

*NYCON-G™  
Results of Tests  
In Concrete Products*

[www.nycon.com](http://www.nycon.com)

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This report contains actual plant and field data from actual customer testing of NyconG™. Each test includes a description of the product and its use, along with a report of actual test data. In each case, all sampling and testing was performed by the customer's QA/QC staff.

NyconG can provide crack control to a properly proportioned mix by adding 1.5 lb/CY to 2.5 lb/CY. NyconG can also provide crack control and improvements to compressive strength by adding 3 lb/CY to 6 lb/CY. Compressive strength improvement from using NyconG fiber is typically most significant when the concrete is in the plastic state. The use of higher doses of NyconG can also provide reductions of cement content - while maintaining original mix compressive strength.

NyconG is available in convenient ready-to-use toss-in bags of 1.5 lb or any custom weight bag. We also offer an automatic bulk dispensing system that can interface with your batch or continuous plant.

NyconG provides technical support for your optimum mix design development - including assistance with your mix or product formulations. Our technical support staff is available to help you determine the best performance optimum - and the most cost effective NyconG content for each of your products.

NyconG has developed a mix design procedure for determining the product optimum fiber content. The new procedure includes appropriate mix design, laboratory testing and product trials to determine the optimum NyconG content.

We appreciate your review of this report and look forward to discussing how NyconG can reduce your cost and improve the performance of your products.

To learn more please visit [www.nycon.com](http://www.nycon.com) or call 1-800-456-9266.

NyconG is protected by U.S. Patent No. 6,971,784 other U.S. and foreign patents pending.

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NyconG™ is made from 100% post-consumer and post-industrial carpet.



## Mix #1 (Crack Control)

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This is a commercial, 4000 psi in 28-days, site-cast ready-mix. To control cracking, the regular control mix uses 1.5 lb/CY of polypropylene fiber. To test NyconG 3 lb/CY of NyconG was added. To provide for precise comparison, we adjusted results to a fixed slump and air content.

### Control Mix #1 at Baseline – PP Fiber

Mix #1	Amount	Volume
Cement T1-T2	588 lbs	2.99
Stone #57	1,800 lbs	10.61
Sand C	1,223 lbs	7.54
Water	31.8 gal	4.25
Target % Air	6.0%	1.62
'Other' Fiber	1 lb	
Admixtures	Air/SuperP	

### Test Results

Parameter	Average
Air	4.5%
Slump	5.2
Temperature	74 °F
3 days	2,567 psi
7 Days	2,992 psi
14 Days	3,239 psi
28 Days	3,681 psi

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### Mix #1 with 3 lb/CY NyconG

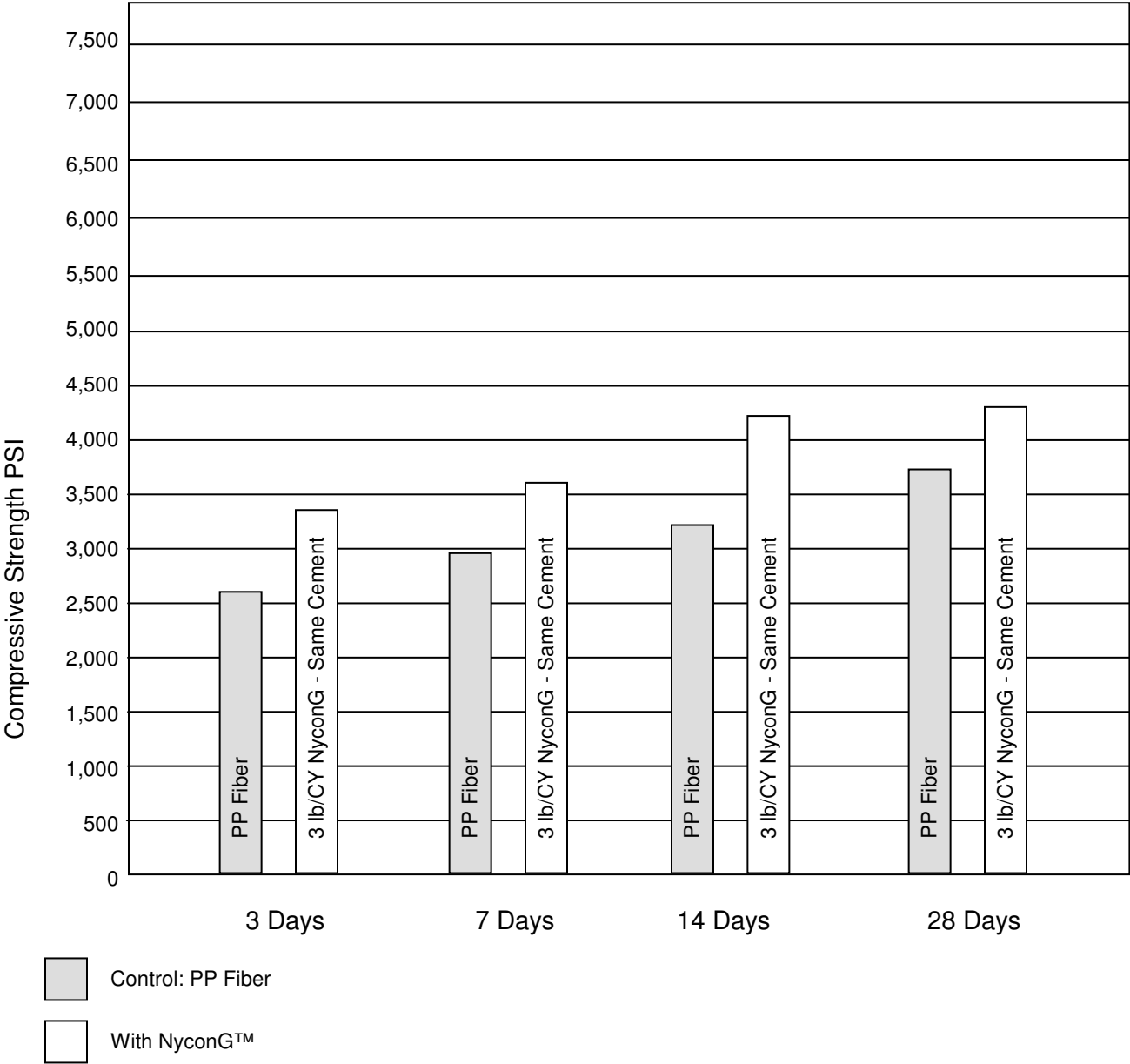
Mix #1	Amount	Volume
Cement T1-T2	588 lbs	2.99
Stone #57	1,800 lbs	10.61
Sand C	1,223 lbs	7.54
Water	31.8 gal	4.25
Target % Air	6.0%	1.62
NyconG	3 lbs	
Admixtures	Same as Control	

### Test Results

Parameter	Average
Air	4.5%
Slump	5.2"
Temperature	74 °F
3 days	3,383 psi
7 Days	3,559 psi
14 Days	4,196 psi
28 Days	4,301 psi

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Mix #1



**Note:** NyconG provided crack control and a dramatic improvement to strength when compared to the control mix with fibrillated PP fiber.

## Mix #2 (Crack Control)

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This is a commercial 4000 psi, site-cast ready mix. To compare to 1 lb/CY of PP fiber and to determine the optimum amount of NyconG required for crack control only, we added 1 lb/CY, 1.5 lb/CY and 2 lb/CY of NyconG. To provide an exact comparison, we adjusted the test results to a fixed slump and air content. The optimum NyconG content was approximately 1.8 lb/CY.

### Control Mix #2 at Baseline - PP Fiber

Mix #2	Amount	Volume
Cement T1-T2	441 lbs	2.24
Slag	147 lbs	0.80
Stone #67	1,800 lbs	10.61
Sand C	1,175 lbs	7.24
Water	33.6 gal	4.49
Target % Air	6.0%	1.62
PP Fiber	1 lb	
Admixtures	Air/SuperP	

### Test Results

Parameter	Average
Air	5.2%
Slump	4.5"
Temperature	86 °F
7 Days	2,528 psi
14 Days	3,317 psi
28 Days	3,910 psi

### Mix #2 with 1 lb/CY NyconG

Mix #2	Amount	Volume
Cement T1-T2	441 lbs	2.24
Slag	147 lbs	0.80
Stone #67	1,800 lbs	10.61
Sand C	1,175 lbs	7.24
Water	33.6 gal	4.49
Target % Air	6.0%	1.62
NyconG	1 lb	
Admixtures	Air/SuperP	

### Test Results

Parameter	Average
Air	5.2%
Slump	4.5"
Temperature	86 °F
7 Days	2,848 psi
14 Days	3,688 psi
28 Days	4,254 psi

### Mix #2 with 1.5 lb/CY NyconG

Mix #2	Amount	Volume
Cement T1-T2	441 lbs	2.24
Slag	147 lbs	0.80
Stone #67	1,800 lbs	10.61
Sand C	1,175 lbs	7.24
Water	33.6 gal	4.49
Target % Air	6.0%	1.62
NyconG	1.5 lbs	
Admixtures	Same as Control	

### Test Results

Parameter	Average
Air	5.2%
Slump	4.5"
Temperature	84 °F
7 Days	3,315 psi
14 Days	4,241 psi
28 Days	4,821 psi

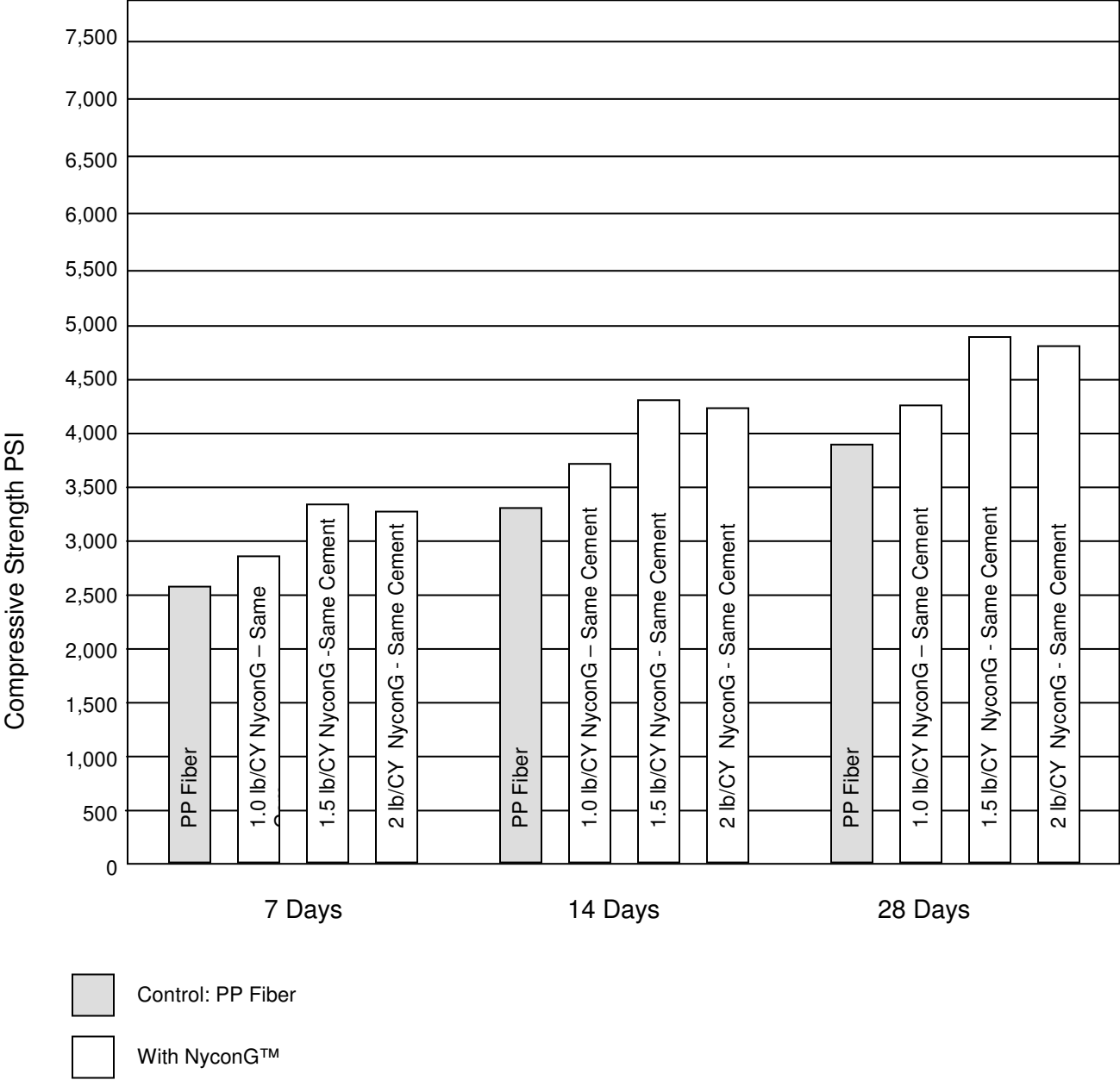
**Mix #2 with 2 lb/CY NyconG**

Mix #2	Amount	Volume
Cement T1-T2	441 lbs	2.24
Slag	147 lbs	0.80
Stone #67	1,800 lbs	10.61
Sand C	1,175 lbs	7.24
Water	33.6 gal	4.49
Target % Air	6.0%	1.62
NyconG	2 lbs	
Admixtures	Same as Control	

**Test Results**

Parameter	Average
Air	5.2%
Slump	4.5"
Temperature	83 °F
7 Days	3,272 psi
14 Days	4,192 psi
28 Days	4,740 psi

Mix #2



**Note:** NyconG provided crack control and improvement to strength throughout the required design range of 1 lb/CY to 2 lb/CY.

## Mix #3 (Crack Control)

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This is a very lean commercial mix, 3500 psi 28-day compressive strength, site-cast ready mix for walls and footers. To control cracking and reduce cement content, we added 3 lb/CY of NyconG and reduced cement content by 20 lb/CY.

### Control Mix #3 at Baseline – No Fiber

Mix #3	Amount	Volume
Cement Type 1	300 lbs	1.53
Slag	120 lbs	0.66
Fly Ash	180 lbs	1.20
Stone #67	1,560 lbs	9.26
Sand C	1,528 lbs	9.42
Water	37 gal	4.94
Target % Air	5.0%	1.35
Admixtures	SuperP	

### Test Results

Parameter	Average
Air	2.75%
Slump	4.0"
Temperature	71 °F
20 Hours	358 psi
7 Days	1,866 psi
28 Days	4,893 psi

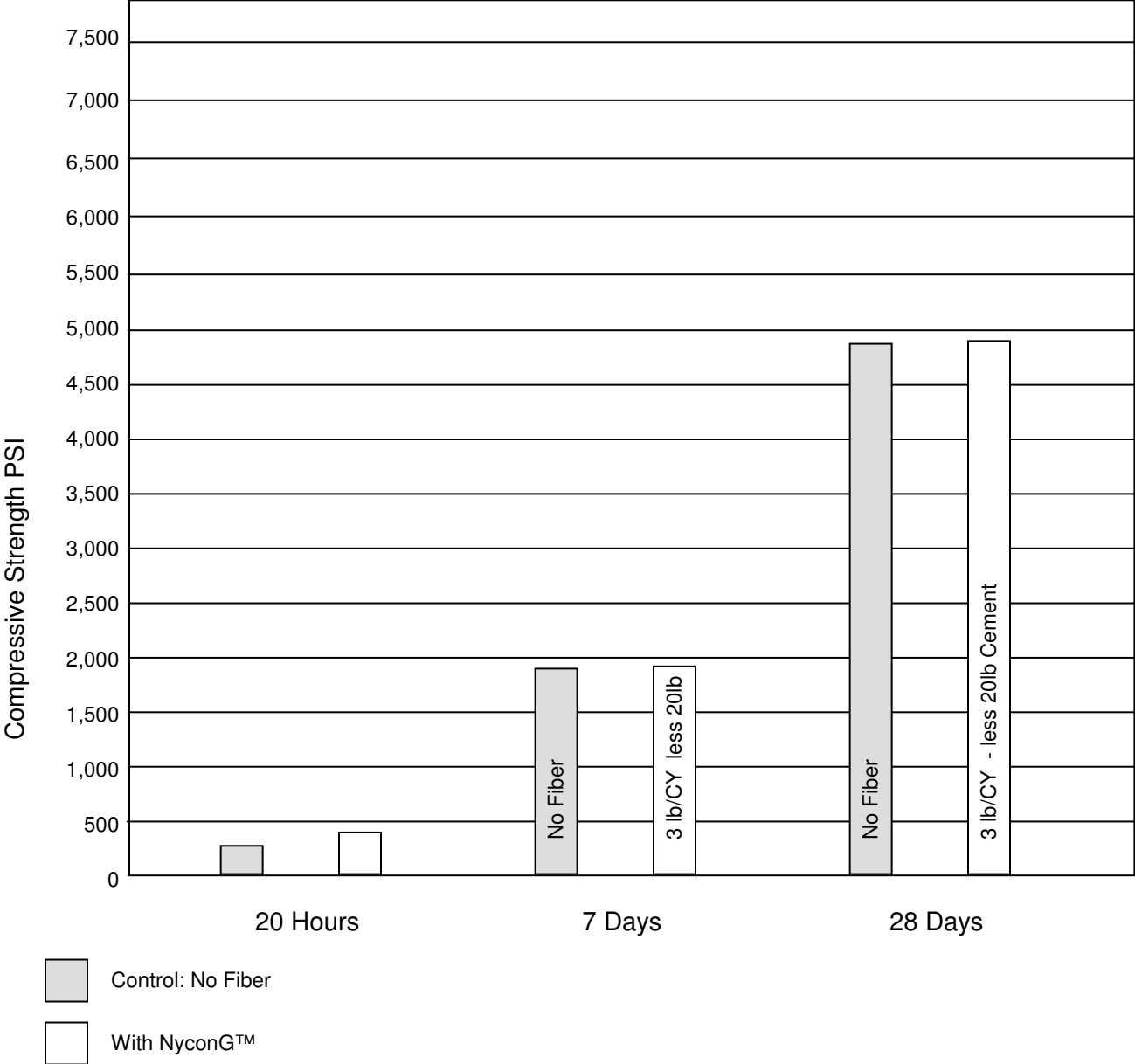
### Mix #3 with 3lb/CY NyconG 20lb less Powder

Mix #3	Amount	Volume
Cement Type 1	290 lbs	1.53
Slag	110 lbs	0.66
Fly Ash	180 lbs	1.20
Stone #67	1,585 lbs	9.26
Sand C	1,543 lbs	9.42
Water	36 gal	4.94
Target % Air	5.0%	1.35
NyconG	3 lbs	
Admixtures	Same as Control	

### Test Results

Parameter	Average
Air	3.20%
Slump	2.75"
Temperature	60 °F
20 Hours	438 psi
7 Days	1,850 psi
28 Days	4,912 psi

Mix #3



**Note:** NyconG provided crack control and maintained similar strength to this mix while reducing cement by 20 lb/CY. A significant cost savings.

## Mix #4 (Crack Control & Cement Reduction)

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This is a structural slump mix produced at a Precast concrete plant. Tests were performed using 3 lb/CY and 4 lb/CY of NyconG while reducing the mix cement content by 40 lb/CY, 50 lb/CY and 60 lb/CY.

### Control Mix #4 at Baseline – No Fiber

Mix #4	Amount	Volume
Cement Type 3	575 lbs	2.93
Fly Ash	100 lbs	0.70
Stone ¾"	1,600 lbs	9.32
Sand	1,268 lbs	7.72
Water	37.3 gal	4.98
Target % Air	5.0%	1.35
Admixtures	Air/SuperP	

### Test Results

Parameter	Average
Air	5.9%
Unit Weight	142 lb/cf
Flow	25"
16 Hour Break	3,560 psi
7 Day Break	4,646 psi
28 Day Break	5,348 psi

### Mix #4 with 3 lb/CY NyconG & 40lb less Cement

Mix #4	Amount	Volume
Cement Type 3	535 lbs	2.72
Fly Ash	100 lbs	0.70
Stone ¾"	1,600 lbs	9.32
Sand	1,349 lbs	8.22
Water	35.1 gal	4.69
Target % Air	5.0%	1.35
NyconG	3 lbs	
Admixtures	Same as Control	

### Test Results

Parameter	Average
Air	5.3%
Unit Weight	143 lbs/cf
Flow	20.5"
16 Hour Break	3,591 psi
7 Day Break	5,049 psi
28 Day Break	5,714 psi

### Mix #4 with 3 lb/CY NyconG & 50lb less Cement

Mix #4	Amount	Volume
Cement Type 3	525 lbs	2.62
Fly Ash	100 lbs	0.77
Stone ¾"	1,600 lbs	9.32
Sand	1,371 lbs	8.23
Water	34.5 gal	4.71
Target % Air	5.0%	1.35
NyconG	3 lbs	
Admixtures	Same as Control	

### Test Results

Parameter	Average
Air	4.2 %
Unit Weight	145 lbs/cf
Flow	21"
16 Hour Break	3,640 psi
7 Day Break	4,621 psi
28 Day Break	5,364 psi

**Mix #4 with 3 lb/CY NyconG & 60lb less Cement**

Mix #4	Amount	Volume
Cement Type 3	515 lbs	2.62
Fly Ash	110 lbs	0.77
Stone ¾"	1,600 lbs	9.32
Sand	1,350 lbs	8.23
Water	35.3 gal	4.71
Target % Air	5.0%	1.35
NyconG	3 lbs	
Admixtures	Same as Control	

**Test Results**

Parameter	Average
Air	4.5 %
Unit Weight	145 lbs/cf
Flow	22.5"
16 Hour Break	3,502 psi
7 Day Break	4,592 psi
28 Day Break	5,123 psi

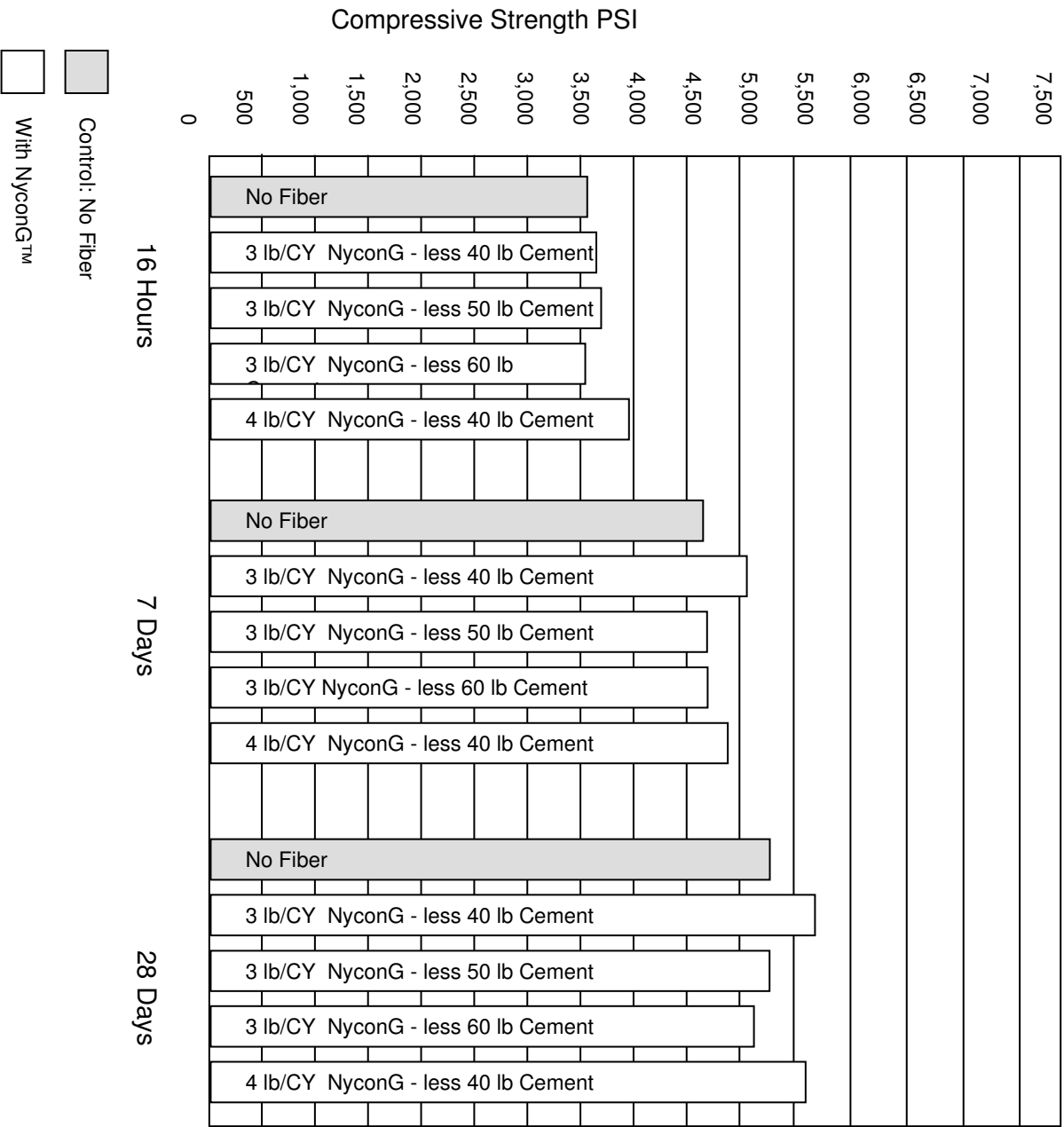
**Mix #4 with 4 lb/CY NyconG & 40lb less Cement**

Mix #4	Amount	Volume
Cement Type 3	535 lbs	2.72
Fly Ash	90 lbs	0.63
Stone ¾"	1,620 lbs	9.44
Sand	1,366 lbs	8.32
Water	34.0 gal	4.54
Target % Air	5.0%	1.35
NyconG	4 lbs	
Admixtures	Same as Control	

**Test Results**

Parameter	Average
Air	6.0 %
Unit Weight	143 lbs/cf
Flow	20"
16 Hour Break	3,910 psi
7 Day Break	4,895 psi
28 Day Break	5,575 psi

Mix #4



**Note:** NyconG provides significant cost savings in this case by providing crack control and reducing cement as much as 60 lb/CY while maintaining strength equal to the control mix.

## Mix #5 (Crack Control and Cement Reduction)

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This is an early strength slump mix produced at a Precast concrete plant. The goal for NyconG was to reduce the wait time to strip forms enough to add one additional cast cycle per day, reduce labor and reduce cement cost. Normal production practice included immediately covering freshly cast molds with tarps and warm the molds with heaters. We added 4 lb/CY of NyconG while reducing the mix cement content by 40 lb/CY.

### Control Mix #5 at Baseline – No Fiber

Mix #5	Amount	Volume
Cement Type 3	705 lbs	3.59
Stone ¾"	1,500 lbs	8.74
Sand	1,391 lbs	8.48
Water	36.3 gal	4.85
Target % Air	5.0%	1.35
Admixtures	Air/SuperP	

### Test Results

Parameter	Average
Air	8 %
Unit Weight	144 lbs/cf
Flow	17"
Temperature	66 °F
4.5 Hours	2,069 psi
5.5 Hours	3,024 psi
28 Days	7,150 psi

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### Mix #5 with 4 lb/CY NyconG & 45lb less Cement

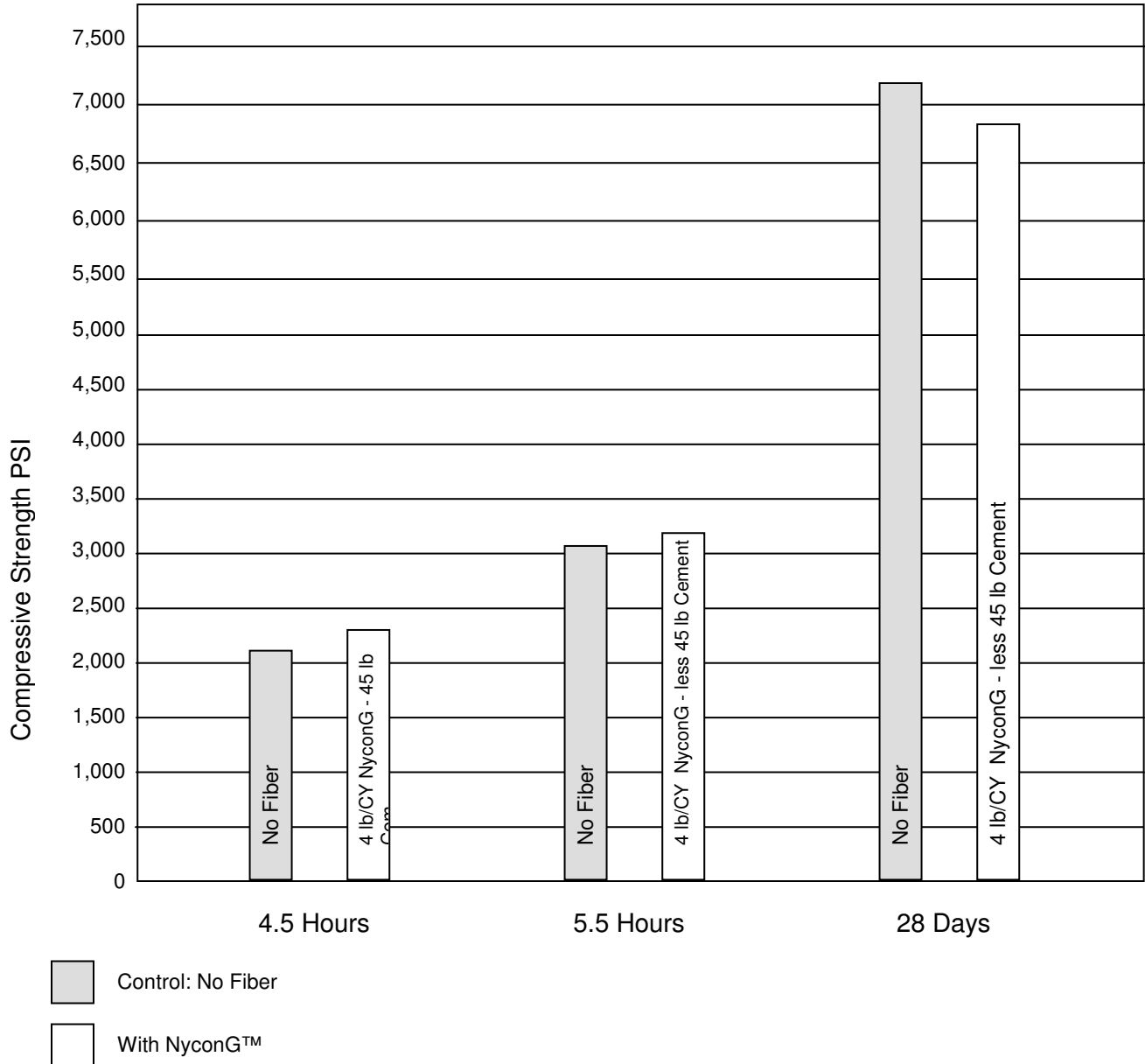
Mix #5	Amount	Volume
Cement Type 3	660 lbs	3.36
Stone ¾"	1,600 lbs	9.32
Sand	1,407 lbs	8.58
Water	32.9 gal	4.39
Target % Air	5.0%	1.35
NyconG	4 lbs	
Admixtures	Same as Control	

### Test Results

Parameter	Average
Air	8.5 %
Unit Weight	143 lbs/cf
Flow	16.0"
Temperature	65 °F
4.5 Hours	2,308 psi
5.5 Hours	3,183 psi
28 Days	6,750 psi

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Mix #5



**Note:** NyconG provided improved early strength to this mix while reducing cement by 45 lb/CY. A significant cost savings.

## Mix #6 (Crack Control and Strength Improvement)

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This mix is an early SCC mix produced at a Precast concrete plant. The mix is used to produce many large and structural products. Plant molds were heated. We added 4 lb/CY of NyconG while maintaining cement content at the original amount.

### Control Mix #6 at Baseline – No Fiber

Mix #6	Amount	Volume
Cement Type 3	650 lbs	3.31
Fly Ash	100 lbs	0.70
Stone ¾"	1,750 lbs	10.20
Sand	1,050 lbs	6.80
Water	34.8 gal	4.65
Target % Air	5.0%	1.35
Admixtures	Air/SuperP	

### Test Results

Parameter	Average
Air	4.8 %
Unit Weight	141.4 lbs/cf
Flow	21.5"
Temperature	89 °F
12 Hours	3,536 psi
3 Days	5,067 psi
7 Days	5,212 psi
28 Days	6,610 psi

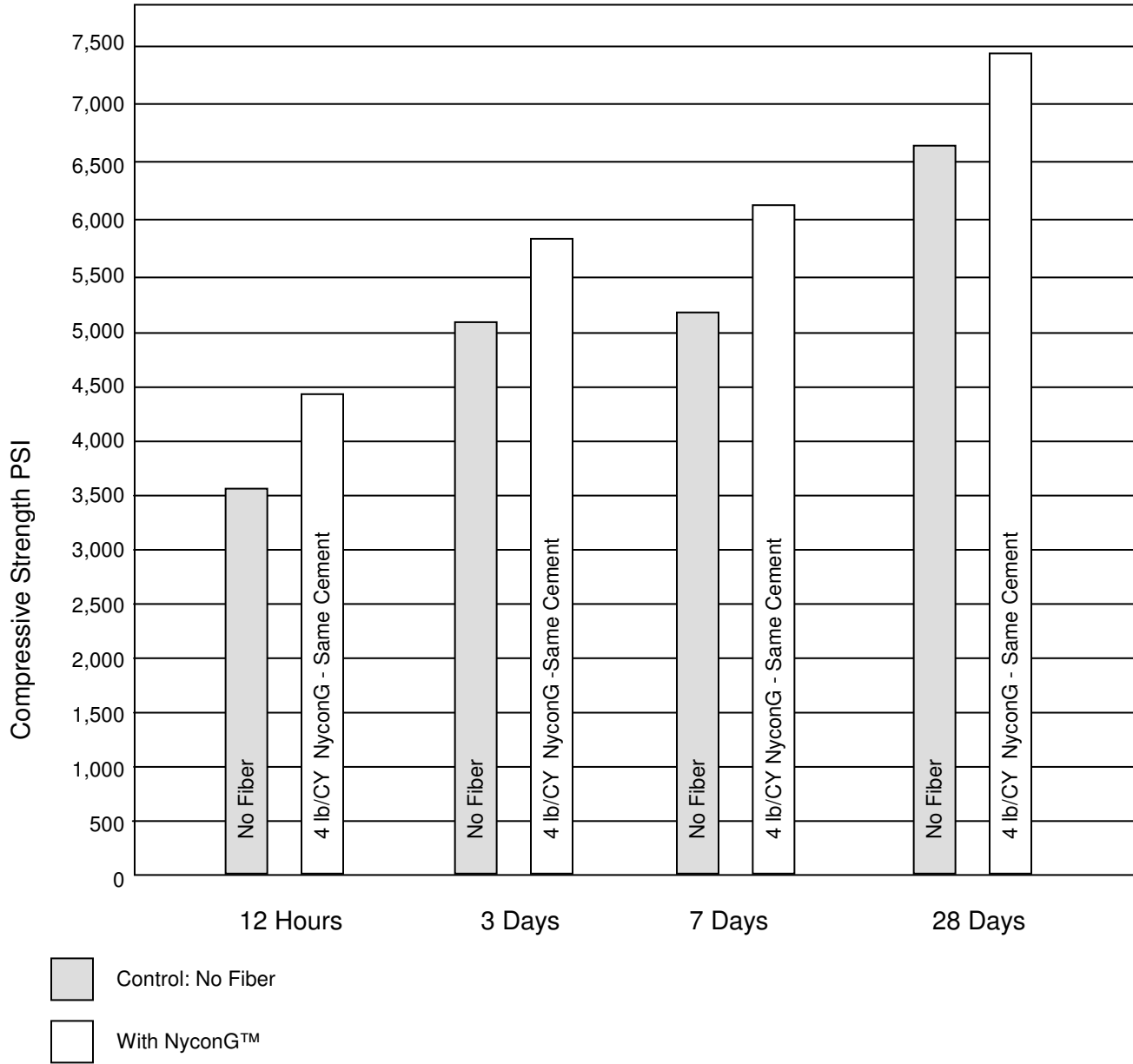
### Mix #6 with 4 lb/CY NyconG & Same Cement

Mix #6	Amount	Volume
Cement Type 3	650 lbs	3.31
Fly Ash	100 lbs	0.70
Stone ¾"	1,750 lbs	10.20
Sand	1,050 lbs	6.80
Water	34.8 gal	4.65
Target % Air	5.0%	1.35
NyconG	4 lbs	
Admixtures	Same as Control	

### Test Results

Parameter	Average
Air	4.0 %
Unit Weight	143 lbs/cf
Flow	20"
Temperature	88 °F
12 Hours	4,488 psi
3 Days	5,839 psi
7 Days	6,064 psi
28 Days	7,491 psi

Mix #6



**Note:** NyconG provided dramatically improved strength over the control mix without NyconG. This also provided reduced strip time.

## Mix #7 (Crack Control, Strength Improvement and Strip Time)

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This mix is an early SCC mix produced at a Precast concrete plant. The mix was used for small and large structural castings. To develop the optimum amount of NyconG based on compressive strength, and to reduce strip time, we added 4 lb/CY and 6 lb/CY of NyconG while maintaining cement content at the original amount. NyconG between 4 lb/CY and 6 lb/CY was determined to be optimal and reduced strip time.

### Control Mix #7 at Baseline – No Fiber

Mix #7	Amount	Volume
Cement Type 3	700 lbs	3.36
SEFA Fly Ash	120 lbs	
Stone #67	1,635 lbs	9.32
Sand	1,100 lbs	8.58
Water	34.8 gal	4.39
Target % Air	5.0%	1.35
Admixtures	Air/SuperP	

### Test Results

Parameter	Average
Air	4 %
Flow	20.5"
8 Hours	2,308 psi
7 Days	6,750 psi

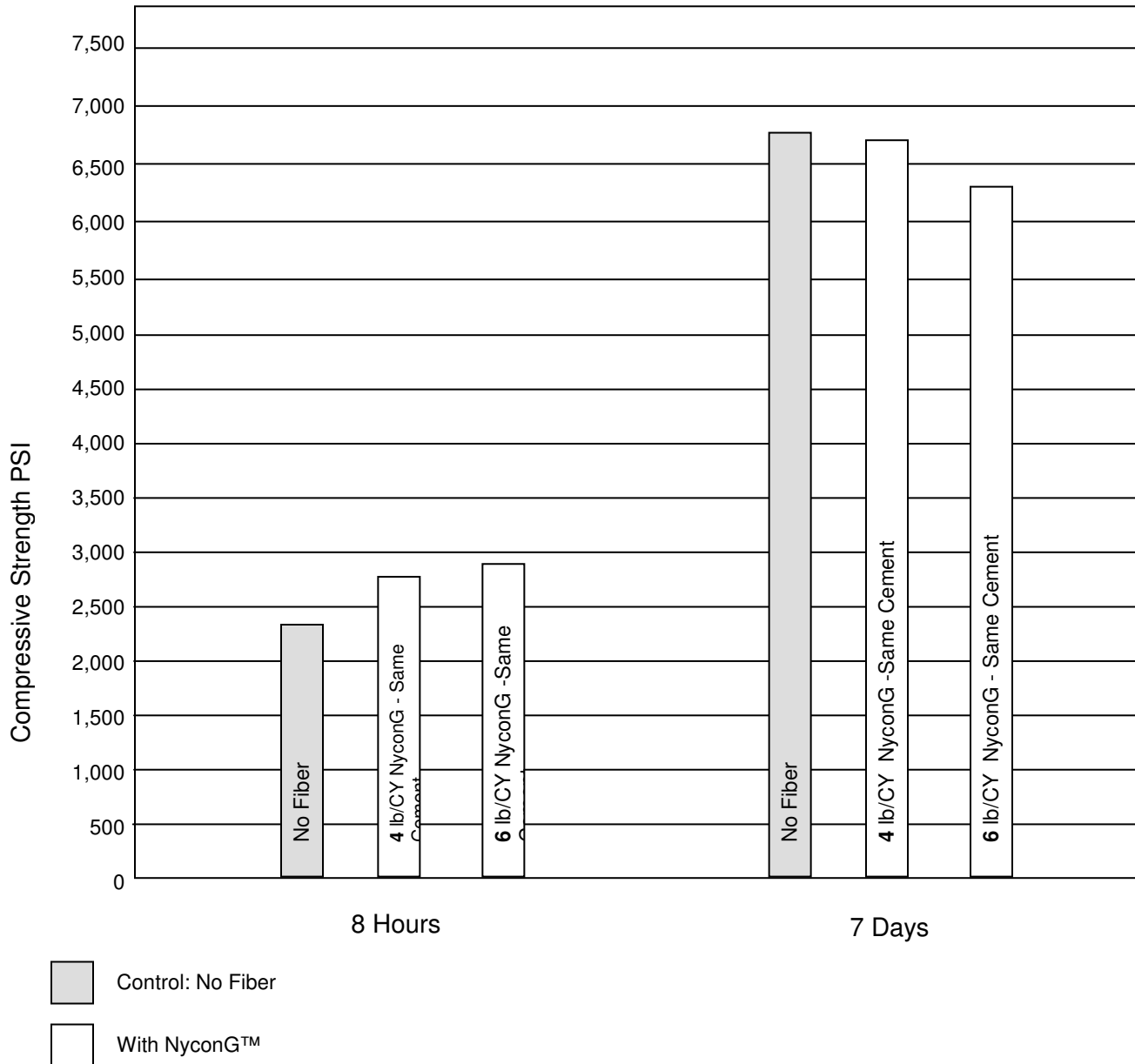
### Mix #7 w/ 4 & 6 lb/CY NyconG & Same Cement

Mix #7	Amount	Volume
Cement Type 3	700 lbs	3.36
SEFA Fly Ash	120 lbs	
Stone #67	1,635 lbs	9.32
Sand	1,100 lbs	8.58
Water	34.8 gal	4.39
Target % Air	5.0%	1.35
NyconG	Varies – See Test Results	
Admixtures	Same as Control	

### Test Results

Parameter	Test 1	Test 2
<b>NyconG</b>	4/lb/CY	6lb/CY
Air	4.6 %	4.4%
Flow	22.5"	22.5"
8 Hours	2,688 psi	2,845 psi
7 Days	6,654 psi	6,293 psi

Mix #7



**Note:** NyconG provided improved early strip strength, crack control and tensile strength to this mix compared to the control mix without NyconG.

## Mix #8 (Crack Control, Strength Improvement and Strip Time)

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This is a high slump, fiber mix produced at a central mix plant and transported to a Precast wall panel manufacturer. The Precast plant adds Superplasticizer just prior to use. The mix is cast on heated beds. The mix with 3 lb/CY of NyconG and with reduced cement content by 30 lb/CY provides similar results as the control mix with polypropylene fiber.

### Control Mix #8 at Baseline with PP Fiber

Mix #8	Amount	Volume
Cement T-3	680 lbs	3.46
Fly Ash	120 lbs	0.80
Stone #8	1,550 lbs	9.13
Sand C	1,143 lbs	7.04
Water	35 gal	4.67
Target % Air	7.0%	1.89
PP Fiber	1 lb	
Admixtures	Air/SuperP/Ret	

### Test Results at Central Plant

Parameter	Average
Air	5.7%
Slump	3"
Temp	73 °F
20 Hours	1,595 psi
7 Days	5,074 psi
28 Days	6,703 psi

### Data with Infrared Cure

15 Hours	2,093 psi
28 Days	6,166 psi

### Mix #8 with 3 lb/CY NyconG 10 lb less Cement

Mix #8	Amount	Volume
Cement T-3	670 lbs	3.41
Fly Ash	120 lbs	0.80
Stone #8	1,562 lbs	9.20
Sand C	1,151 lbs	7.09
Water	34.5 gal	4.61
Target % Air	7.0%	1.89
NyconG	3 lbs	
Admixtures	Same as Control	

### Test Results at Central Plant

Parameter	Average
Air	5.5%
Slump	3.5"
Temp	60 °F
20 Hours	1,830 psi
7 Days	5,131 psi
28 Days	7,458 psi

### Test Results at Panel with heat

10 Hours	2,456 psi
28 Days	6,683 psi

**Mix #8 with 2.5 lb/CY NyconG 20 lb less Cement**

Mix #8	Amount	Volume
Cement T-3	660 lbs	3.36
Fly Ash	120 lbs	0.80
Stone #8	1,573 lbs	9.27
Sand C	1,157 lbs	7.13
Water	34.1 gal	4.55
Target % Air	7.0%	1.89
NyconG	2.5 lbs	
Admixtures	Same as Control	

**Test Results at Central Plant**

Parameter	Average
Air	4.9%
Slump	3.25"
Temp	74°F
20 Hours	1,710 psi
7 Days	4,843 psi
28 Days	7,155 psi

**Data with Infrared Cure**

10 Hours	2,406 psi
28 Days	6,862 psi

**Mix #8 with 3 lb/CY NyconG 30 lb less Cement**

Mix #8	Amount	Volume
Cement T-3	650 lbs	3.31
Fly Ash	120 lbs	0.80
Stone #8	1,555 lbs	9.16
Sand C	1,199 lbs	7.24
Water	33.7 gal	4.5
Target % Air	7.0%	1.89
NyconG	3.0 lbs	
Admixtures	Same as Control	

**Test Results at Central Plant**

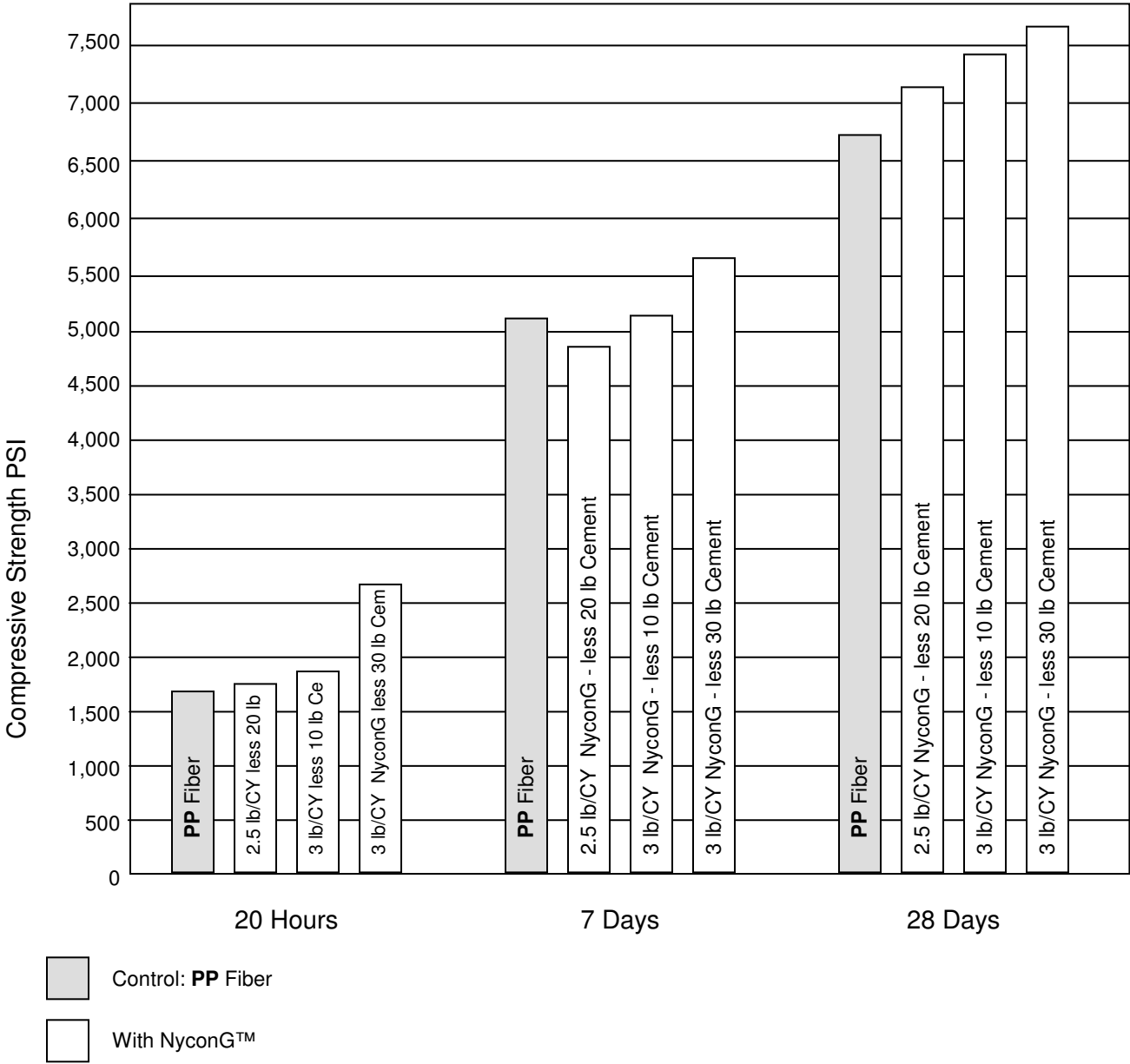
Parameter	Average
Air	6.5
Slump	3.0
Temp	79°F
20 Hours	2,157 psi
7 Days	5,638 psi
28 Days	7,639 psi

**Data with Infrared Cure**

10 Hours	2,624 psi
28 Days	6,540 psi

Mix #8

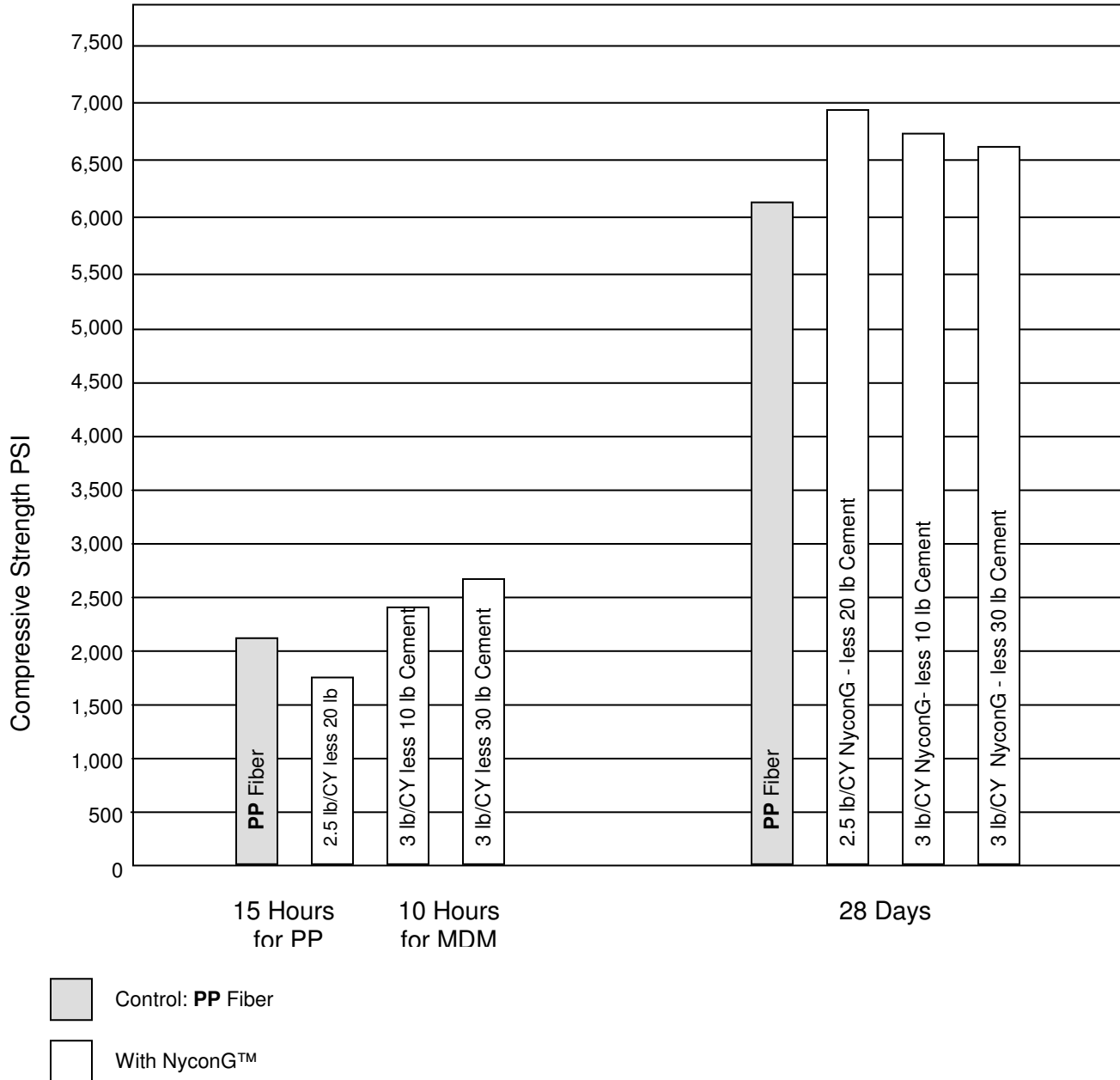
Data from Central Mix Plant (no heat)



**Note:** NyconG provided crack control and improved strength while reducing cement by up to 30 lb/CY and replacing the more expensive PP fiber. A significant cost savings.

Mix #8

Data with Infrared Cure



**Note:** NyconG provided crack control and dramatically improved early strength while reducing cement by up to 30 lb/CY as well as replacing the more expensive PP fiber. A significant cost savings.