Function of Each Chamber

Understanding the role of each compartment in a three-chamber septic tank system.

Chamber Volume Ratio

The recommended volume ratio for the three chambers is **2 : 1 : 3**. This ratio ensures optimal treatment efficiency:

Chamber	Ratio	Purpose
First Chamber	2 parts	Largest settling area for initial separation of solids
Second Chamber	1 part	Concentrated treatment zone for deeper fermentation
Third Chamber	3 parts	Storage and final clarification before effluent release

Note: The volume of the second chamber may be increased if needed, provided the first chamber volume is not reduced below the specified minimum. If the effluent from the third chamber is directed to a soil filtration system rather than being reused, the third chamber volume may be reduced accordingly.

First Chamber — Primary Treatment

Function:

The first chamber receives all incoming wastewater from the dwelling. Its primary role is to separate incoming waste into three distinct layers through sedimentation and to begin the anaerobic fermentation process.

What happens inside:

Fresh wastewater enters and naturally stratifies into three layers. Heavy solids sink to the bottom, forming a sludge layer. Lighter materials (fats, oils, and grease) float to the top, forming a scum layer. The partially clarified liquid in the middle gradually flows into the second chamber.

Key conditions:

The chamber must be sealed tightly to maintain anaerobic (oxygen-free) conditions. The liquid inside should remain relatively still or flow very slowly. An appropriately long retention time allows solids to settle effectively and fermentation to begin.

Second Chamber — Secondary Treatment

Function:

The second chamber continues the treatment process that began in the first chamber. It provides deeper anaerobic fermentation and further settling of any remaining suspended solids.

What happens inside:

Only the partially clarified liquid from the first chamber enters — solids and scum are retained in the first chamber by the design of the internal division plates and elbow fittings. The concentration of treatment agents (including free ammonia) increases in this chamber, providing a more aggressive treatment environment.

Key conditions:

The chamber must remain sealed to maintain anaerobic conditions. The division plate between the first and second chambers must effectively prevent solids, scum, and sludge from transferring between chambers.

Third Chamber — Storage and Final Clarification

Function:

By the time liquid reaches the third chamber, it has undergone significant treatment. The majority of harmful organisms have been substantially reduced through the extended fermentation process. The primary function of the third chamber is to store the treated effluent before it is released to a drainage field, absorption trench, or soil filtration system.

What happens inside:

Final settling of any remaining suspended particles occurs. The treated effluent is stored until it exits the tank via the outlet pipe. If the effluent is directed to a shallow soil filtration system rather than a traditional drainage field, the third chamber effectively provides an additional stage of clarification.