## Mix Proportions of Concrete

| | | |
|---|---|---|
| Type 1 Cement | 814 lb | 370 kg |
| Sand | 1,879 lb | 854 kg |
| Gravel 3/8" | 1,879 lb | 854 kg |
| Water | 488 lb | 222 kg |
| MaxTen Fiber | 0.22%, 0.33%, 0.50% | |
| W/C Ratio | 0.6 | |

## Properties of Fiber

| | |
|---|---|
| Material | Virgin Copolymer |
| Fiber Type | Monofilament |
| Fiber Length | 2 1/4" (54mm) |
| Absorption | Nil |
| Specific Gravity | 0.91 |
| Tensile Strength | 100 - 120 ksi (685 - 825 MPa) |
| Acid / Salt Resistance | High |
| Alkali Resistance | 100% (alkali proof) |

## Fresh and Hardened Properties of Concrete

| Fiber Volume Fraction | Air Content | Slump | | Concrete Strength | | MOR | |
|---|---|---|---|---|---|---|---|
| | | in. | (mm) | psi | MPa | psi | MPa |
| 0 | 1.40% | 9.25 | 235 | 5511 | 38 | 667 | 4.60 |
| 0.20% | 1.45% | 7.50 | 192 | 6236 | 43 | 755 | 5.21 |
| 0.33% | 1.45% | 7.00 | 178 | 6526 | 45 | 790 | 5.45 |
| 0.50% | 1.50% | 6.50 | 165 | 5800 | 40 | 692 | 4.77 |

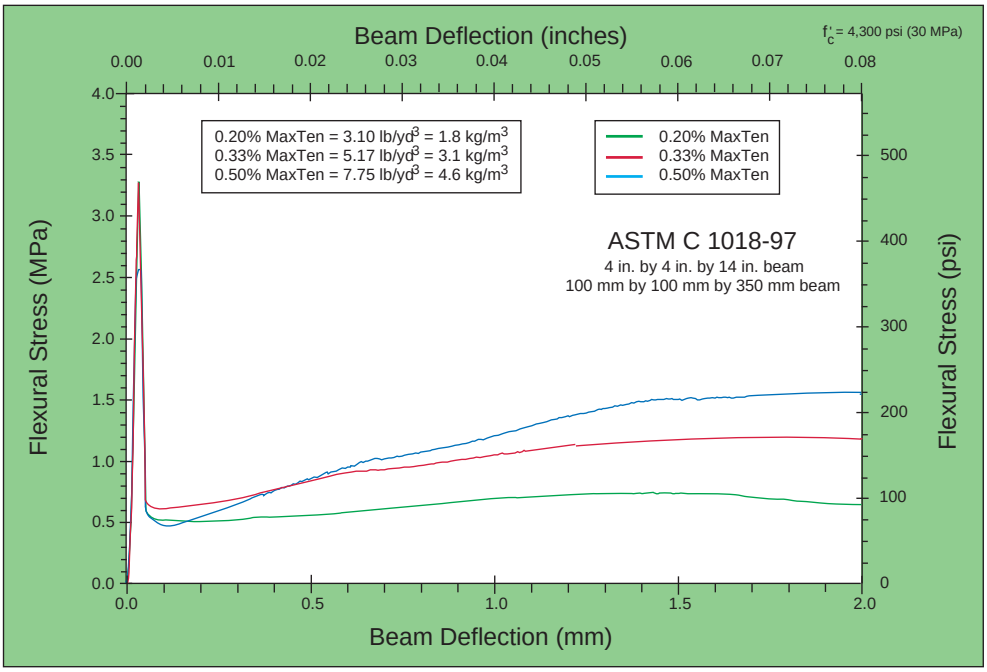
## Flexural Strength and Toughness (Compressive Strength: 4,300 psi)

| PSI MaxTen Dosage Rate | Defl. @ 1st Crack (mil) | Specimen Cross-Section | | Max. Load (lbs) | Flexural Strength (psi) | ASTM C-1018 Toughness Indices | | | | | ASTM C-1018 Residual Strength Factors | | | | | JSCE* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Base (in.) | Height (in.) | | | $I_5$ | $I_{10}$ | $I_{20}$ | $I_{30}$ | $I_{60}$ | $R_{5,10}$ | $R_{10,20}$ | $R_{20,30}$ | $R_{30,60}$ | $R_{60,80}$ | $f_{e3}$ (psi) | $R_{e3}$ (%) |
| 0.20% | 1.929 | 4 | 4 | 6,236 | 755 | 2.3 | 3.9 | 7.2 | 10.6 | 21.7 | 31.7 | 32.7 | 34.5 | 37.0 | 35.5 | 333 | 44 |
| 0.33% | 1.811 | 4 | 4 | 6,526 | 790 | 2.7 | 4.7 | 9.1 | 13.9 | 29.4 | 40.9 | 44.1 | 47.9 | 51.4 | 53.8 | 435 | 55 |
| 0.50% | 1.929 | 4 | 4 | 5,800 | 691 | 2.6 | 4.5 | 8.8 | 13.8 | 31.1 | 37.8 | 43.7 | 49.9 | 57.6 | 61.2 | 449 | 65 |

## Flexural Strength and Toughness (Compressive Strength: 30 MPa)

| PSI MaxTen Dosage Rate | Defl. @ 1st Crack (mm) | Specimen Cross-Section | | Max. Load (kN) | Flexural Strength (MPa) | ASTM C-1018 Toughness Indices | | | | | ASTM C-1018 Residual Strength Factors | | | | | JSCE* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Base (mm) | Height (mm) | | | $I_5$ | $I_{10}$ | $I_{20}$ | $I_{30}$ | $I_{60}$ | $R_{5,10}$ | $R_{10,20}$ | $R_{20,30}$ | $R_{30,60}$ | $R_{60,80}$ | $f_{e3}$ (MPa) | $R_{e3}$ (%) |
| 0.20% | 0.049 | 100 | 100 | 43 | 5.21 | 2.3 | 3.9 | 7.2 | 10.6 | 21.7 | 31.7 | 32.7 | 34.5 | 37.0 | 35.5 | 2.3 | 44 |
| 0.33% | 0.046 | 100 | 100 | 45 | 5.45 | 2.7 | 4.7 | 9.1 | 13.9 | 29.4 | 40.9 | 44.1 | 47.9 | 51.4 | 53.8 | 3.0 | 55 |
| 0.50% | 0.049 | 100 | 100 | 40 | 4.77 | 2.6 | 4.5 | 8.8 | 13.8 | 31.1 | 37.8 | 43.7 | 49.9 | 57.6 | 61.2 | 3.1 | 65 |

* Japanese Society for Civil Engineering

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