



# Fosroc Auracast Solutions for Pretensioned Spun High Strength Concrete Pile

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



*constructive solutions*

# ABOUT FOSROC INTERNATIONAL

Since the company's beginnings over 80 years ago, Fosroc has developed into an international leader in delivering Constructive Solutions for projects across a broad range of market segments including transport, utilities, industrial and general buildings.

Fosroc's commitment to customer service and technical support is second to none. We work closely with architects, structural engineers, contractors and owners to best understand their requirements. Together we can develop a bespoke solution for a construction project, adding value and becoming more than just a materials supplier, but a solution provider.

Fosroc has an extensive network of offices and manufacturing locations across Europe, the Middle East, Africa, India, North, South and East Asia, and is further represented in other regions across the world by distributor and licensee partners.

Selecting from the full portfolio of Fosroc products and services and integrating expert technical support, world class customer service and innovation, Fosroc goes beyond just product selling to ensure that we partner with our customers to deliver complete constructive solutions.

- > Admixtures
- > Adhesives
- > Protective Coatings
- > Concrete Repairs
- > Industrial Flooring
- > Grouts & Anchors
- > Joint Sealants
- > Surface Treatments
- > Grinding Aids
- > Waterproofing

## FOSROC DELIVERS SOLUTIONS NOT JUST PRODUCTS

### CAD Details

A library of standard CAD details are available, bespoke CAD details can be created for your specific project

### Project Specifications

Dedicated specification managers on hand to assist with correct system choices and tailored solutions

### Site Support

Expert product and application support made available from our specialist teams.

### Seminar & Training

Comprehensive programme of seminars and training courses designed to expand and reinforce your knowledge.



## What is Pretensioned Spun High Strength Concrete Pile?

**Compressive strength: more than 80 MPa**

### PHC Pile

- By NAC(Non Auto clave) and AC(Auto Clave).
- By Product length: 5m - 15m.
- By Diameter divide : Normally  $\phi 300$  -  $\phi 1,200$
- By Valid Prestressed
  - A type -  $3.92\text{N/mm}^2$  (40kg/cm<sup>2</sup>)
  - B type -  $7.85\text{N/mm}^2$  (80kg/cm<sup>2</sup>, Normal products)
  - C type -  $9.81\text{N/mm}^2$  (100kg/cm<sup>2</sup>)

### More Information

- The quality depends on centrifugal force and speed
- Steam curing system
  - NAC: 65°C to 85°C
  - AC is 180°C.

### Properties of PHC pile

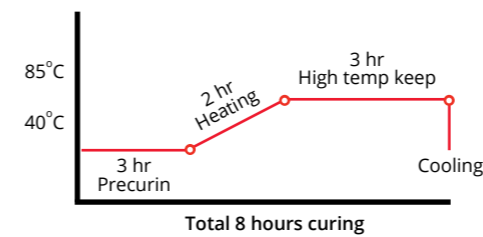
- > Design bearing capacity 78.5MPa(Nm<sup>2</sup>) Steam curing system
- > Excellent resisting force for hitting power
- > Offering competitive construction planning
- > Resisting internal forces for bending moment
- > Minimised drying creep & drying shrinkage



Leader in delivering  
Constructive Solutions  
**Worldwide!**

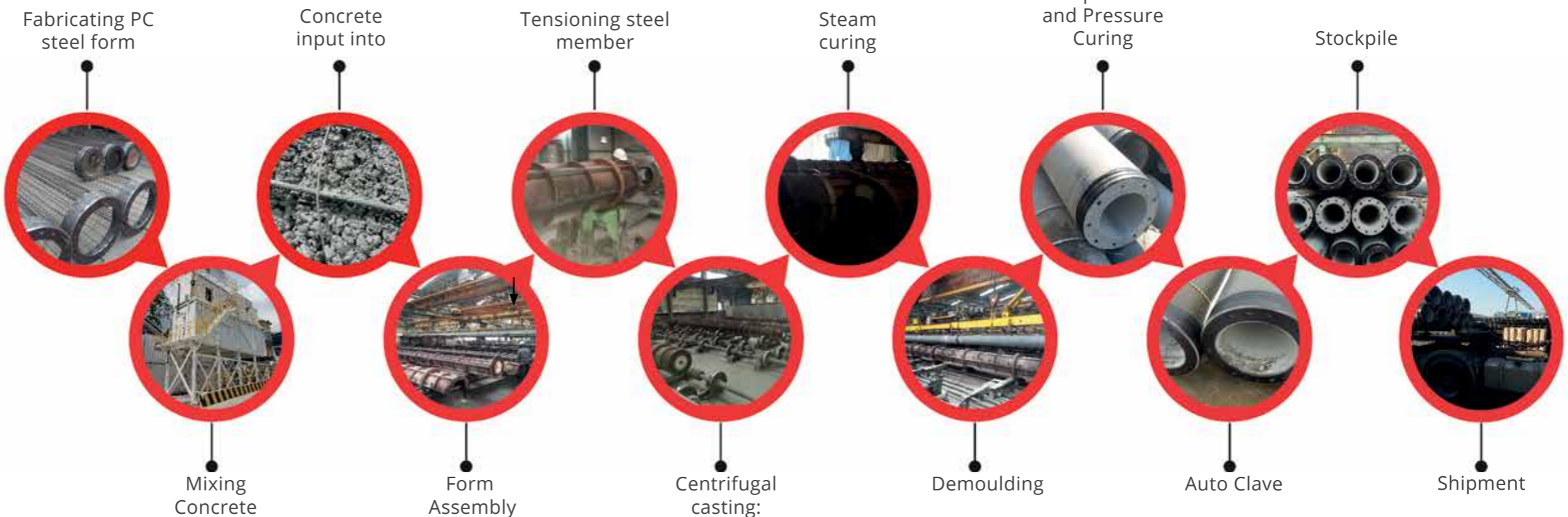
# How to Manufacture PHC pile

PHC piles comply with JIS A5337:1993. Piles are modified to suit ACI 543R-74(80) - Recommendation for Design, Manufacture and Installation of Prestressed Concrete Piles, BS 8004:1986 - Foundations and BS 8110:1997 - Structural Use of Concrete. The method of manufacture, the dimensional tolerances and requirements for bending strength of the main body and joint comply with JIS A 5337:1993.



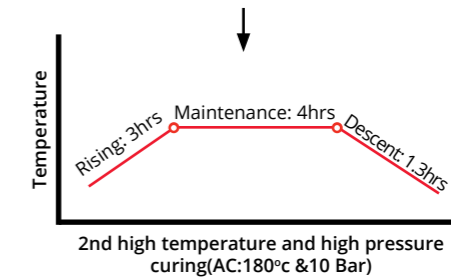
Fabricating PC steel form:  
PC steel bar > Fabricating PC steel > JIG Assembly

Cement + Sand + Gravel +  
Admixtures + Water



The quality depends on centrifugal force & speed. The pile section is divided into several segregated layers such as laitance, paste, mortar, and concrete layers.

Item	Compaction Condition				Total
	Step 1	Step 2	Step 3	Step 4	
Rpm	85	180	480	650	-
Time (sec)	150	60	150	270	630



# AURACAST PHC 500

Auracast PHC 500 has been designed for PHC pile's requiring high early strength, good surface finishing, excellent resisting force for hitting power & bending moment. Designed to help maximize production efficiency and saving costs.

## Performance

- > Compressive Strength: 60MPa and 90 MPa
- > Workability: 30 minutes
- > Initial 15 mins.: Pouring concrete to mould to reach spinning area
- > Last 15 mins.: Waiting time at spinning area for mould to be spined.
- > Compressive strength after steam curing min. 65.6 MPa (82% at 1 Day)
- > Achieved target compressive strength: At 14 days
- > Superior resistance to freezing, thawing, acid & chemical attack

## Benefits

- > High early strength
- > Good surface finishing
- > Excellent resisting force for hitting power
- > Offer competitive construction planning
- > Resisting internal forces for bending moment
- > Minimised drying creep & drying Shrinkage
- > Superior resistance to freezing, thawing, acid & chemical attack

## Applications

- > Bridges
- > Building Foundations
- > Civil Engineering Works
- > Marine Structure
- > Piled Embankments
- > Utility poles



## TEST RESULTS

MPa, mm

Type	Required Slump	1 Day	3 Day	7 Day
OPC	-	>60	>70	>80
CEM III	-	>60	>70	>80
Auracast PHC500	No Slump	66 ~ 70	72 ~ 75	80 ~ 83



## CONCRETE MIXING DESIGN

Batch Weight (kg/M<sup>3</sup>)

Type	W/B	S/A	W	B	C	GGBS	Additive for HSC	AD(%)
OPC	25	37	0.25	470 - 520	80%	20%	4 - 8%	1.5 - 2.2%
CEM III	27	33	0.27	420 - 470	80%	20%	4 - 8%	1.5 - 2.2%



# FOSROC PRODUCTS & SOLUTIONS

## FOSROC ADMIXTURE PRODUCTS:

### Auramix series

Superplasticizers with extended workability and ultra high performance concrete for RMC.

### Auracast Series

Superplasticizers with excellent water reducing & compressive strength for Precast concrete industry.

### Structuro Series

Superplasticizers with extended workability & ultra high performance concrete.

### Conplast P & SP Series

Superplasticizers / Plasticizers with high performance concrete.

### Conplast A, NC & Resivit

Accelerating admixtures for Precast.

### Conplast AE Series

Air entraining admixtures.

### Conplast F Series

Foaming agent.

### Conplast Controller

Shrinkage reducing admixtures.

### Conplast WP Series

Concrete integral waterproofing admixtures.

### Auramix SP & V series

High performance viscosity modifying agent.

### Conplast UW

Underwater concrete admixtures system.

### Conplast CN & CNI

Calcium nitrite corrosion inhibiting admixtures.

### Sprayset Series

High performance shotcrete accelerators.

### Concure Series

Concrete curing compound.

### Preco Series

Surface retarders.

### Reebol & Auramol

Mould release agent.

## FOSROC SOLUTIONS:



### Admixtures

Liquid or powder products, which modify and improve the properties of fresh and hardened concrete or mortar.



### Surface Treatments

Concrete curing membrane and other products to enhance the concrete surface.



### Concrete Repair & Protection

Primers, cement and resin based materials to reinstate defective concrete.



### Grinding Aids

Specially formulated to offer increased grinding efficiency for cement.



### Waterproofing

Liquid applied & preformed membranes for waterproofing of structures from basement to roof.



### Grouts & Anchors

Cement and epoxy resin grouts for construction applications including grouting baseplates, machine bases, rails and all sort of voids in new construction and repair work.



### Flooring

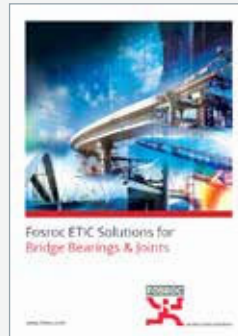
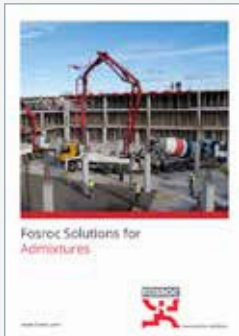
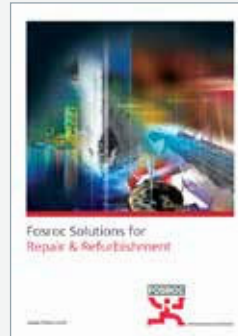
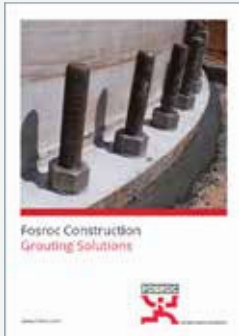
Coatings, toppings and screeds to provide improved performance to new and existing concrete floors.



### Jointing Materials

Flexible infill materials used for joints in pavements, cladding and other components.

Fosroc offers a full range of construction chemical solutions, helping to protect structures throughout the world. Please refer to our brochures, which include:



Details of your local Fosroc office can be found at [www.fosroc.com](http://www.fosroc.com)

**Important Note**

Fosroc products are guaranteed against defective materials and manufacture and are sold subject to its standard terms and conditions of sale, copies of which may be obtained on request. Whilst Fosroc endeavours to ensure that any advice, recommendation, specification or information it may give is accurate and correct, it cannot, because it has no direct or continuous control over where or how its products are applied, accept any liability either directly or indirectly arising from the use of its products, whether or not in accordance with any advice, specification, recommendation or information given by it.



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