

# The proven science behind the range.

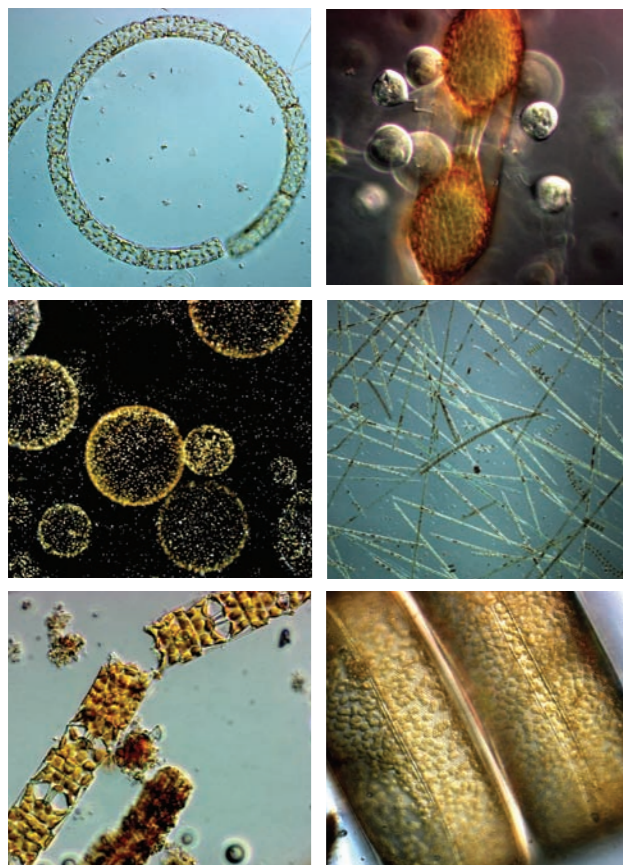
## Class leading removal rates of Organic matter.

### D2 Standard Replica Tests

Filtersafe® in conjunction with its research partners, has successfully proven its industry leading performance in the Ballast Water Treatment filtration sector by conducting a series of scientific tests on its Weave Wire Sintered Screens and Proximity Nozzle® technology. The results clearly indicate positive ecological benefits and lucrative advantages for all companies involved in the business of BWT systems.

### Biological Test Data

Test Cycle	PHYTPLANKTON Average Removal % of org. $10 \leq 50$	ZOOPLANKTON Average Removal % of org. $>50$
1	62.80	99.20
2	47.56	94.29
3	-	97.93
4	31.45	96.19
5	54.94	93.85

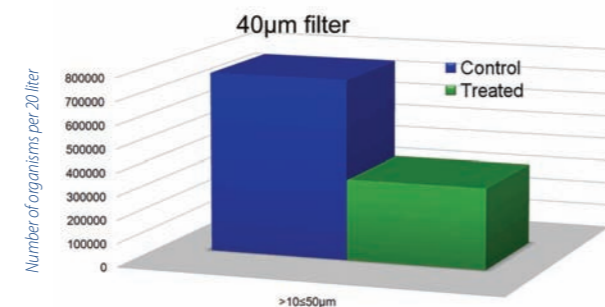


Courtesy of NIOZ

### Phytoplankton Test Methodology

- Organisms  $10 \mu\text{m} \leq 50 \mu\text{m}$ .
- Three 20L replicates for each "control" and "treated".
- 40  $\mu\text{m}$  filter was used.
- Water pumped into a storage tank, zooplankton and algae were added.

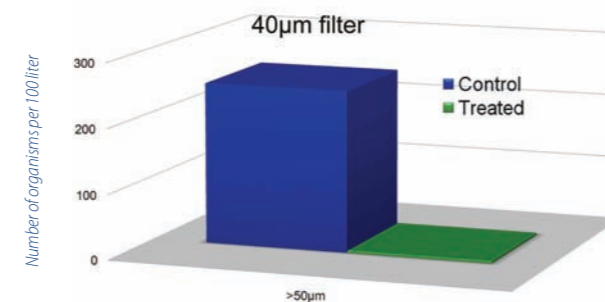
### Phytoplankton Test Results



### Zooplankton Test Methodology

- Organisms  $> 50 \mu\text{m}$ .
- Three 100L replicates for each "control" and "treated".
- 40  $\mu\text{m}$  filter was used.
- Water was pumped from Cullercoats Bay.

### Zooplankton Test Results



### Conclusions

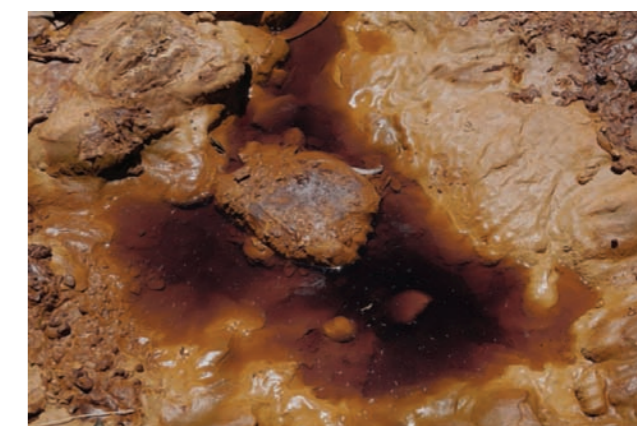
Highly effective at removing organisms  $> 50 \mu\text{m}$  showing **> 98% removal.**  
 Has moderate effect in removing organisms  $10 < 50 \mu\text{m}$  showing an average **50% removal.**

## Preventing accumulation of Sediments in ballast water tanks.

Filtersafe® has recently concluded scientific tests in association with BaWaPla and NIOZ in order to determine the the BSF-series filter's ability to reduce sediment load in BWT systems and ballast water tanks.

### Test Methodology

Filtersafe® chose the wet volumetric TSS loading method rather than the standard dry and weighing method in order to best simulate true conditions in ballast water tanks.



### Sediment Test Results

Results of this study parallel a series of tests performed at NIOZ and Newcastle University (UK), concluding that Filtersafe® BSF-Series filters are highly effective in removing Total Suspended Solids (TSS) loads by up to 96% with our standard 40  $\mu\text{m}$  filter.

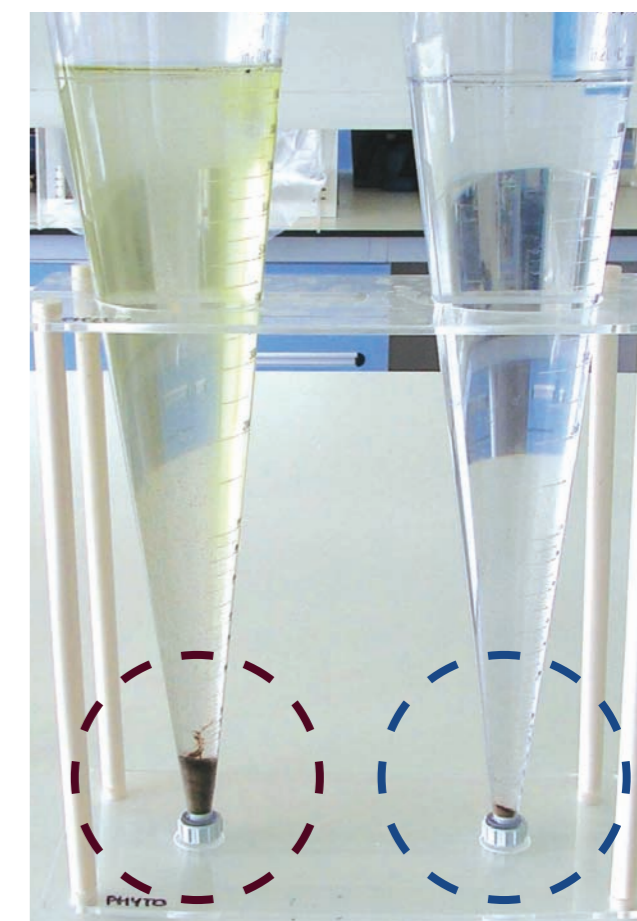
This is an obvious benefit for ship owners with long periods between ballast water tank cleaning and compliments the very high performance of organic matter removal obtained by our BSF-series filters.

### Conclusion

Very high removal of TSS from ballast water **BSF-Series 40  $\mu\text{m}$  screen** proving **96% removal.**

### Sediment Test Data

	Results ml	Results ppm
Pre-Filter	2.5	2500
Post Filter	< 0.1	100
Removal Rate		> 96%



**BEFORE**  
2.5 ml sediment residue

**AFTER**  
0.1 ml sediment residue