



# CPVC Marine Drainage System Selection for Black & Gray Water Systems

Although Schedule 80 CPVC pressure piping systems have been used in marine black & gray water drainage system applications, Schedule 80 CPVC systems are not ideally suited for this application. Spears® Manufacturing Company offers OceanTUFF™, complete with all the advantages expected from a **TRUE** CPVC black & gray water drainage system. Let's compare the features of OceanTUFF™ CPVC Marine Drainage System to a CPVC Schedule 80 pressure system used for drainage.

## System Weight

Unnecessary piping system weight costs money through higher vessel fuel consumption during operation. Schedule 80 CPVC pressure piping systems are designed with thicker walled components to withstand high pressures. However, a true marine drainage system is designed for non-pressure, gravity-flow drainage eliminating the need for the excess wall thickness weight of a Schedule 80 system.

**Solution** Spears® OceanTUFF™ Marine Drainage System uses Schedule 40 piping (lighter weight) and drainage pattern fittings providing a substantial weight savings over Schedule 80 CPVC pressure piping systems. Lighter weight Spears® OceanTUFF™ Marine Drainage System = **Lower vessel fuel costs.**

## Fitting Slope Design

CPVC Schedule 80 90-degree change-of-direction fitting sockets are not designed with a 1/4" per foot pipe slope - a design feature required by all model plumbing codes for proper system function. The absence of a pipe slope promotes inline waste stoppage.

**Solution** Spears® OceanTUFF™ Marine Drainage System fitting designs conform to ASTM D3311-*The Standard Specification for Drain, Waste, and Vent (DWV) Plastic Fittings Patterns*. The Spears® OceanTUFF™ 90° change-of-direction fitting sockets have a 1/4" per foot slope design. The "built-in" slope feature allows for better drainage capability and eliminates clogs.

## Fitting Configurations

Schedule 80 CPVC pressure piping systems do not offer traditional Drain, Waste & Vent fittings configurations such as P-traps, Combo Wyes, Street Bends, Trap Adapters, etc.

**Solution** The Spears® OceanTUFF™ Marine Drainage System offers appropriate molded fitting configurations whose dimensions are in compliance with model plumbing codes.

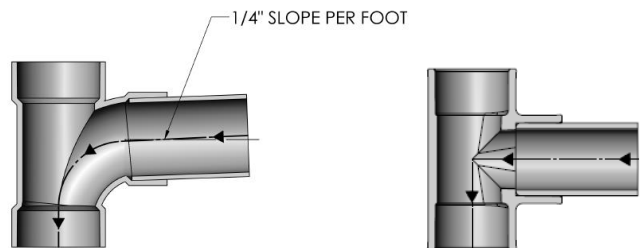
## OceanTUFF™ Marine Drainage System offers:

- One-Step Cement Installation
- Limited Lifetime Warranty
- Vacuum Flush Piping System
- ABS & USCG Approvals
- ASME B31.3 Training
- Sizes: 1-1/2" to 12"

## Weight Comparison Between CPVC Sch80 and OceanTUFF™ Systems

| Component    | CPVC Sch80 (lbs.) | OceanTUFF™ (lbs.) |
|--------------|-------------------|-------------------|
| 3" Pipe      | 2.12 lbs/ft       | 1.53 lbs/ft       |
| 3" 90 Elbow  | 1.70              | 1.04              |
| 3" Tee       | 2.43              | 1.36              |
| <b>Total</b> | <b>6.25</b>       | <b>3.93</b>       |

**37% Weight Savings**



Proper 1/4" per foot pipe slope (Spears® OceanTUFF™)

No Pipe Slope (CPVC Sch 80 - Competition)



Visit the Spears® Marine Portal for more information

[www.spearsmfg.com/marine.htm](http://www.spearsmfg.com/marine.htm)

P-traps, Combo Wyes, Street Bends, Trap Adapters and more.



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