

RESEARCH PAPER

# A method for determining buildings' material composition prior to demolition

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A prerequisite of the efficient recycling of demolition waste and its evaluation in terms of the material specific recycling rates is information on the composition of the building material stock (as the source of future demolition waste). A practical method is presented that characterizes the material composition of buildings prior to their demolition. The characterization method is based on the analysis of available construction documents and different approaches of on-site investigation. The method is tested in different buildings and the results from four case studies indicate that the documents are useful to quantify bulk materials (*e.g.* bricks, concrete, sand/gravel, iron/steel and timber). However, on-site investigations are necessary to locate and determine the trace materials such as metals (*e.g.* copper and aluminium), or different types of plastics. The overall material intensity of the investigated buildings ranges from 270 to 470 kg/m<sup>3</sup> gross volume. With ongoing surveys about the composition of different buildings, the collected data will be used to establish a building-specific database about the amount of materials contained in Vienna's building stock.

Keywords: buildings, deconstruction, demolition, demolition waste, material composition, material intensity, recycling, urban mining, waste management

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