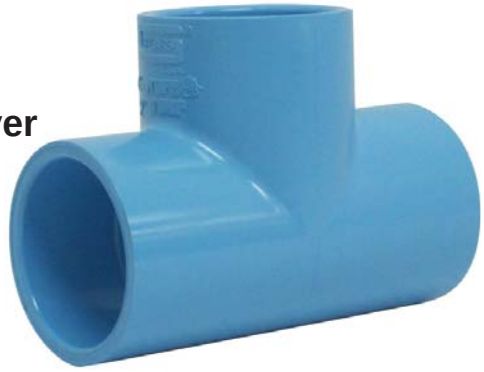
EverTUFF® TURF™

Fittings Engineered for Golf Course & Turf Applications

The "Tuffest" Fittings Just Got Tuffer!

Third Party Cyclic Testing confirms that Spears® Refined EverTUFF® TURF™ Fittings are at least over 200% stronger than competitor "surge" fittings under the same high-stress failure tests.



NO FAILURES AFTER 50,000 CYCLES!

New testing by Fresno State International Center for Water Technology subjected Spears® EverTUFF® TURF™ Tees to 50,000 cycles *Without* failure.

Product Tested	Cycles
Competitor "surge" Tees	Average Failure at **22,746.00**
Spears® EverTUFF® TURF™ Tees	**50,000.00** with No Failures

Even Spears® Schedule 40 Fittings Beat Competitor Schedule 80!

Previous tests* of Spears® Schedule 40 fittings demonstrated to be over 6X stronger than competitor published Schedule 80 fitting test results.

Product Tested	Cycles
Competitor Schedule 80 Tees	Average Failure at **1,912.80**
Spears® Schedule 40 Tees*	Average Failure at **9,201.20**

*CIT report November 15, 2010

Progressive Products From Spears® Innovation & Technology

Simply The Best!

See ICWT report on back

EverTUFF® TURF™

Fittings Engineered for Golf Course & Turf Applications

ICWT International Center for Water Technology | A Partnership FOR YOUR FUTURE

Development of a Protocol to Determine the Cyclic Strength of PVC Pipe Fittings when Stressed to 50,000 Cycles

Major components built into the testing jig (see Figure 1) are described as follows:

1. **Nitrogen tank (yellow) equipped with a pressure regulator.** This arrangement is capable of supplying a controlled supply of gas at pressures to 3000 psi.
2. **Gas over water bladder tank (blue).** With a pressure-controlled gas inlet, the tank is capable of delivering a supply of water to the test jig at a specified pressure in a pulse-free manner. For these tests, the water pressure was set at 250-260 psi. The supply pressure gauge is visible near the end of the tank.
3. **Three-way solenoid valve.** On signal from the timer circuit (see Figure 2), the solenoid valve alternately opens, thereby pressurizing the PVC tee, and closes thereby isolating the supply and depressurizing the PVC tee. For these tests, a 34-second cycle was used subjecting the tee to 17 seconds at 250 psi followed by 17 seconds at atmospheric pressure. The timer circuit also has a relay and an electrically-actuated cycle counter. The timer is a model H3C-R as manufactured by Anly Electronics Co, Ltd.
4. **A data logger** is required to record the maximum cycle pressure and document the time when the fitting failed. A model DLI2 by Dwyer Instruments was selected.

Figure 1. Test bench general arrangement

Figure 2. 2-in. EverTUFF® TURF™ tee installed in the test jig with related components

The tee sockets are fitted with schedule 40 2-in. x ½-in. reducer bushings (SP x F). The solvent welding was accomplished using Spears® Primer-70 primer and Spears® PVC-11 solvent cement. A pressure gauge is fitted into the vertical connection. A ball valve is fitted into the downstream port and is used to vent the air in the system. During the test, the lab room temperature was kept between 60° and 65° F.

Spears® EverTUFF® TURF™ Fittings completed the 50,000 cycles with no damage at which point testing was terminated.

Disclaimer

All tees were provided by Spears Mfg., Co. All other materials were purchased and assembled by the Center for Irrigation Technology (CIT), California State University, Fresno personnel. All tests were conducted by CIT, Fresno State personnel. Testing was started in October of 2013 and are currently ongoing. The cycle time and maximum pressure selected reflect an attempt to develop a protocol useful for comparative purposes. The results of this protocol must not be interpreted as applying to specific field situations.

CIT report dated February 12, 2014

SPEARS® MANUFACTURING COMPANY
CORPORATE OFFICE
15853 Olden St., Sylmar, CA 91342 • PO Box 9203, Sylmar, CA 91392
(818) 364-1611 • www.spearsmfg.com

MADE IN THE USA WITH PRIDE