

1. Record Nr.	UNINA9910484770903321
Autore	Roth Hannah Rae
Titolo	The green building materials manual : a reference to environmentally sustainable initiatives and evaluation methods / / Hannah Rae Roth, Meghan Lewis, Liane Hancock
Pubbl/distr/stampa	Cham, Switzerland : , : Springer, , [2021] ©2021
ISBN	3-030-64888-5
Descrizione fisica	1 online resource (xv, 194 pages) : illustrations
Disciplina	324.120286
Soggetti	Building materials - Environmental aspects Sustainable buildings
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Intro -- Acknowledgments -- Prologue -- A Letter from the Authors -- Contents -- Chapter 1: Introduction -- 1.1 Defining Sustainability -- 1.1.1 World Commission on the Environment and Development -- 1.1.2 The Sustainable Development Goals -- 1.1.3 The Hannover Principles -- 1.2 Measuring Sustainability -- 1.3 The Triple Bottom Line -- References -- Chapter 2: Describing Building Materials and Products -- 2.1 Introduction -- 2.2 What Is a Building Material? -- 2.3 How Are Building Materials and Products Used? -- 2.3.1 Performance -- 2.4 How Are Building Materials and Products Made? -- 2.4.1 Chain of Custody -- 2.4.2 Trade Secrets -- 2.5 Why Is the Size or Unit of a Building Material or Product Important? -- 2.6 Where Are Building Materials and Products Made? -- 2.7 How Are Building Materials and Products Selected? -- 2.7.1 Who Represents Building Materials and Products? -- References -- Chapter 3: Decoding the Ways to Measure Sustainability and Life Cycle Thinking -- 3.1 Decoding the Ways to Measure Sustainability -- 3.2 Life Cycle Thinking -- 3.3 Life Cycle Assessment -- 3.3.1 Life Cycle Stages and System Boundaries -- 3.3.2 The Four Steps of Life Cycle Assessment -- 3.3.2.1 Step 1: Goal and Scope Definition -- 3.3.2.2 Step 2: Life Cycle Inventory (LCI) -- 3.3.2.3 Step 3: Life Cycle Impact Assessment (LCIA) -- 3.3.2.4 Step 4: Interpretation -- 3.3.3 Comparing Life Cycle Assessments -- References -- Chapter 4:

Resource Use -- 4.1 Introduction -- 4.2 Selecting Sustainable Ingredients -- 4.2.1 Resource (Raw Material) Extraction Sites -- 4.2.1.1 Ecosystem and Biodiversity Impacts -- 4.2.1.2 Local Sourcing -- 4.2.2 Non-renewable Resources -- 4.2.2.1 Quarries, Mines, and Wells -- 4.2.2.2 Conflict Resources -- 4.2.3 Renewable Resources -- 4.2.3.1 Biobased Content -- 4.2.3.2 Rapidly Renewable Content -- 4.2.3.3 Wood Sourcing. 4.2.3.4 Carbon Sequestering (Carbon-Storing) Materials -- 4.2.4 Circular Feedstocks: Reused, Reclaimed, and Recycled Resources -- 4.2.4.1 Reused Material Content -- 4.2.4.2 Reclaimed Material Content -- 4.2.4.3 Recycled Content -- 4.3 Designing Products to Minimize Resource Use: Dematerialization -- 4.4 End of Life: Waste Recovery and Circularity -- 4.4.1 Circularity -- 4.4.2 Biodegradability -- 4.4.3 Compostable -- 4.4.4 Recyclability -- 4.4.5 Design for Disassembly -- 4.4.6 Manufacturing Waste Recovery and Resource Conservation -- 4.4.7 Material Recovery and Manufacturer "Take-Back" Programs -- References -- Chapter 5: Energy Use -- 5.1 Introduction -- 5.2 Energy Sources -- 5.2.1 Primary Energy Fuel -- 5.2.2 Secondary Energy Fuel or Energy Currency -- 5.2.3 Energy Carrier -- 5.2.4 Renewable Energy -- 5.2.5 On-Site Renewable Energy -- 5.2.6 Exported Energy -- 5.3 Energy Savings and Efficiency -- 5.3.1 Energy Consumption -- 5.3.2 Energy Audits -- 5.3.3 Energy Efficiency -- 5.4 Excess and Potential Energy Throughout Life Cycle -- 5.4.1 Energy Recovery -- 5.4.2 Energy from Waste -- 5.4.3 Bioenergy from Waste -- References -- Chapter 6: Water Use -- 6.1 Introduction -- 6.2 Extraction: Water Sourcing -- 6.2.1 Body of Water Protection -- 6.2.2 Freshwater Versus Potable Water -- 6.3 Manufacturing and Use: Water Volume Reduction -- 6.3.1 Water Audits: Identifying Inefficiencies -- 6.3.2 Water-Efficient Manufacturing Tools -- 6.3.3 Net Zero Water Use -- 6.4 Water Origin Related to Ecology and Social Accountability -- 6.4.1 Embodied Water -- 6.4.2 Water Footprint -- 6.4.3 Water Stewardship -- 6.4.4 Worker Water Supply -- 6.5 End of Life: Water Recycling and Water Quality -- 6.5.1 Water Recycling -- 6.5.2 Water Quality and Character -- 6.5.3 Antidegradation Requirements -- 6.5.4 Water Quality Testing Requirements -- References -- Chapter 7: Emissions. 7.1 Introduction -- 7.2 Carbon Dioxide and Greenhouse Gas Emissions -- 7.2.1 Global Warming Potential -- 7.2.2 Embodied Carbon -- 7.2.3 Greenhouse Gas Accounting and Emissions Reporting -- 7.2.4 Carbon Offsets -- 7.3 Acidification -- 7.4 Nutrient Pollution and Eutrophication -- 7.5 (Stratospheric) Ozone Depletion -- 7.6 Photochemical Ozone Creation (Smog) Potential -- References -- Chapter 8: Toxicity and Human Health -- 8.1 Introduction -- 8.2 Toxicity Exposure: Hazard Versus Risk -- 8.3 Exposure Pathways -- 8.4 Levels of Toxic Impacts -- 8.5 Effect of Toxins -- 8.6 Measuring Toxicity -- 8.6.1 Evaluating Chemicals for Toxicity and Controlling Their Use and Release -- 8.6.2 Bans on Specific Chemicals -- 8.6.3 Chemical Red Lists -- 8.6.4 Chemical Class -- 8.6.4.1 Per- and Polyfluoroalkyl Substances -- 8.6.4.2 Antimicrobials -- 8.6.4.3 Flame Retardants -- 8.6.4.4 Bisphenols and Phthalates -- 8.6.4.5 Some Solvents -- 8.6.4.6 Certain Metals -- 8.6.5 Characterizing, Optimizing, and Managing Chemicals -- References -- Chapter 9: Social Accountability -- 9.1 Introduction -- 9.2 Labor and Human Rights -- 9.2.1 Assessing and Addressing Child Labor and Forced Labor -- 9.2.2 Discrimination -- 9.2.3 Working Hours -- 9.3 Unions and Collective Bargaining -- 9.4 Management Processes and Social Accountability -- 9.4.1 Social Impact Indicators -- 9.4.2 Risk Assessment -- 9.4.3 Safe Working Environments -- 9.4.4 Requirements for Grievance Mechanisms -- 9.4.5 Third-Party Audit or Accreditation -- 9.5 Animal Welfare -- References -- Chapter 10: Laws,

Regulations, Standards, Certifications, and Ecolabels -- 10.1
Introduction -- 10.2 Laws and Regulations -- 10.3 Executive Orders --
10.4 Court Challenges to the Constitution, Laws, Executive Orders,
and Regulations and Case Law -- 10.5 De Facto Regulations -- 10.6
Codes -- 10.7 Standards and Certifications.
10.7.1 Types of Standards -- 10.7.2 What Is Being Evaluated? -- 10.7.3
How Is the Building Material or Product Evaluated in Relation
to the Standard? -- 10.7.4 How Is the Measurement of Environmental
Impacts Achieved? -- 10.8 Standard Development and the Certification
Process -- 10.8.1 Standard Developing Originating Organization --
10.8.2 Standards Developing Organization -- 10.8.3 ANSI Standards,
ANSI-Accredited Standards Developing Organizations, and ANSI-
Accredited Certifying Organizations -- 10.8.4 Governmental Standards
-- 10.8.5 Conformity Assessment Bodies -- 10.8.6 Auditors
and Consultants -- 10.9 Ecolabel or Certification Mark -- References
-- Chapter 11: Transparency -- 11.1 Introduction -- 11.2 Disclosure
-- 11.3 Material Inventories and Characterization -- 11.4
Environmental Product Declarations -- 11.4.1 Product Category Rules
-- 11.5 Health Disclosures -- 11.5.1 Health Product Declarations --
11.5.2 The Declare Label -- 11.6 Data at Your Fingertips: Databases --
References -- Chapter 12: Conclusion -- 12.1 Introduction -- 12.1.1
Why People? -- 12.2 A Timeline -- 12.2.1 Pre-1960 -- 12.2.2 1960-
1979 -- 12.2.3 1980-1999 -- 12.2.3.1 Corporate Social Responsibility
and the Carpet Industry -- 12.2.3.2 Green Chemistry -- 12.2.4 2000-
2020 -- 12.2.4.1 Sustainable Ingredients -- 12.2.4.2 Social
Accountability, Social Justice, and Equity -- 12.3 From Individual
to Collective Action -- References -- Index.
