DIY DI Water Purification System

Objective: To build a 3 stage DI water purification system for S$100 (similar units retail for S$300 upwards.

Materials:

❑ Clear filter housings	Qty 3	S$26 each
❑ Sediment filter cartridge	Qty 1	comes with the filter housings
❑ Granular Activated Carbon cartridge	Qty 1	S$21
❑ Mixed Bed DI resin	3.5 litres	S$45 (enough to do 3 fills)
❑ ½" Speedfit elbow for 10 mm tube (for output hose)	Qty 1	S$3.80
❑ ½" hose input fitting	Qty 1	S$1.20

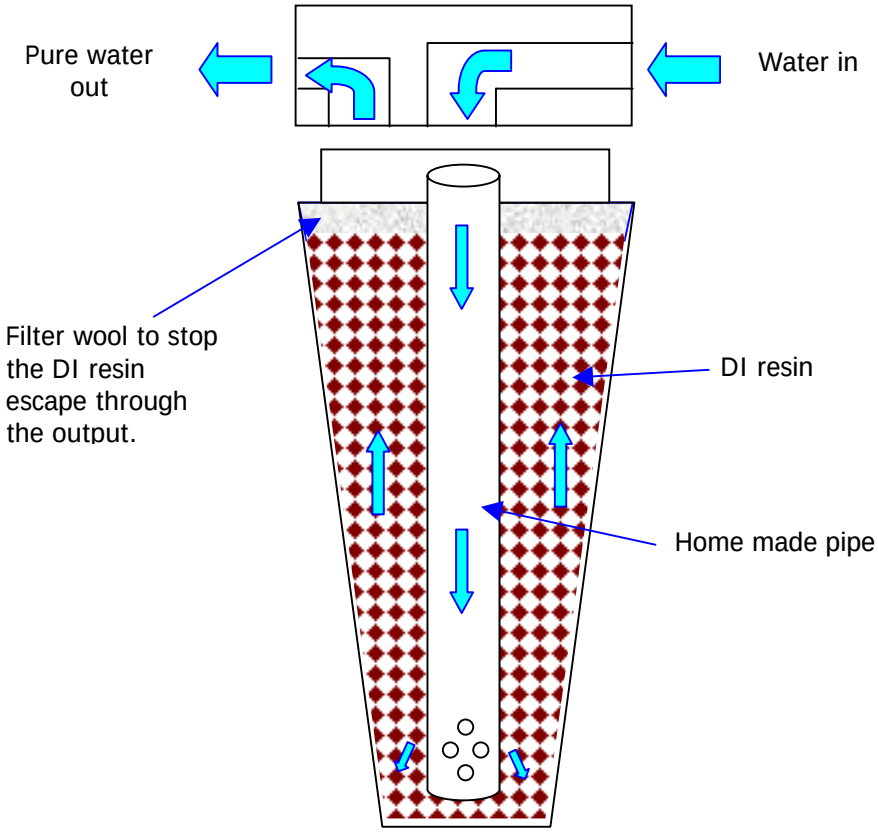
That's about it….

Completed system mounted on the wall.

Filter housing.

	Available from Homely Hardware for S$26 each.
	5 micron sediment filter (left side) and GAC filter cartridge.
	Housings easily connect together using the connectors supplied with each housing.

	These filter housings need some sort of cartridge for the water flow through it, so as the DI resin is 'loose' I needed to construct a tube to go from the bottom of the filter to the top (see diagram). This is simply two female halves of PVC bulkhead fittings and a short length of PVC tube.



	Completed pipe for the DI filter, with holes drilled in the bottom end to let the water out. Holes are drilled on an upwards angle so that the resin will not enter into the tube.

	Mixed bed DI resin.

	Resin is made from small spherical slippery beads about 0.5 mm diameter. Be careful, the stuff goes everywhere!

	DI filter with tube installed (left). DI filter charged with DI resin.

	½' speedfit elbow outlet from the DI filter. Takes a 10 mm tube.

	10 mm outlet tube.

	Completed system.

	Conductivity & TDS meter borrowed from work ☺. Initial tests gave a conductivity of 4.9 uS and TDS 2.4 ppm. Compared with tap water of 134uS and TDS 67 ppm. So conductivity and TDS are 20 times lower than the tap water input. Nitrate measured in the tap water was 5mg/L. Nitrates in the filtered water were undetectable. Phosphate also undetectable.