CONCRETEBC
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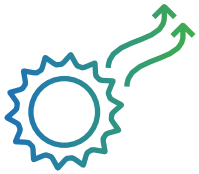
CONCRETE:
A Sustainable, Lasting Building Material

Energy efficient building materials are key for a low carbon future. Concrete is part of the answer.

Around the world, communities, governments and industries are wrestling with reducing carbon emissions and addressing climate change. British Columbia has made energy efficient buildings central to its carbon reduction strategies. Here's why concrete is a solution:

Concrete improves energy efficiency in buildings:

Its thermal mass (ability to store energy) reduces temperature swings, making buildings more comfortable for occupants and lowering heating and cooling costs.[1]



Concrete can optimize heat absorbed into buildings by sunlight and reduce heat energy consumption by up to 15%.[2]

Combined with energy technologies like geothermal heating and cooling, natural lighting, ventilation and optimum design efficiency, concrete can reduce a structure's energy demands over its service life by more than 70%.[3]

Concrete can sequester (trap and contain) carbon, while making buildings even stronger over time.[4]

Concrete can be central to green building systems including LEED, Passive House, WELL and Green Building Challenge, contributing effectively to certification.

Little known fact: The energy used to construct a building is only a fraction of the energy consumed during the structure's life. Up to 90% is consumed during building occupancy, depending on geography and building design.[5]

Concrete is the lowest carbon building material over the life cycle of a structure.[6]

Life Cycle Assessment (LCA) may be the best approach to measure carbon emissions.

Using LCA, concrete's embodied carbon footprint (emissions during the manufacture, transport and construction of building materials, together with end-of-life emissions) are up to 6% less intensive than wood products.[7]

Concrete buildings can be converted to other occupancy types during their service life. Renovation and reuse projects typically save between 50% to 75% of the embodied carbon emissions compared to constructing a new building.[8]

Concrete is locally sourced and recyclable.

Concrete can be recycled as aggregate at the end of a building's life for use as sub-base material in roadbeds, parking lots or other applications, reducing landfill and the need for new construction materials.[9]

Concrete is typically manufactured within 160 kilometers of a project site, using local resources while minimizing shipping and pollution.[10]

1 https://pdfs.semanticscholar.org/634c/a99e3904ffdc64dc4e0ebc16c2bad0b4b345.pdf
2 https://www.buildup.eu/en/practices/publications/concrete-energy-efficient-buildings-benefits-thermal-mass
3 http://rediscoverconcrete.com/en/sustainability/a-better-building-material/the-benefits-of-concrete.html
4 https://www.nrcresearchpress.com/doi/full/10.1139/L09-140#.XUx0M5NKgdU
5 http://www.iaarc.org/publications/fulltext/ISARC2018-Paper162.pdf
6 http://rediscoverconcrete.com/en/sustainability/a-better-building-material/the-benefits-of-concrete.html
7 https://www.iisd.org/library/emission-omissions
8 https://www.aia.org/articles/70446-ten-steps-to-reducing-embodied-carbon
9 https://www.concretecentre.com/Performance-Sustainability-(1)/Material-Effieciency/End-of-life-recycling.aspx
10 http://rediscoverconcrete.com/en/sustainability/a-better-building-material/the-benefits-of-concrete.html