

Designation: E2129 – 18

Standard Practice for Data Collection for Sustainability Assessment of Building Products¹

This standard is issued under the fixed designation E2129; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This practice covers a set of instructions for collecting data to be used in assessing the sustainability of building products for use in both commercial and residential buildings.

1.1.1 There are many features of a building that contribute to sustainability; one of them is the selection of products for use in a building. Other key features influencing sustainability include, but are not limited to: overall efficiency of the design of the building, the impact the building has on the habits of the occupants, and the impact the building has on the microclimate and macroclimate. This practice addresses sustainability issues related to building products. This practice does not address sustainability issues related to overall building design, site selection, building operations, or other features influencing sustainability.

1.1.2 While it is recommended that users rely on professional judgment informed by both environmental expertise and specific knowledge of the intended use of the product, this practice provides no instruction as to interpretation of the data obtained. Interpretation of the data obtained is the responsibility of the user of this practice.

1.1.3 This document cannot replace education or experience and should be used in conjunction with professional judgment. Not all aspects of this practice may be applicable in all circumstances. This practice is not intended to represent or replace the standard of care by which the adequacy of a given professional service must be judged, nor should this document be applied without consideration of a project's many unique aspects. The word "standard" in the title means only that the document has been approved through the ASTM consensus process.

1.2 This practice is organized according to the Construction Specifications Institute's (CSI) MasterFormat² sections to promote consistency in the evaluation of building products.

1.2.1 CSI MasterFormat version 1995 is used to organize information in Table 2. Appendix X1 provides a cross reference comparison to CSI MasterFormat 2004.

1.3 This practice includes general, comprehensive data requirements. Depending upon the building product, certain data requirements may not apply given the unique characteristics of the product and the potential environmental impacts related to the intended use of the product. Depending upon the building product, certain data requirements may need to be added as appropriate to the unique characteristics of the product and the potential environmental impacts related to the intended use of the unique characteristics of the product and the potential environmental impacts related to the intended use of the product.

1.4 This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.

1.5 This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.

2. Referenced Documents

- 2.1 ASTM Standards:³
- C618 Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
- C989/C989M Specification for Slag Cement for Use in Concrete and Mortars
- C1240 Specification for Silica Fume Used in Cementitious Mixtures
- D5359 Specification for Glass Cullet Recovered from Waste for Use in Manufacture of Glass Fiber
- D6400 Specification for Labeling of Plastics Designed to be Aerobically Composted in Municipal or Industrial Facilities

 $^{^{1}}$ This practice is under the jurisdiction of ASTM Committee E60 on Sustainability and is the direct responsibility of Subcommittee E60.01 on Buildings and Construction.

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² The term "MasterFormat" and the MasterFormat logo are trademarks of Construction Specifications Institute (CSI).

³ For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

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TABLE 1 General Questions

	Question	Voc. or No.	NI/A	11/12	Commonte
	QUESIION	Tes of No	IN/A	0/K	Comments
DIVISION 1 -	GENERAL REQUIREMENTS				
Criterion No.	1–Materials (Product Feedstock)				
1.1	Have efforts (such as mining management, site restoration, and so forth) been made to				
	minimize or avoid negative environmental impacts, or both, (such as impact to rare or				
	endangered resources or species, releases of toxic chemicals or hazardous air				
	pollutants, and so forth) in obtaining raw materials for this product? If yes, describe				
	these efforts.				
1.2	Is the product a recycled content product? If YES, indicate what percentage of the				
	product is recycled and differentiate between pre-consumer and post-consumer				
	recycled content				
13	If annicable does the recycled content product contain the percentage of recovered				
1.5	materials recommended by the United States Environmental Protection Agency's (EPA)				
	Comprehensive Procurement Guidelines?				
1 4	In the product 100% regulable? If NO places indicate what percentage of the product				
1.4	is the product 100% recyclable? If NO, please indicate what percentage of the product				
1 5	Is recyclable.				
1.5	is the product a biobased product (that is, agricultural or forestry material)? If YES,				
	please indicate the source and blobased content percentage. If percentage refers to a				
1.0	component rather than the entire product, please specify.				
1.6	is the product made from a renewable resource? If YES, indicate the renewable cycle				
. –	time and what percentage of the product that resource represents.				
1./	Does the product, in the specified condition of use, meet U.S. EPA's National Vola-				
	tile Organic Compound (VOC)?				
1.8	Does the product in the specified condition of use, meet the requirements of				
	South Coast Air Quality Management District for content of VOCs?				
1.9	Is this product covered by an environmental product declaration (EPD) that conforms to				
	ISO 14025, ISO 14040, ISO 14044, and EN 15804 or ISO 21930 and does it have at				
	least a cradle-to-gate scope? If YES, please indicate if EPD is product specific and how				
	the sender of this questionnaire could obtain a copy of the EPD.				
Criterion No.	2-Manufacturing				
2.1	Has the manufacturer taken steps to minimize the use of nonrenewable energy from				
	the point at which raw materials are gathered to the point at which the final product is				
	transported to the building site? If yes, describe these measures.				
2.2	Is any of the waste produced in making this product reclaimed on-site? If yes, what \supset				
	percentage of the waste is reclaimed? Of the waste that is not reclaimed on-site, how				
	is that waste handled?				
2.3	Does the process for manufacturing this product avoid the use of listed substances				
	above the levels that would require reporting under the U.S. EPA's Toxics Release In-				
	ventory? ^A If NO, indicate how much of each substance is released per unit of product.				
2.4a	Does the process for manufacturing the product avoid the addition of substances listed				
	in the National Toxicology Program's (NTP) Report on Carcinogens? ^B				
2.4b	If substances listed in the NTP's Report on Carcinogens are added directly in the				
	manufacturing process or are reported by suppliers on Material Safety Data Sheets				
	(MSDS), do the concentrations fall below levels required to be reported under federal				
	regulations on the products' MSDS? If NO, indicate the substance, classification and				
	ta concentration per unit of product. and ards/sist/d82eac66-5142-4cc5-a2ac				
2.5	Have any recent improvements been made to limit negative environmental impacts re-				
	lating to the manufacturing process? If YES, describe the benchmark against which the				
	improvements are measured and the degree of improvement.				
2.6	If water is used during the production process, have water conservation or recycling				
	measures, or both, been initiated? If yes, describe the measures and what percentage				
	of the total water usage they address.				
2.7	Has the manufacturer undertaken any of the following actions? If yes, indicate when				
	the action(s) was (were) taken and describe the benchmark against which the improve-				
	ments are measured and the degree of improvement.				
2.7a	Redesigned a production process to decrease greenhouse gas emissions?				
2.7b	Redesigned a production process to decrease liquid effluents?				
2.7c	Redesigned a production process to utilize less toxic materials?				
2.7d	Substituted safer solvents in a production process?				
2.7e	Instituted more stringent dust controls?				
2.7f	Installed smoke-stack particulate collectors or gas scrubbers?				
2.7g	Installed or improved in-plant solid and toxic waste reduction programs?				
2.8	Does the manufacturing facility comply with or exceed applicable occupational, health,				
	and safety requirements?				
Criterion No.	3–Operational Performance of Installed Product				
3.1	If applicable, does the product qualify for an EPA ENERGY STAR ^C Program rating or				
	meet the energy efficiency recommendations of the Department of Energy's (DOE)				
2.0	Describe the product's energy efficiency impacts				
0.2 0.0	Describe routine maintenance procedures for the product				
0.0 Q /	How long will the product last in the building if maintained property with routine maintained				
0.4	nance procedures?				
3.5	Does the manufacturer provide detailed instructions with the product upon delivery to				
0.0	the job site for the proper use and maintenance required in order to ensure that this				
	product will last this long?				

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TABLE 1	Continued
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	Question	Yes or No	N/A	U/K	Comments
Criterion No.	4–Indoor Environmental Quality ^E				
4.1	Is there any other information about how this product contributes to indoor				
	environmental quality (positively or negatively, for example, acoustical properties,				
	lighting, potential risks to workers during application, and so forth) that has not already				
	been reported, but that sender of this questionnaire should know? If YES, describe. (If				
	this product is not intended to be used in the indoor environment or to interface with				
0 ··· · N	the occupants, indicate N/A.)				
Criterion No.	5-Corporate Environmental Policy				
5.1	boes the manufacturer have a written environmental policy? If YES, indicate now the sender of this questionnaire could obtain a copy of this policy upon request.				
5.2	Does the manufacturer have a reclamation program or any other program in place to				
	facilitate the recycling or reuse of its product by accepting return of the product at the				
	end of its useful life? If NO, comment on the environmental impact of the product as a				
	waste material. If yes, comment on how much of the product is actually reused or				
	recycled at the end of the product's useful life.				
5.3	Does the manufacturer have a program in place to reduce the amount of the product's				
	packaging? If YES, describe.				
5.4	Does the manufacturer have a program in place to facilitate the return, reuse, recycling,				
	or composting of the product's packaging? If YES, describe.				
5.5	Does the manufacturer provide information on the service life of the product or				
	encourage the use of professional guidelines to determine the service life of the product?				
5.6	Does the manufacturer provide information regarding natural disaster mitigation, such				
	as performance of the product during a natural disaster or appropriate response after a natural disaster?				
57	Is documentation available to support the product's environmental claims? If YES				
5.7	please indicate how copies may be obtained upon request				
5.8	Is there other information for which you could provide objective evidence about the				
0.0	environmental guality of the building product you offer that you would like taken into				
	consideration? If YES, describe the information and indicate how copies of this				
	evidence could be obtained upon request				

^A For additional information, visit http://www.epa.gov/tri. ^B NTP (National Toxicology Program). 2016. Report on Carcinogens, Fourteenth Edition.; Research Triangle Park, NC: U.S. Department of Health and Human Services, Public Health Service. https://ntp.niehs.nih.gov/go/roc14.

^C The term "ENERGY STAR" and the ENERGY STAR logo are trademarks of the U.S. Environmental Protection Agency (EPA).

^D Additional information may be obtained from U.S. Department of Energy, Office of Energy Efficiency & Renewable Energy, Forrestal Bldg. 1000 Independence Ave., SW, Washington, DC 20585, https://www.energy.gov/eere/femp/federal-energy-management-program.

^E Note that some of the questions under Criterion No. 1 (Materials [Product Feedstock]) refer to attributes of products, for example, toxicity, that pose concerns for indoor environmental quality as well. In the interest of avoiding repetition, those questions are not repeated here. Respondents are reminded to answer all questions in the general section of this questionnaire.

E631 Terminology of Building Constructions

E1480 Terminology of Facility Management (Building- 6-5) Related)

E2114 Terminology for Sustainability Relative to the Performance of Buildings

2.2 ANSI Standard:⁴

ANSI A208.2 Medium Density Fiberboard

2.3 ASHRAE Standards:⁵

ASHRAE 90.1 Energy Efficient Design of New Buildings Except Low-Rise Residential Buildings

ASHRAE 62 Ventilation for Acceptable Indoor Air Quality ASHRAE 52–76 Gravimetric and Dust-Spot Procedures for Testing Air-Cleaning Devices Used in General Ventilation

for Removing Particulate Matter

2.4 ASME Standard:⁶

ASME A112.18.1M-1989 Plumbing Fixture Fittings

2.5 CSI Program:⁷ MasterFormat 2004 Edition⁷ def⁷ astm-e2129-18

2.6 EN Standard:⁸

EN 15804 (2012 Amd 1) Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products

2.7 EPA Standards:⁹

ENERGY STAR Program

Comprehensive Procurement Guidelines

- National Volatile Organic Compound (VOC) Emission Standards
- 2.8 HUD Standards:¹⁰

⁴ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, http://www.ansi.org.

⁵ Available from American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc. (ASHRAE), 1791 Tullie Circle, NE, Atlanta, GA 30329, http://www.ashrae.org.

⁶ Available from American Society of Mechanical Engineers (ASME), ASME International Headquarters, Two Park Ave., New York, NY 10016-5990, http:// www.asme.org.

²⁴ CFR Pt. 3280 Manufactured Home Construction and Safety Standards

⁷ Available from Construction Specifications Institute (CSI), 110 S. Union St., Suite 100, Alexandria VA 22314, http://www.csiresources.org.

⁸ Available from European Standards (EN), Krimicka 134, 318 13 Pilsen, Czech Republic, https://www.en-standard.eu.

⁹ Available from U.S. Environmental Protection Agency (EPA), William Jefferson Clinton Bldg., 1200 Pennsylvania Ave., NW, Washington, DC 20460, http://www.epa.gov.

¹⁰ Available from U.S. Department of Housing and Urban Development (HUD), 451 7th Street S.W., Washington, DC 20410, http://www.hud.gov.

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TABLE 2 Questions Related to Specific Building Products

		TABLE 2 QUESTIONS Relate			ouucis		
		Question	Yes or No	N/A	U/K	Criteria Category(les)	Comments
DIVISION 2	-SITE CONSTRUCTION						
2-A	Does the manufacturer facil or building products, or both for reuse) by, for example, or YES, describe the process.	tate ultimate deconstruction of building , (in which components are taken apa lesigning products for disassembly? If	js rt			Materials Manufacturing Op. Performance IEQ	
2-B	Does the product facilitate v the process and indicate the	vater treatment on site? If YES, describ level of treatment.	De			Materials Manufacturing X Op. Performance IEQ X Corp. Env. Policy	
2-C	Does the manufacturer offer What is the albedo reflectar	surfaces with high albedo reflectance ce?	?			Materials Manufacturing X Op. Performance IEQ	
2-D	Does the manufacturer offer landscaped areas (roadway	pervious paving materials for non- s, surface parking, plazas, pathways)?				Materials Manufacturing X Op. Performance IEQ Corp. Env. Policy	
DIVISION 3	-CONCRETE					_ , ,	
3-A	Does the product meet the recovered materials?	ollowing standards, which refer to				X Materials Manufacturing Op. Performance	
3-A.1	Specification C618 "Specific cined Natural Pozzolan for I	ation for Coal Fly Ash and Raw or Cal Jse in Concrete?"	ndar			X Materials Op. Performance	
3-A.2	Specification C989/C989M Concrete and Mortars?"	Specification for Slag Cement for Use	lards.			Corp. Env. Policy X Materials Manufacturing Op. Performance	
3-A.3	Specification C1240 "Specificitious Mixtures?"	cation for Silica Fume Used in Cemen				Corp. Env. Policy X Materials Manufacturing Op. Performance	
						Corp. Env. Policy	
DIVISION 4	MASONRYs itch ai/ca					$\overline{47}$ def/astm-e212	
4-A	Does the product meet the ered materials?	ollowing standards, which refer to reco	OV-			X Materials Manufacturing Op. Performance IEQ Corp. Env. Policy	
4-A.1	Specification C989/C989M ' Concrete and Mortars?"	Specification for Slag Cement for Use	in			X Materials Manufacturing Op. Performance	
4-A.2	Specification C1240 "Specif tious Mixtures?"	cation for Silica Fume Used in Cemen	ti-			X Materials Manufacturing Op. Performance	
DIVISION 5	5-METALS					Corp. Env. Policy	
5-A	Does the product have a fact ished? If NO, describe reco	ctory finish or can it be installed unfin- nmended field finishing properties.				Materials <u>X</u> ManufacturingOp. PerformanceIEQCorp. Env. Policy	
5-B	If a finish does exist, can th future recycling of the metal	e finish be easily removed to facilitate ?				Materials XManufacturing Op. Performance IEQ Corp. Env. Policy	

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 TABLE 2
 Continued

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			Continued				
	Question		Yes or No	N/A	U/K	Criteria Category(ies)	Comments
DIVISION 6- Wood							
6-A	Is the wood that is used in the product harvested from for have been managed for sustainability according to the g a recognized certification program? If YES, indicate the regulation and describe the primary aspects of sustainab promotes	prests that uidelines of name of pility that it				X Materials Manufacturing Op. Performance IEQ	
6-B	Is the product made from a species of wood that is natu to damage associated with the conditions to which it is e YES, indicate which definition of "naturally resistant" is u this determination and indicate the name of the species.	rally resistant exposed? If used to make				<u>X</u> Materials <u>Manufacturing</u> <u>Dp. Performance</u> <u>IEQ</u> <u>Corp. Env. Policy</u>	
6-C	Has the wood been treated with a preservative? If YES, indicate the preservative that was used and the standard standards) to which the wood was treated.	please d (or				Materials XManufacturing Op. Performance XEQ	
6-D	Is the agricultural resource from which this product is ma organically grown according to the standards of a recogn certification program? If YES, indicate the name of the c program.	ade certified nized ertification				<u>X</u> Materials Manufacturing Op. Performance IEQ Corp. Env. Policy	
6-E	Is the medium density fiberboard (MDF), or products ma containing MDF, third party certified to comply with the fe emissions requirements in ANSI A208.2?	ide ormaldehyde				Materials X Manufacturing Op. Performance X IEQ Corp. Env. Policy	
6-F	Does the binder for plywood or particleboard, or both, m Manufactured Home Construction and Safety Standards by HUD 24 CFR Pt. 3280) for formaldehyde emissions?	eet the promulgated				Materials <u>X</u> Manufacturing <u>Op.</u> Performance <u>X</u> IEQ <u>Corp. Env. Policy</u>	
Plastics and 6-G	I Plastic Composites Are plastics marked to identify materials for recycling?					X Materials Manufacturing Op. Performance	
6-H	Does the building product (or components of the produc requirements of Specification D6400 "Specification for La Plastics Designed to be Aerobically Composted in Munic dustrial Facilities?"	t) meet the abeling of sipal or In-				Corp. Env. Policy X Materials Manufacturing Op. Performance IEQ	
DIVISION 7-	—THERMAL AND MOISTURE PROTECTION AS					Corp. Env. Policy	
Roofing 7-A	Is the roofing material a light color/high albedo material? what is the albedo reflectance?	d82eac66 If YES,				Materials Manufacturing X Op. Performance IEQ Corp. Env. Policy	
Sealants an 7-B	d Caulking Do caulking and sealant products come with detailed ins proper application in order to minimize health concerns? cate how the sender of this questionnaire could obtain a instructions.	tructions for If YES, indi- copy of the				Materials Manufacturing Op. Performance X IEQ Corp. Env. Policy	
7-C	Is the sealant or caulking compound a low-odor, all-wear waterproof, and vapor-proof coating?	ther,				Materials Manufacturing X_ Op. Performance X_ IEQ Corp. Env. Policy	
7-D	Does the fiberglass insulation product meet the requiren lished in Specification D5359 "Specification for Glass Cu ered from Waste for Use in Manufacture of Glass Fiber?	nents estab- illet Recov- "				X Materials Manufacturing Op. Performance IEQ Corp. Env. Policy	
7-E	In which R-Values is the insulation product available?					Materials Manufacturing X Op. Performance IEQ Corp. Env. Policy	

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 TABLE 2
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		TADLE 2	Continueu				
	Question		Yes or No	N/A	U/K	Criteria Category(ies)	Comments
DIVISION 8 8-A	DOORS AND WINDOWS Is the energy efficiency of the windows, doors, or sky determined in accordance with NFRC 100 (U Factor) (SHGC) by an accredited independent laboratory and certified by the manufacturer?	rlights and NFRC 200 d labeled and				Materials Manufacturing X Op. Performance IEQ	
8-B	What is the Visible Light Transmission Coefficient of doors, and skylights as determined according to NFF	the windows, ₹C 300?				Materials Manufacturing X Op. Performance	
DIVISION 9 Flooring	-FINISHES						
9-A	Does the carpet product meet the requirements of a ronmental certification program? If YES, indicate the certification program.	third party envi- name of the				Materials Manufacturing Op. Performance X IEQ Corp. Env. Policy	
9-B	Does the manufacturer recommend the carpet produ prior to installation? If YES, describe the process for	ct be aired out airing out.				Materials Op. Performance X IEQ Corp. Env. Policy	
Paints and 9-C	Coatings Does the finishing product contain plant-sourced oils ing only natural or aliphatic solvents, or both?	and solids utiliz-				X Materials Manufacturing Op. Performance X IEQ	
9-D	Is the finish water-borne? If NO, indicate the solvent	used.				Corp. Env. Policy Materials Manufacturing	
						Op. Performance X IEQ Corp. Env. Policy	
DIVISION 1 10-A	0—SPECIALTIES Is the product modular or otherwise adaptable? If YE product.	S, describe the				X Materials	
						X Op. Performance	
DIVISION 1 There are n DIVISION 1	1—EQUIPMENT to questions for Division 11. 2—FURNISHINGS	ASTM E21					
https:/	Are there components of the furnishings that are reu bished? If YES, indicate how much of the furnishings used or refurbished.	sed or refur- ;, per unit, is re-(Materials Manufacturing Op. Performance IEQ Corp. Env. Policy	
12-B	Does the finishing product for furnishings contain pla and solids utilizing only natural or aliphatic solvents,	nt-sourced oils or both?				X Materials Manufacturing Op. Performance X IEQ	
12-C	Is the finish water-borne? If NO, indicate the solvent	used.				Corp. Env. Policy Materials Manufacturing Op. Performance X IEQ	
12-D	Is the adhesive or fastener products for furnishings r without the addition of urea-formaldehyde?	nanufactured				Materials Manufacturing Op. Performance X IEQ	
DIVISION 1 There are n	3—SPECIAL CONSTRUCTION to questions for Division 13.						
וטוטוטוטוט 14-A	4—CONVEYING SYSTEMS Does the elevator operate by using hydraulics? If YE method used to prevent and mitigate leakage of hyd	S, describe the raulic fluid.				Materials Manufacturing X_Op. Performance IEQ	

Corp. Env. Policy