

Rainwater harvesting tank size calculator to BS 8515:2009

Created by and for Graf UK Ltd

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Project: **Court Park Pavillion, Uxbridge, UK**

Plot/type:

Quantity:

The intermediate approach (extract from BS 8515:2009)

To apply the intermediate approach to sizing the rainwater harvesting system for non-potable domestic use, storage capacity should be calculated from the following equations and should be the lesser of 5% of the annual rainwater yield or 5% of the annual non-potable water demand.

5% of the annual rainwater yield should be calculated using the equation:

$$Y_r = A \times e \times h \times \eta \times 0.05$$

where:

Y_r is the annual rainwater yield (L);
 A is the collecting area (m^2);
 e is the yield coefficient (%);
 h is the depth of rainfall (mm);
 η is the hydraulic filter efficiency.

$$\begin{aligned} A &= 133.6 \text{ } m^2 & Y_r &= A \times e \times h \times \eta \times 0.05 \\ e &= 0.8 \% & 3935 &= 133.6 \times 0.8 \times 775 \times 0.95 \times 0.05 \\ h &= 775 \text{ } mm & & \\ \eta &= 0.95 & \downarrow & \\ & & 3935 \text{ Litres} & \end{aligned}$$

5% of the annual non-potable water demand should be calculated using the equation:

$$D_n = P_d \times n \times 365 \times 0.05$$

where:

D_n is the annual non-potable water demand (L);
 P_d is the daily requirement per person (L);
 n is the number of persons.

$$\begin{aligned} P_d &= 50 \text{ L} & D_n &= P_d \times n \times 365 \times 0.05 \\ n &= 3 & 2738 &= 50 \times 3 \times 365 \times 0.05 \\ & & \downarrow & \\ & & 2738 \text{ Litres} & \end{aligned}$$

Final recommended tank size in accordance with BS 8515: 2009

5% of annual rainwater yield = 3935 L

5% of annual non-potable water demand = 2738 L

Lesser of the two above figures = **2738** Litres

Closest/Most suitable tank size = Litres

Notes & Rainfall statistics;

Rainwater statistics taken from Figure 2 (page 9) BS 8515:2009

Above equations taken from 4.1.2.3 (page 12) BS 8515:2009

Enter site specific figures in to YELLOW boxes

Filter efficiency based on GRAF Optimax Pro filter (self-cleaning)

Tank sizes based on GRAF GmbH tanks by Graf UK Ltd

FEH Annual average rainfall (mm)

From	To	Max.
520 to 650	=	650
650 to 775	=	775
775 to 890	=	890
890 to 1000	=	1000
1000 to 1250	=	1250
> 1250	=	1250