



Waste and compost volume/weight conversion and process weight reduction

Compost Volume/Weight Conversions

The density of compost varies depending on various factors including feedstocks used, moisture content and 'grade' produced (or maximum particle size). A recent UK study on in-vessel derived composts (processing garden wastes or garden and food waste) varied in density from around 400 to 750 kg per m³. The look-up/reference table below is produced on the basis that the compost density is 600 Kg/m³ (i.e. 1 m³ or 1,000 litres equates to 600 Kg of compost). Flipping this around, this can be thought of as 1.667m³ (1,667 litres) of compost equates to one tonne.

Look-up table of weights and volumes (see info above on input wastes) – based on a 1m³ starting pile of waste

Input waste options for composting	Kg weight of a 1 m ³ (1,000 litres) pile	Kg weight of compost produced - 25% reduction of input waste	Volume of compost produced, litres (Kg x 1.667)
Garden waste	400	300	500
Food waste	500	375	625
Food & garden waste	338	254	423
Food, garden and card	502	377	628

When sizing up your project it may be that initially this is based on weight data. However, on a practical level it is useful to know how weight translates into volume in order to size the space required for composting, to assist with purchasing the right size of system/equipment etc. Most people are likely to find it easier to think about an area, and therefore volume, that they would like to fill with compost, rather than weight.

Other considerations that feed into the table are described below.

Waste Volume/Weight Conversions

In terms of individual waste types, the UK organisation WRAP² reports that food waste density averages 500 Kg per m³, based on a survey of household waste collections. In this same report, food and garden waste collected together average at 338Kg/m³ and food, garden and card 502Kg/m³. There is no separate data for separately collected garden waste, however this will lie between 500 and 338Kg/m³.

Weight reduction through the composting process

During a well-managed composting process you should expect to see a reduction in weight due to breakdown of material, and loss of moisture from cells of waste material. The % weight loss will vary depending on the process and feedstocks and potentially exposure to the elements but a 25% mass reduction would be a reasonable estimate³.

¹ <https://www.sciencedirect.com/science/article/abs/pii/S0956053X21001173?via%3Dihub>

² <https://wrap.org.uk/resources/report/material-bulk-densities>

³ (3) (PDF) Scottish composting sector survey 2017 (researchgate.net)