

3	<b>MATERIALS ASPECTS</b>	<b>3.2 SELECTION OF MATERIALS</b>
		<b>MA 7 RECYCLED MATERIALS</b>
	<b>EXCLUSIONS</b>	None.
	<b>OBJECTIVE</b>	Promote the use of recycled materials in order to reduce the consumption of virgin resources.
	<b>CREDITS ATTAINABLE</b>	3
	<b>PREREQUISITES</b>	Compliance with the Building (Construction) Regulations, Chapter 123B Regulation 3.
	<b>CREDIT REQUIREMENT</b>	<p>a) Outside surface works and structures</p> <p>1 credit for the use of recycled materials contributing to at least 10% of all materials used in site exterior surfacing work, structures and features.</p> <p>b) Building structure</p> <p>1 credit where at least 10% of all building materials used for facade and structural components are recycled materials.</p> <p>c) Interior Components</p> <p>1 credit where at least 10% of all building materials used for interior non-structural components are recycled materials.</p>
	<b>ASSESSMENT</b>	<p>a) Surface work and structures</p> <p>The Client shall submit a report prepared by a suitably qualified person detailing the recycled materials used (minerals, plastics, etc), their quantities as compared to all materials used in exterior surfacing works and structures (structures and features, which include paths, surfaces for recreational areas, structures such as seating, playground features, etc), and technical and/or economic reasons for not using elements made from recycled materials. The unit may be mass/volume/dollar value but shall be consistent throughout the assessment of this credit. Credit will be awarded where at least 10% of all materials used in site exterior surfacing work, structures and features are recycled materials.</p> <p>b) Building structure</p> <p>The Client shall submit a report prepared by a suitably qualified person detailing the recycled materials used and their quantities as compared with all materials used for facade and structural components. The unit may be mass/volume/dollar value but shall be consistent throughout the assessment of this credit. Where the target percentage of all building materials used for the purposes in the requirements is recycled materials the credit(s) shall be awarded.</p> <p>c) Interior Components</p> <p>The Client shall submit a report prepared by a suitably qualified person detailing the recycled materials used and their quantities as compared with all materials used for interior non-structural components. The unit may be mass/volume/dollar value but shall be consistent throughout the assessment of this credit. Where the target percentage of all building materials used for the purposes in the requirements is recycled materials the credit(s) shall be awarded.</p>
	<b>BACKGROUND</b>	Waste materials and industrial by-products can be used in building construction in an unprocessed form, e.g. as fill material, or processed to a limited degree for use as aggregates in concrete, or used as raw material for manufacturing building products. This reduces the extraction of virgin materials. The basic properties required for technical

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acceptance are that they can perform their intended functions throughout the design life without being deleterious on the environment or associated constructional features.

There are many opportunities for using recycled materials in structural and non-structural elements of a building and the surrounding site works. For large sections, high strengths, where shrinkage and cracking are critical, where resistance to sulphate attack is required, and where surface finish is particularly important, PFA concrete should be specified. Crushed concrete aggregate complying with the quality and grading requirements of British Standard BS 882 [1] or similar for use in concrete for foundations. The fills in foundations and for over-site use of recycled materials should comply with the requirements of BS 6543 [2] or similar specification.

A list of Recycled Construction Products is available from the Environmental Protection Department [3]. Works Branch Technical Circular 14/90 [4] and 14/90 Addendum 1 [5] discusses the quantities of PFA that can be used. PNAP No. APP-33 [6] sets out the conditions in which the use of PFA as a partial cement replacement in concrete is permitted. PNAP No. APP-129 [7] sets out the technical guidelines for using recycled aggregates in prescribed mix concrete of specified grade strength of 20P and designed mix concrete of specified grade strengths of 25D to 35D.

Materials which normally consist of recycled content will not be considered for this credit, for instance, steel and glass.

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- 1 British Standards Institution. Specification for aggregates from natural sources for concrete. British Standard BS 882:1992.
- 2 British Standards Institution. Guide to use of industrial by-products and waste materials in building and civil engineering. British Standard BS 6543: 1985.
- 3 Environmental Protection Department. [http://www.epd.gov.hk/epd/misc/cdm/text/t\\_products\\_list.htm](http://www.epd.gov.hk/epd/misc/cdm/text/t_products_list.htm)
- 4 Works Branch Technical Circular No. 14/90. The Use of PFA in Structural Concrete. <http://www.devb.gov.hk/filemanager/technicalcirculars/en/upload/259/1/WB1490.pdf>
- 5 Works Branch Technical Circular No. 14/90 Addendum 1 to LWB PN4. <http://www.devb.gov.hk/filemanager/technicalcirculars/en/upload/259/2/WB14901.pdf>
- 6 Buildings Department. Practice Note for Authorized Persons, Registered Structural Engineers and Registered Geotechnical Engineer, PNAP No. APP-33 Pulverized Fuel Ash in Concrete. <http://www.bd.gov.hk/english/documents/pnap/signed/APP033se.pdf>
- 7 Buildings Department. Practice Note for Authorized Persons, Registered Structural Engineers and Registered Geotechnical Engineer, PNAP No. APP-129 Use of Recycled Aggregates in Concrete. <http://www.bd.gov.hk/english/documents/pnap/signed/APP129se.pdf>