

- The early filtration units developed in Great Britain used a process in which the hydraulic loading rate is relatively low.
- Typical slow sand filtration velocities are only about 0.4 m/hr.
- At these low rates, the filtered contaminants do not penetrate to an appreciable depth within the filtration medium.







	🛓 Wa	ater Filtra	ation	
Raj	pid Sand Filtrat	ion		
≻ Ir u ≻ F	n rapid sand filtration sed iltration occurs thro	on much higher	application velocities of the filter	ar
≻ A tł	comparison of rap ne table below	id and slow sar	nd filtration is shown i	n
	Filtration Type	Applic	cation Rate	
		m/hr	gal/ft²-day	
	Slow Sand	0.04 to 0.4	340 to 3,400	
	Rapid Sand	0.4 to 3.1	3.400 to 26.000	







		Water F	Filtration			
F	Hydraulic Loading Rate					
	Let's compute the hydraulic loading rate on our filters in lab:					
		Flowrate (ml/min)	Loading Rate (gpm/ft ²)			
		800	3.163			
		1,000	3.954			
		1,200	4.745			







Water Filtration

Hydraulic Loading Rate

A hydraulic loading rate of 5,694 gpd/ft.² could be qualifies as a rapid sand filter

Filtration Type	Application Rate	
	m/hr	gal/ft²-day
Slow Sand	0.04 to 0.4	340 to 3,400
Rapid Sand	0.4 to 3.1	3,400 to 26,000











- The water above the filter provides the hydraulic pressure (head) for the process.
- The filter medium is above a larger gravel, rock, or other media for support.
- Below the rock is usually an underdrain support of some type.
- The water flows through the filter and support media, exiting from a pipe below.

















