



The Chemical Company

MASTERFIBER™ 50PS

High Performance Concrete Fiber

| MASTERFIBER™ 50PS Fiber Reinforcement Recommended Application Rates | | | | | | | | | | |
|--|--|----------------|-------------------------|--|----------------|-------------------------|--|----------------|-------------------------|--|
| | | 6 in. x 6 in. | | | | | | | | |
| | | W 1.4 | | | W2 | | | W2.9 | | |
| | | 10/10 | | | 8/8 | | | 6/6 | | |
| | | 0.028 | | | 0.040 | | | 0.058 | | |
| Wall Thickness (in.) | Wire Gauge | Steel Ratio | f _t (psi) | MASTERFIBER MT 225 w _f (lb/yd ³) | Steel Ratio | f _t (psi) | MASTERFIBER MT 225 w _f (lb/yd ³) | Steel Ratio | f _t (psi) | MASTERFIBER MT 225 w _f (lb/yd ³) |
| | A _s (in. ² /ft.) | | | | | | | | | |
| 2.00 | | 0.12% | 168 | 4 | 0.17% | 240 | 5 | 0.24% | 348 | 8 |
| 2.25 | | 0.10% | 150 | 3 | 0.15% | 213 | 5 | 0.21% | 309 | 7 |
| 2.50 | | 0.09% | 150 | 3 | 0.13% | 192 | 4 | 0.19% | 278 | 6 |
| 2.75 | | 0.08% | 150 | 3 | 0.12% | 175 | 4 | 0.18% | 253 | 6 |
| 3.00 | | 0.08% | 150 | 3 | 0.11% | 160 | 3 | 0.16% | 232 | 5 |
| 3.25 | | 0.07% | 150 | 3 | 0.10% | 150 | 3 | 0.15% | 214 | 5 |
| 3.50 | | 0.07% | 150 | 3 | 0.10% | 150 | 3 | 0.14% | 199 | 4 |
| 3.75 | | 0.06% | 150 | 3 | 0.09% | 150 | 3 | 0.13% | 186 | 4 |
| 4.00 | | 0.06% | 150 | 3 | 0.09% | 150 | 3 | 0.12% | 174 | 4 |

This table addresses the use of high performance synthetic fibers as a replacement for welded wire fabric when used in precast concrete septic tank applications. The information presented recommends a fiber application rate designed to provide equivalent performance characteristics to welded wire fabric.

The structural design of septic tanks can be determined by calculation or by performance.

When designing by calculation, the Strength Design Method (ultimate strength theory) as outlined in ACI-318-02 is typically incorporated.

When designing by performance, the manufacturer must demonstrate that failure will not occur when physically applying loads to the product. The loads applied shall be 1.5 times the anticipated actual loads while in service.




Depending on the required calculated wire reinforcement steel area, this table determines the recommended application rate for the MASTERFIBER™ 50PS Fiber to provide equivalent performance characteristics.

A_s = area of steel, (in.² / ft.)

f_t = average residual strength (psi)
when tested in accordance with ASTM C-1399
to equal the corresponding steel ratio

w_f = weight of MASTERFIBER 50PS Fiber in (lb³ / yd)
of concrete

To Use This Table:

1. Select the correct wall thickness 
2. Select the size of welded wire fabric to be replaced 
3. Select the corresponding recommended application rate of MASTERFIBER 50PS Fiber to be used 

Note: A minimum average residual strength of 150 psi for the fiber reinforced concrete provides equivalent performance to that of concrete with a steel ratio of 0.10%, where the steel is located at the mid plane of the section. **This is the minimum steel ratio recommended by ACI-318-02, Chapter 16, Section 16.4.2 for precast non prestressed walls.**

When tested in accordance with ASTM C-1399, the minimum average residual strength, f_t, of the concrete mix designs used to manufacture septic tanks with MASTERFIBER 50PS Fibers shall not in any case be less than 150 psi.