

SUMIYOSHI

Sumiyoshi Engineering Pte Ltd
住吉エンジニアリング株式会社



A Brand of Sumiyoshi Engineering
Energy Division

Polypropylene (PP) Fill Pack For Cooling Tower

New Upgraded Fill Pack/
Lifetime is 10-15 years/
Maintenance free



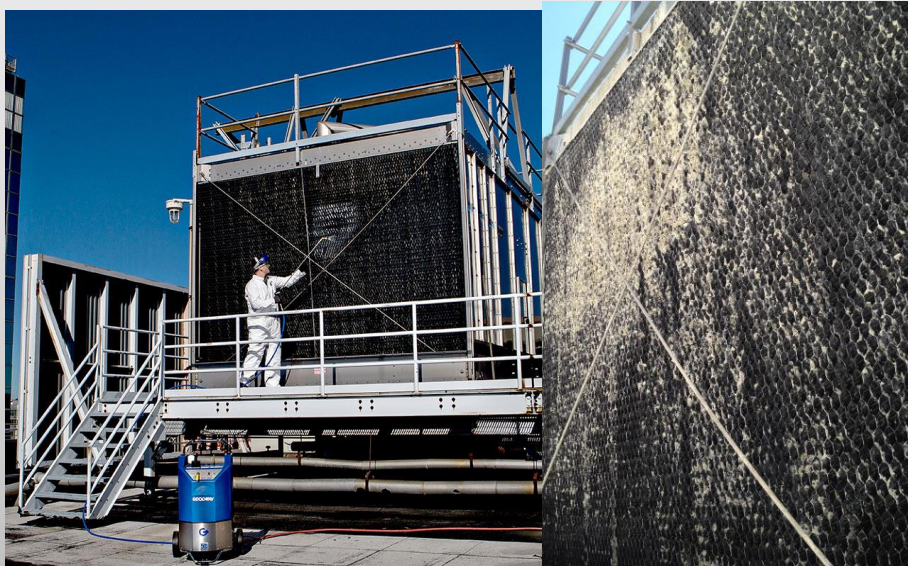
Traditional PVC Film Pack



- Dirty, crusty, scale-filled cooling tower fill is a perfect environment for bacterial growth, **especially Legionella bacteria.**
- Need chemical washing frequently and replace Fill pack every 2 years.
- Wear & tear fast and block water flow, reduce cooling tower performance.



Chemical Cleaning



Replace Fill Pack



Legionella Control in Cooling Tower

- Legionella bacteria grow best between temperatures of 22° C – 45° C with optimum growth temperature being 35° C – 40° C. Normally, Legionella remain in the biofilm.
- According to OSHA, cooling towers and evaporative condensers should be inspected and thoroughly cleaned at least twice a year. Algae and accumulated scale should be removed.

Isolation rate of *Legionella* bacteria in the environment by type of premises, 2000

Type of premises	No. positive/No. tested (%)			
	Cooling tower	Fountain (outdoor)	Shower head/tap swab	Total
Office	22/ 47 (46.8)	-	-	22/ 47 (46.8)
Office/shopping complex	12/ 28 (42.9)	-	-	12/ 28 (42.9)
Shopping complex	30/ 41 (73.2)	0/1 (0)	-	30/ 42 (71.4)
Hotel	21/ 36 (58.3)	1/1 (100.0)	0/2 (0)	22/ 39 (56.4)
Library	8/ 12 (66.7)	-	-	8/ 12 (66.7)
Polytechnic	2/ 2 (100.0)	-	-	2/ 2 (100.0)
Factory	5/ 8 (62.5)	-	-	5/ 8 (62.5)
Food outlet/supermarket	12/ 15 (80.0)	-	-	12/ 15 (80.0)
Construction site	1/ 1 (100.0)	-	-	1/ 1 (100.0)
Residence	-	0/1 (0)	2/4 (50.0)	2/ 5 (40.0)
Total	113/190 (59.5)	1/3 (33.3)	2/6 (33.3)	116/199 (58.3)

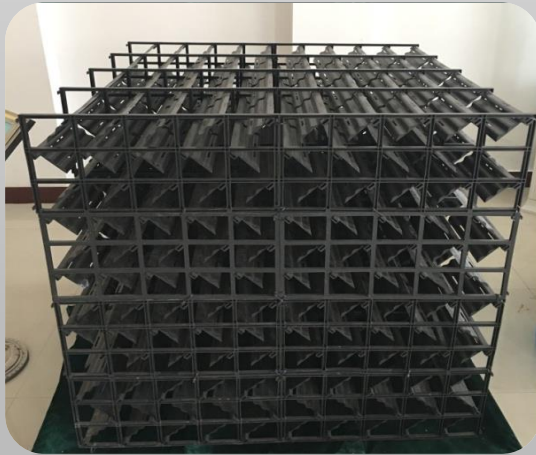
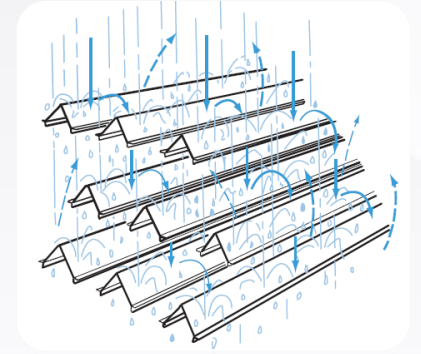
Singapore Ministry of Environment MOE/NEA Year 2000 island wide Legionella survey result

Cooling water treatment deliverables	
Total Bacteria Count : cfu/ml	< 100,000 cfu/ml
Legionella Bacteria Count : cfu/ml	< 10 cfu/ml

New PP Fill Pack

Main Characters:

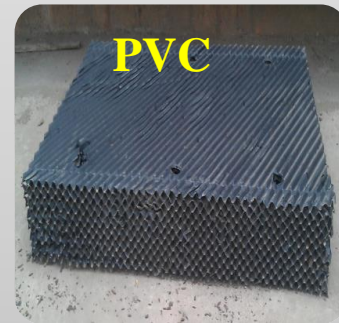
- ❑ Patented Technology - New Upgraded Fill Pack for cooling tower;
- ❑ **Polypropylene material with added bacteriostatic Nano – factor;**
- ❑ Splash type fill pack with waveform structure and double-side water distribution;
- ❑ **Lifetime lasts for 10-15 years, maintenance free;**
- ❑ Heat resistance range: - 35 °C to 100 °C, Non-broken off, Non-clogging



Application:

- ❖ where appreciable **contamination of the circulating water** is anticipated, only splash-type fill should be considered.
- ❖ Typical industries: **Food processing, Dairy, Petrochemical, Steel production and Foundries, Paper processing, etc.**
- ❖ Cooling tower is required to operate in a **dusty or wooded environment**, or whose make-up supply will come from **unclarified water**

PP Fill Pack vs. PVC Film Pack



1. Temperature Resistance: $-5^{\circ}\text{C} \sim 55^{\circ}\text{C}$
2. Heat deformation, fragile and clogging
3. Legionella and Bacteria hazard



Strucutal design

1. Temperature Resistance: $-35^{\circ}\text{C} \sim 100^{\circ}\text{C}$
2. Smooth water distribution, Don't drop off and clog
3. Anti - Legionella and bacteria



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