxiliary verb is “should”.

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Contractual and legal considerations

This publication has been prepared in good faith, however no representation, warranty, assurance or undertaking (express or implied) is or will be made, and no responsibility or liability is or will be accepted by BSI in relation to the adequacy, accuracy, completeness or reasonableness of this publication. All and any such responsibility and liability is expressly disclaimed to the full extent permitted by the law.

This publication is provided as is, and is to be used at the recipient’s own risk.

The recipient is advised to consider seeking professional guidance with respect to its use of this publication.

This publication is not intended to constitute a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

1 Scope

This part of [BS 8541](#) gives recommendations on the transmission of product declarations relating to construction library objects and facility declarations (including buildings, infrastructure and built assets). It applies primarily to manufacturers' specific products, but the principles and some examples are also applicable to facility declarations.

NOTE 1 Independent declarations are an increasingly important aspect of product and facility data, covering environmental and other performance.

This part of [BS 8541](#) gives recommendations on conveying declarations as part of a standard product data set (supplementary to printed labels, annexes and document lodgement) and integrates product and facility declarations into information-driven design, construction and operational processes.

This part of [BS 8541](#) is applicable to any independent declaration scheme and establishes principles for the identification of declarations and their origin.

It defines the level of information appropriate for specific uses including confirmation, reporting, and analysis. The intent is to allow any declaration to be communicated with indications as to the degree of attestation offered. The specific values declared are given in the context of a specific declaration scheme and supported with details of the relevant life cycle stage and details of its scenario.

A1 This part of [BS 8541](#) covers third-party declarations other than Environmental Product Declarations (EPDs) which are now covered by BS EN ISO 22057. **A1**

*NOTE 2 Construction products regulations and CEN standards for buildings and products provide the primary examples. **A1** This part of [BS 8541](#) covers the communication of other product declarations such as wastage rates developed with the UK Government WRAP programme and UK government display energy certificate (DEC) declaration scheme. **A1***

*NOTE 3 COBie, **A1** [BS EN ISO 16739-1](#) **A1** IFC and IFCXML are used as example formats with reference to BS ISO 10303-21 and ISO/TS 10303-28. These formats can be mapped to standard printed forms if required.*

NOTE 4 In situations where the adoption of data-driven design is partial or incomplete, this part of [BS 8541](#) gives further recommendations. If a particular project is formally committed to integrated working then this standard may be adopted as a requirement.

NOTE 5 Self-declared environmental claims (such as described as Type II environmental labels in BS EN ISO 14021) have the lowest degree of attestation but are also covered by this standard.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

[BS 8541-1](#), *Library objects for architecture, engineering and construction – Part 1: Identification and classification – Code of practice*

[BS 8541-2](#), *Library objects for architecture, engineering and construction – Part 2: Recommended 2D symbols of building elements for use in building information modelling*

[BS 8541-3](#), *Library objects for architecture, engineering and construction – Part 3: Shape and measurement – Code of practice*

[BS 8541-4](#), *Library objects for architecture, engineering and construction – Part 4: Attributes for specification and assessment – Code of practice*

 [BS EN ISO 16739-1](#) , *Industry Foundation Classes (IFC) for data sharing in the construction and facility management industries – Data schema*

3 Terms and definitions

For the purposes of this part of [BS 8541](#), the terms and definitions given in [BS 8541-1](#) and the following apply.

3.1 auditor

testing review body

3.2 declaration scheme

set of requirements for characterizing product or facility performance, prepared by an independent body other than the product manufacturer or supplier, and other than the purchaser or owner

NOTE 1 A declaration scheme might have legal or best practice status, which could influence how it is represented.

NOTE 2 BS EN 15804 refers to a Type III environmental declaration programme.

3.3 declarer

provider of the declaration, typically the manufacturer or supplier, but can be a library or scheme provider

NOTE BS EN ISO 14025 and BS EN 15804 refer to “programme operator”.

3.4 facility declaration

data associated to a facility such as a constructed asset, building or structure, provided or verified by a distinct independent declaration scheme to support evaluation and comparisons

3.5 product declaration

data related to a product provided or verified by a distinct independent declaration scheme to support specification and selection

3.6 tester

testing body

NOTE Verification is considered as a type of testing in the context of this standard.

3.7 verification

confirmation, through the provision of objective evidence, that specified requirements have been fulfilled

[SOURCE: BS EN ISO 9000:2005]

4 Declaration processes

4.1 Preparation and publication

The product manufacturer or other library supplier should provide product data, including any current product declarations, in a form that can be used by BIM processes to support the following purposes:

- a) reviewing and confirming declarations by providing the references to definitive resources;
- b) specifying and selecting conformant products or facilities by structuring the performance data in a checkable format;

- c) comparing alternative compliant product and facilities by structuring the performance data in a sortable format; and
- d) analysing and predicting performance by providing clear explanation of the scenarios assumed alongside the values.

4.2 Use

Use should be determined by the declaration scheme objectives and limitations. Confirmation of the declaration information should be undertaken when used for reporting, for validation and for comparison.

Declarations of minimum or maximum performance should not be compared with typical performance and should only be used with caution in simulations and analysis.

Schemes may use different bases for the assessment, and so values provided under different schemes should not be compared.

EXAMPLE What is measured by BS EN 15804 as global warming potential (GWP) is not the same as what is measured as climate change by BRE Environmental Profiles 2008 [1] nor the same as what ICE measures as embodied carbon (which is reported separately for ECO_2 and ECO_2Eq).

5 Principles for the exchange of declarations

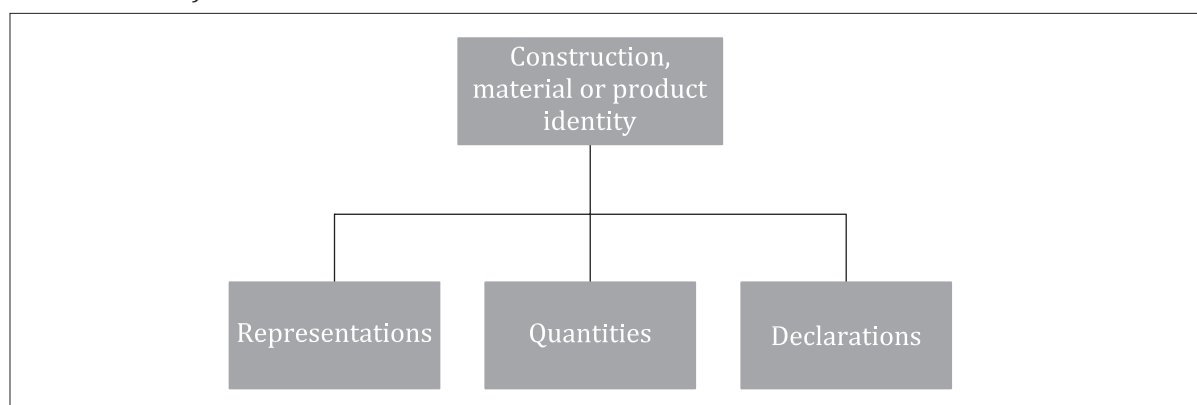
5.1 Construction objects

Any declaration attached to a construction library object should be based on the associated quantity measures of the product or facility (see [Figure 2](#)).

NOTE 1 See [BS 8541](#) Parts 1 to 4 for more information on the exchange of product data.

Facility information should follow similar standards particularly in relation to naming, classification and measurement.

Figure 2 — Construction object



The quantity should be provided as mass and/or volume, or on a unit product, or in some cases areas or thicknesses (see [Table 1](#) and [Table 2](#)).

NOTE 2 For more information see [BS 8541-3](#).

Table 1 — Quantity set definition

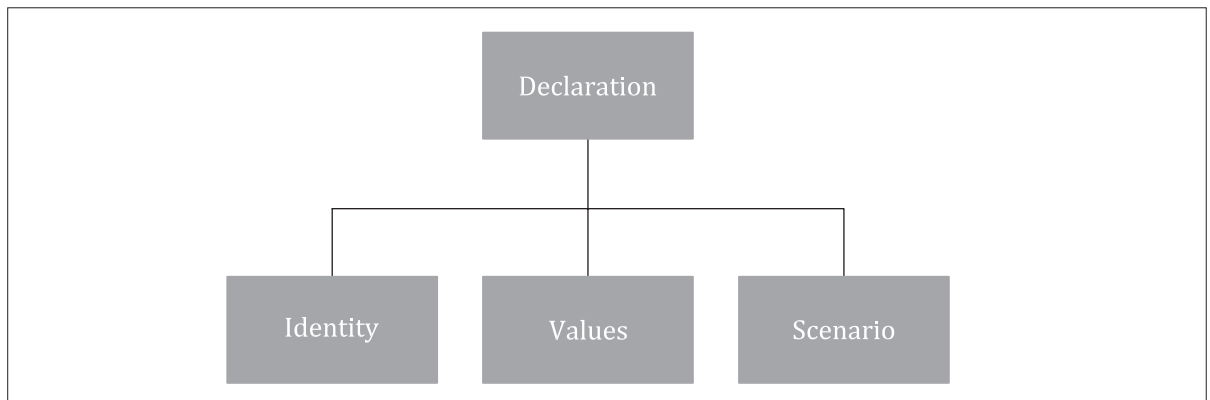
Quantity set name	BaseQuantities
Applicable entities	IfcMaterial, IfcTypeProduct, IfcBuilding, IfcProxy
Description	Base Quantities

Table 2 — Quantity definitions

Quantity name	Measure	Example value and unit		Description
GrossWeight	mass	<i>2 400</i>	<i>kg</i>	Characteristic mass
GrossVolume	volume	<i>1</i>	<i>m³</i>	Characteristic volume

NOTE 3 In Table 2 to Table 7, example values and units in italic are informative.

Declarations should be exchanged as a property set with properties covering identification, declared values and their scenario (see Figure 3).

Figure 3 — Declaration property set

Property set names and property names should be in CamelCase without spaces.

NOTE 4 See BS 8541-4.

NOTE 5 See Annex A for examples.

5.2 Property set

A declaration should be transmitted as a grouped set of properties so that the performance values provided have sufficient context to enable appropriate use.

NOTE 1 The use of property sets separates the declaration from other values and allows multiple declarations to be transmitted within one construction library object.

The property set should be named so as to identify the declaration scheme, the product or facility type and the applicable locale (see Table 3).

Table 3 — Property set naming

Aspect	Measure	Example	Description
Scheme	text	<i>scheme1</i>	The declaration scheme should be identified.
Sub-scheme	text	<i>aspect1</i>	The sub-scheme or product type should be specified.
Locale	text	<i>locale1</i>	Any applicable locale may be identified (optional).
Property set description	text	<i>aspect1_declaration_according to_locale1_scheme1</i>	No unusual punctuation should be used.

The property set should be described by expanding the name with any qualifications required (see Table 4).

NOTE 2 Recipient applications might not preserve the description.

Table 4 — Description

Aspect	Measure	Example	Description
Scheme	text	<i>scheme1</i>	The declaration scheme should be identified.
Sub-scheme	text	<i>aspect1</i>	The sub-scheme or product type should be specified.
Locale	text	<i>locale1</i>	Any applicable locale may be identified (optional).
Property set description	text	<i>aspect1_declaration_according_to_locale1_scheme1</i>	No unusual punctuation should be used.

5.3 Identification properties

5.3.1 General

Properties should be provided to support identification of the declaration and confirmation of the data provided. Indications of the level of attestation should also be provided (see [Table 5](#)).

NOTE See [BS 8541-1](#) for the identification of the product itself and the manufacturer.

The declaration type, tester type and auditor type should indicate the level of attestation and/or type of verification and what standard was used for testing and/or verification.

Table 5 — Properties used for product declaration identification

Property name	Measure	Example value and unit	Description
Scheme	text, as recommended in 5.2	<i>scheme1</i>	The scheme should be identified. (Required)
Sub-scheme	text, as recommended in 5.2	<i>aspect1</i>	The sub-scheme or product type should be identified (optional).
Identifier	text	1234-1234-1234-1234	The unique identifier of the product declaration, typically a code or filename. This may be the product identification. (Required)
Applicability	text, list	<i>external, openings</i>	List of any applicable criteria. These are cumulative criteria that are applied serially. (Optional)
Selection	text, list	windows, doors	List of any selective criteria. These are alternative criteria that are applied in parallel. (Optional)
Exception	text, list	<i>on escape route</i>	List of any relevant exception criteria. (Optional)
Confirmation	text	www.scheme.com/declarations	Method of confirming the information provided, typically a URI ^{A)} or email or code. (Required)
Attestation type	enumeration	<i>un-attested, independent</i>	The overall degree of attestation associated to this declaration, depending on who declared, tested and audited the value(s) provided. The enumeration list may be specific to the scheme. (Optional)
Declaration type	enumeration	<i>self-declared, independent</i>	The degree of attestation associated to this declaration, depending on who provided the value(s). The enumeration list may be specific to the scheme. (Optional)
Testing type	enumeration	<i>self-tested, independent, untested</i>	The degree of attestation associated to this declaration, depending on who tested the product value(s). The enumeration list may be specific to the scheme. (Optional)
Auditing type	enumeration	<i>self-audited, independent, unaudited</i>	The degree of attestation associated to this declaration, depending on who audited the value(s). The enumeration list may be specific to the scheme. (Optional)
Declarer	text		Identifier of the providing organization, typically a URI ^{A)} or email or code. (Optional)
Tester	text		Identifier of the testing organization, typically a URI ^{A)} or email or code. (Optional)
Auditor	text		Identifier of the auditing organization, typically a URI ^{A)} or email or code (Optional)

^{A)} Unique resource identifier