OmniClass™

A Strategy for Classifying the Built Environment

Table 41 - Materials

Edition 1.0: 2006-03-28

Table of Contents

Table of Contents i
Definition i
Discussion i
Examples i
Table Uses ii
Table Users ii
Legacy Documents ii
Numbers & Titles 1
41-10 00 00 Chemical Elements 1
41-30 00 00 Solid Compounds 2
41-50 00 00 Liquids 5
41-70 00 00 Gases 5

Definition

Materials are basic substances used in construction or to manufacture products and other items used in construction. These substances may be raw materials or refined compounds, irrespective of their form.

Discussion

This table classifies the basic substances that construction products and tools are made from. The entries describe the basic composition of these substances, without regard to the form the material takes. Because many material names commonly imply a certain form, any apparent overlap between this table and Table 23 - *Products* is exactly that, an apparent but not an actual overlap. The entries in this table are names that can be applied to the Material property of an entity, and do not have expressed forms because they are not intended to represent the actual items used in creating or sustaining the built environment. This table is not intended to be an exhaustive list of possible material names.

Any composition that can be described without implicitly or explicitly defining the form would be included in this table. Forms are characteristics like "board," "bar," "sheet," "block," etc. An example of this is Aluminum -- aluminum is a chemical composition. Although aluminum products come in bars, sheets, and other forms, the term aluminum describes the “material” each of those products is made of.

Other types of materials included in this table are raw material names that usually encompass both chemical composition and form, because they are found in nature in certain forms. For example, the chemical composition of "sand" is silicon dioxide, but because sand is a naturally occurring form of silicon dioxide and because we use sand as a constituent material of other products, we include it in this table. Because sand is also a commodity in its natural form, it will also show up in Table 23 - *Products*.

Examples

Metallic Compounds, Rocks, Soils, Timber, Glass, Plastics, Rubber

Table Uses

Material names can be thought of as adjectives, and can be combined with a product classification from Table 23 to classify a type of product by the material it is made from. Aluminum Sheet is a product classification in Table 23, which can be associated with the material Aluminum from Table 41.

Table Users

Because Material is such a fundamental property of most construction products, anyone who needs to define the requirements for, or describe the properties of, products would be a user of the Materials Table in conjunction with Table 49 - Properties.

Legacy Documents

- CI/SfB Construction Indexing Manual
- EPIC "Constituent Materials" table
- ISO 12006-2, Table 4.17 Properties and characteristics (by type)
- Uniclass Table P – Materials

Number Title

Numbers & Titles

41-10 00 00 Chemical Elements

41-10 10 00 Non-Metallic Solid Elements

41-10 10 06 Carbon
41-10 10 14 Silicon
41-10 10 15 Phosphorus
41-10 10 16 Sulfur
41-10 10 20 Calcium
41-10 10 53 Iodine

41-10 20 00 Metallic Elements

41-10 20 05 Boron
41-10 20 12 Magnesium
41-10 20 13 Aluminum
41-10 20 19 Potassium
41-10 20 22 Titanium
41-10 20 23 Vanadium
41-10 20 24 Chromium
41-10 20 25 Manganese
41-10 20 26 Iron
41-10 20 27 Cobalt
41-10 20 28 Nickel
41-10 20 29 Copper
41-10 20 30 Zinc
41-10 20 33 Arsenic
41-10 20 42 Molybdenum
41-10 20 47 Silver
41-10 20 48 Cadmium
41-10 20 50 Tin
41-10 20 51 Antimony
41-10 20 74 Tungsten
41-10 20 79 Gold
41-10 20 82 Lead
41-10 20 83 Bismuth

41-10 50 00 Liquid Elements

41-10 50 80 Mercury

41-10 70 00 Gaseous Elements

41-10 70 01 Hydrogen
41-10 70 02 Helium
41-10 70 07 Nitrogen
41-10 70 08 Oxygen
41-10 70 09 Fluorine
41-10 70 10 Neon
41-10 70 17 Chlorine
41-10 70 18 Argon
41-10 70 36 Krypton
41-10 70 54 Xenon
41-10 70 86 Radon

Number Title

41-30 00 00 Solid Compounds

41-30 10 00 Mineral Compounds

41-30 10 11 Rocks
- 41-30 10 11 11 Granites
- 41-30 10 11 14 Limestones
- 41-30 10 11 17 Marbles
  - 41-30 10 11 17 11 Marble Stone
  - 41-30 10 11 17 14 Travertine
  - 41-30 10 11 17 17 Limestone Marble
  - 41-30 10 11 17 21 Onyx
- 41-30 10 11 21 Quartz-Based Rocks
  - 41-30 10 11 21 11 Quartz
  - 41-30 10 11 21 14 Quartzitic-Sandstone
  - 41-30 10 11 21 17 Sandstone
  - 41-30 10 11 21 21 Sand
- 41-30 10 11 24 Slates
- 41-30 10 11 27 Rock Fibers
- 41-30 10 11 31 Other Rocks
  - 41-30 10 11 31 11 Barite
  - 41-30 10 11 31 14 Chalk
  - 41-30 10 11 31 17 Tufa
  - 41-30 10 11 31 21 Perlite
    - 41-30 10 11 31 21 11 Expanded Perlite
  - 41-30 10 11 31 24 Shale
    - 41-30 10 11 31 24 11 Expanded Shale
  - 41-30 10 11 31 27 Mica
    - 41-30 10 11 31 27 11 Expanded Mica
  - 41-30 10 11 31 31 Expanded Vermiculite

41-30 10 14 Clays
- 41-30 10 14 11 Clay
- 41-30 10 14 14 Fire Clay
- 41-30 10 14 17 Bentonite
- 41-30 10 14 21 Expanded Clay
- 41-30 10 14 24 Ceramics (Includes: Fired Clays)
  - 41-30 10 14 24 11 Brick
  - 41-30 10 14 24 14 Earthenware
  - 41-30 10 14 24 17 Terracotta (Note: Low Temperature Fired, Porous Ceramic)
  - 41-30 10 14 24 21 Fired Shale
  - 41-30 10 14 24 24 Porcelain
  - 41-30 10 14 24 27 Vitreous China

41-30 10 17 Other Cementitious Materials
- 41-30 10 17 11 Soils
- 41-30 10 17 14 Cements
  - 41-30 10 17 14 11 Portland Cement
- 41-30 10 17 17 Limes
  - 41-30 10 17 17 11 Hydrated Lime
  - 41-30 10 17 17 14 Quicklime
  - 41-30 10 17 17 17 Slaked Lime
- 41-30 10 17 21 Gypsums (Note: Hydrated Calcium Sulfate)
- 41-30 10 17 24 Calcium Silicate
- 41-30 10 17 27 Magnesia

41-30 10 21 Bituminous and Petrochemical Minerals
- 41-30 10 21 11 Asphalts
  - 41-30 10 21 11 11 Asphalt
  - 41-30 10 21 11 14 Polymer Modified Asphalt
- 41-30 10 21 14 Coal Tars
  - 41-30 10 21 14 11 Coal Tar Pitch
- 41-30 10 21 17 Paraffins

41-30 10 24 Other Non-Metallic Natural Minerals
- 41-30 10 24 11 Asbestos

Number Title

41-30 10 24 14 Graphite
41-30 10 24 17 Carbon Black
41-30 10 24 21 Salt (Sodium Chloride)

41-30 10 27 Other Minerals Not Occurring Naturally

41-30 10 27 11 Glasses and Glass-Like Materials
41-30 10 27 11 11 Glass
41-30 10 27 11 14 Porcelain Enamel
41-30 10 27 14 Other Minerals
41-30 10 27 14 11 Fly Ash
41-30 10 27 14 14 Carbon Fiber
41-30 10 27 14 17 Silicon Carbide (Includes: Carborundum)
41-30 10 27 14 21 Cermet (Note: Composite material made by mixing, pressing and sintering metal with ceramic)

41-30 20 00 Metallic Compounds

41-30 20 11 Iron Alloys

41-30 20 11 11 Carbon Steels
41-30 20 11 14 Stainless Steels
41-30 20 11 21 Other Steels
41-30 20 11 99 Other Iron Alloys
41-30 20 11 99 11 Cast Iron
41-30 20 11 99 14 Wrought Iron
41-30 20 11 99 17 Ductile Iron
41-30 20 11 99 21 Malleable Iron

41-30 20 14 Aluminum Alloys

41-30 20 14 11 Aluminum-Zinc Alloys

41-30 20 17 Copper Alloys

41-30 20 17 11 Brasses
41-30 20 17 14 Bronzes

41-30 20 21 Zinc Alloys

41-30 20 21 11 Zinc-Lead Alloys
41-30 20 21 11 11 Zamac
41-30 20 21 14 Other Zinc Alloys
41-30 20 21 14 11 Mazac (Note: Alloy of Zinc, Aluminum, Copper)

41-30 20 24 Lead Alloys

41-30 20 24 11 Lead and Tin Alloys
41-30 20 24 11 11 Terne

41-30 20 27 Other Alloys

41-30 30 00 Plant Materials

41-30 30 11 Materials from Plants in General

41-30 30 11 11 Cellulose
41-30 30 11 14 Paper
41-30 30 11 17 Textiles
41-30 30 11 21 Combustion Residues

41-30 30 14 Materials from Trees

41-30 30 14 11 Timber
41-30 30 14 11 11 Softwood Timber
41-30 30 14 11 11 11 Southern Pine
41-30 30 14 11 11 14 Douglas Fir-Larch
41-30 30 14 11 11 17 Spruce-Pine-Fir
41-30 30 14 11 11 21 Redwood
41-30 30 14 11 11 24 Western Red Cedar
41-30 30 14 11 14 Hardwood Timber
41-30 30 14 11 14 11 White Oak
41-30 30 14 11 14 14 Red Oak
41-30 30 14 11 14 17 Maple
41-30 30 14 11 14 21 Cherry
41-30 30 14 14 Other Tree Parts
41-30 30 14 14 11 Tree Bark
41-30 30 14 14 14 Coir

Number Title

41-30 30 14 14 17 Cork

41-30 30 17 Materials from Grasses

41-30 30 17 11 Bamboo
41-30 30 17 14 Grass
41-30 30 17 17 Linen (Note: From flax)
41-30 30 17 21 Reeds
41-30 30 17 24 Straw

41-30 30 21 Materials from Other Plants

41-30 34 11 Natural Rubber
41-30 34 12 Cotton
41-30 34 13 Jute

41-30 40 00 Other Organic Materials

41-30 40 11 Materials from Animals

41-30 40 11 11 Animal Hair Materials
41-30 40 11 11 11 Wool
41-30 40 11 11 14 Horsehair
41-30 40 11 14 Other Animal-Based Materials
41-30 40 11 14 11 Leather
41-30 40 11 14 14 Tallow

41-30 40 14 Materials from Insects

41-30 40 14 11 Silk
41-30 40 14 14 Beeswax

41-30 50 00 Synthetic Solid Compounds

41-30 50 11 Acids
41-30 50 14 Bases (Alkalis)
41-30 50 17 Salts
41-30 50 21 Plastics

41-30 50 21 11 Acrylonitrile-Butadiene-Styrene (ABS)
41-30 50 21 14 Acrylic, Polymethyl Methacrylate
41-30 50 21 17 Epoxy
41-30 50 21 21 Polyamide
41-30 50 21 24 Polybutylene (PB)
41-30 50 21 27 Phenolic
41-30 50 21 31 Polycarbonate
41-30 50 21 34 Polyester
41-30 50 21 37 Polyethylene, Polythene (PE)
41-30 50 21 41 Polyisocyanurate
41-30 50 21 51 Polypropylene
41-30 50 21 54 Polystyrene
41-30 50 21 61 Polyurethane
41-30 50 21 64 Polyvinyl Chloride, Plasticised (PVC)
41-30 50 21 71 Polyvinyl Chloride, Unplasticised (PVC-U)
41-30 50 21 74 Polyvinylidene Fluoride
41-30 50 21 81 Urea Formaldehyde
41-30 50 21 84 Vinyl

41-30 50 24 Rubbers

41-30 50 24 11 Butyl Rubber
41-30 50 24 14 Neoprene
41-30 50 24 17 Silicone
41-30 50 24 21 Polysulfide

41-30 50 27 Other Petrochemical Compounds

41-30 50 27 11 Paraffin
41-30 50 27 14 Waxes

41-30 50 99 Other Synthetic Solid Compounds

Number Title

41-50 00 00 Liquids

41-50 10 00 Water

41-50 10 11 Fresh Waters
- 41-50 10 11 11 Rain Water
- 41-50 10 11 14 Ground Water
- 41-50 10 11 17 Distilled Water
- 41-50 10 11 21 Deionized Water

41-50 10 14 Salt Waters
- 41-50 10 14 11 Sea Water

41-50 20 00 Water-Based Solutions

41-50 20 11 Water-Based Acid Solutions
41-50 20 14 Water-Based Base (Alkali) Solutions
41-50 20 99 Other Water-Based Solutions

41-50 30 00 Mineral Liquids

41-50 30 11 Petroleum Products
- 41-50 30 11 11 Gasoline
- 41-50 30 11 14 Diesel Oils
- 41-50 30 11 17 Fuel Oils
- 41-50 30 11 21 Kerosene

41-50 30 14 Mineral Oils

41-50 40 00 Plant Derived Liquids

41-50 40 11 Vegetable Oils
41-50 40 99 Other Plant-Derived Liquids

41-50 50 00 Animal-Derived Liquids

41-50 50 11 Fish Oils
41-50 50 99 Other Animal-Derived Liquids

41-50 60 00 Synthetic Liquids

41-50 60 11 Alcohols
41-50 60 14 Lubricants
41-50 60 17 Ammonia

41-50 99 00 Other Liquids

41-70 00 00 Gases

41-70 10 00 Natural Gases

41-70 10 11 Natural Air
41-70 10 14 Carbon Dioxide
41-70 10 17 Carbon Monoxide
41-70 10 21 Water Vapor

41-70 20 00 Hydrocarbon Gases

41-70 20 11 Propane
41-70 20 14 Butane
41-70 20 17 LPG

41-70 30 00 Refrigerants

41-70 30 11 Fluorocarbons

Number	Title
41-70 30 11 11	Trichlorofluoromethane (CFC-11)
41-70 30 11 12	Dichlorodifluoromethane (CFC-12)
41-70 30 11 13	Chlorotrifluoromethane (CFC-13)
41-70 30 11 14	Chlorodifluoromethane (HCFC-22)
41-70 30 11 15	Trifluoromethane (HFC-23)
41-70 30 11 16	Trichlorotrifluoroethane (CFC-113)
41-70 30 11 17	Dichloro-Tetrafluoroethane (CFC-114)
41-70 30 11 18	Chloro-Pentafluoroethane (CFC-115)
41-70 30 11 19	Hexachloroethane (CFC-116)
41-70 30 11 20	Tetrafluoroethane (HFC-134a)
41-70 30 11 21	Heptafluoropropane (HFC-227ea)

41-70 99 00 Other Gases

41-70 99 11 Halon

41-70 99 11 11	Bromochlorodifluoromethane (Halon 1211)
41-70 99 11 12	Bromotrifluoromethane (Halon 1301)

End of Table 42