



**RAND**  
POLYPRODUCTS PVT. LTD.

**PUCRETE®**



# **PUCRETE®** Mortars and Repair systems

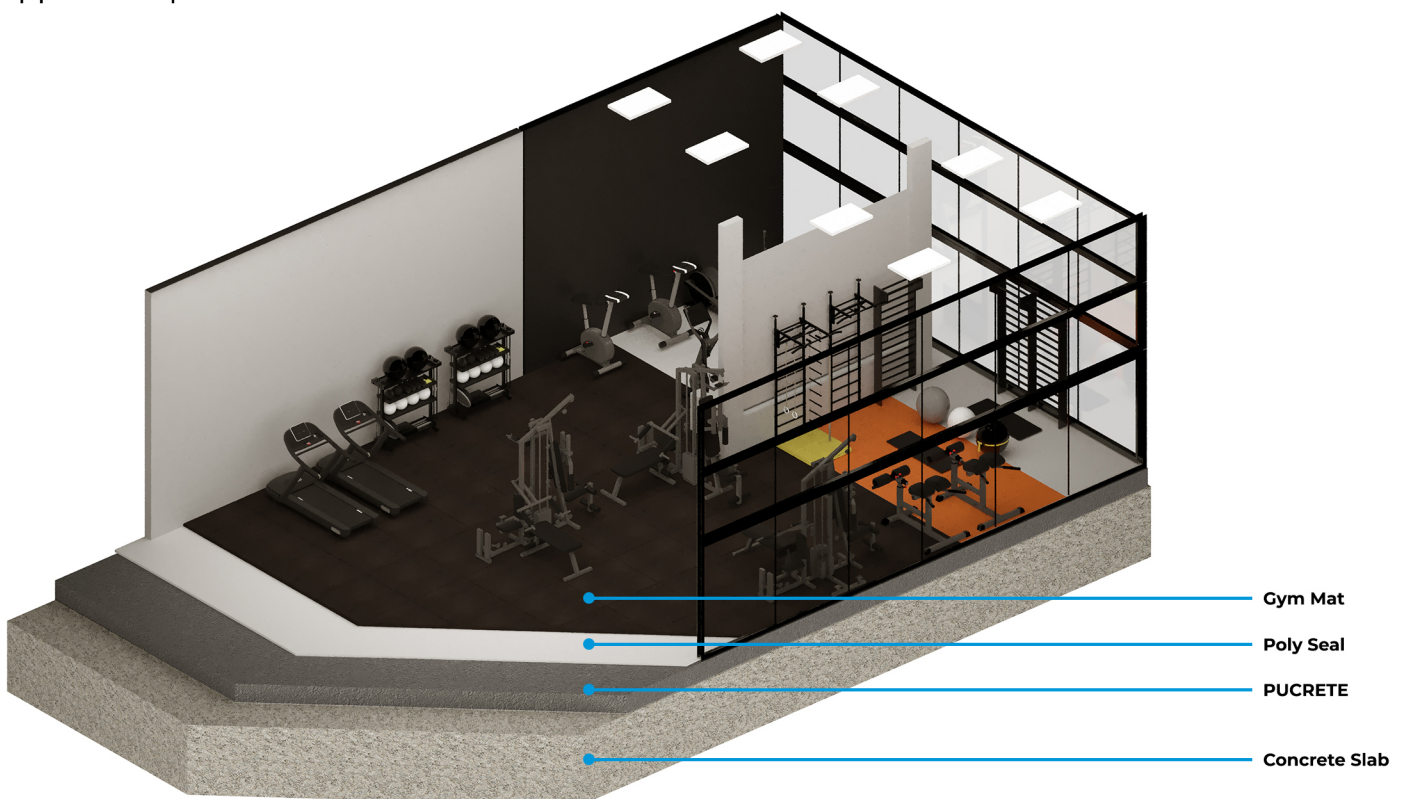
**Construction materials through molecular engineering**

New age Construction technology has created a demand for the use of functional chemical-solutions in niche construction; to ensure safe, long-lasting, resilient and high-performance construction quality.

In parallel, modern architectural designs and concepts for commercial and residential spaces have meant a rise in demand for products that provide fool-proof protection along with an aesthetic appeal.

RPPL has engaged itself into the development, demonstration and application of high-performing construction chemicals to fulfil the ever-growing needs of the Construction Industry.

In association with MIT-WPU, Pune, RPPL has developed effective solutions for the Construction Industry, using IPN's (Inter-Penetrating Network) based on the Polymer-concrete network. Solutions for construction joint repairs in structures/bridges/roads, mortars to replace conventional sub-floors, grouting solutions for various structural needs are just a few of the application possibilities.



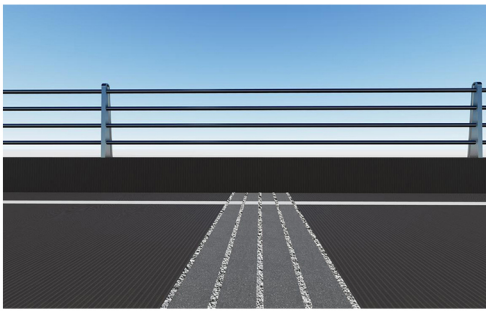
## **PUCRETE® Mortar Systems -**

**PUCRETE®** is the end-product of novel chemistry demonstrated by the combination of polymeric materials with conventional cement concrete. The bond, created with the use of IPN's, forms a network that exhibits high toughness, excellent impact resistance and greater compression ability than conventional concrete.

With new-age construction and design looking to go leaner, PUCRETE® forms an exact substitute for conventional mortar systems that are laid over finished slabs.

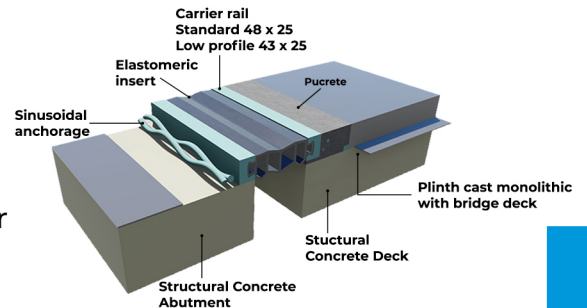
Faster application and curing within 24 hours, ability to resist equivalent loads at a much lower thickness (possibility of reduction of dead-load on slab up to 60%) and excellent bond strength with the substrate makes PUCRETE® the ideal mortar system for

- Commercial projects and offices; where faster work-turnaround is necessary
- Sub-floors in spaces like Gyms, where the floor will be subject to heavy impact-loads
- Repairs of damaged slabs/sub-floors



**PUCRETE® Polyfix** is a mortar-like formulated system on the PUCRETE® base. This system has been formulated specifically for application in repair-work of bridge construction joints. Exhibiting high strain rate and excellent damping properties, at superior compressive strengths to conventional cement-concrete; Polyfix is tailor-made for bridge-joints that are subject to heavy cyclic loads due to vehicular movement.

**PUCRETE® Polyfill** is a flowable system formulated on the PUCRETE® base. The system is designed such that it is ideal to be used for filling construction joints. The PU-concrete network provides the system with a flexible and tough nature, high durability; without compromising on the bond strength with the subfloor. This makes it an ideal solution for construction joints that are subject to heavy tensile and compressive stresses, and where conventional brittle materials fail or yield at a much earlier stage.



## New Gen Toughened Concrete - PUCRETE®

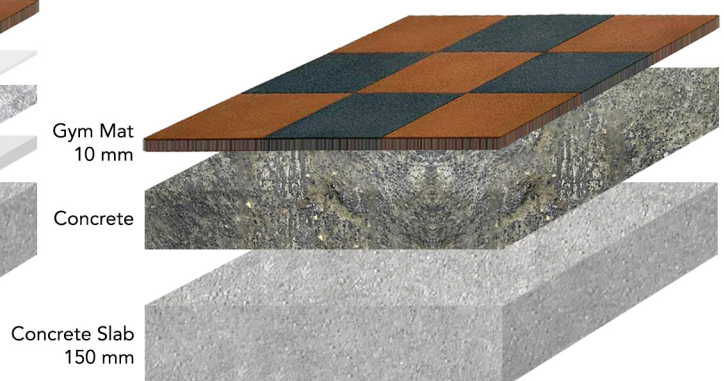
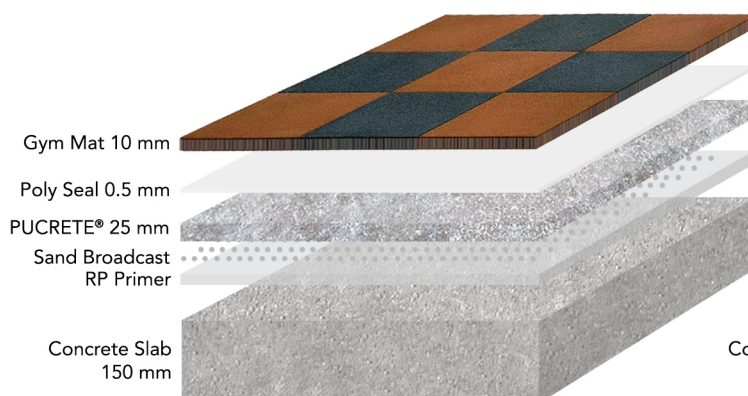
Mechanical behavioural study of unreinforced and reinforced PUCRETE

ADVANTAGES of PUCRETE over conventional concrete under various mechanical conditions-

- Higher STRAIN RATE of PUCRETE compared to concrete; resulting in higher deformation for the same geometry of design.
- Higher FLEXIBILITY for PUCRETE, with REINFORCEMENTS.
- PUCRETE can sustain extremely high IMPACTS multi-fold times.
- The BOND STRENGTH of PUCRETE with metallic members is multifold times the strength of concrete
- Failure at PULL-OUT is not abrupt or catastrophic.
- REINFORCED PUCRETE panels display better DEFORMATION characteristics than REINFORCED FERROCEMENT panels.

APPLICATION INFERENCES of the above results/advantages -

- PUCRETE can provide excellent energy dissipation characteristics.
- When coupled with REINFORCEMENTS, it can provide excellent DAMPING in CRITICAL locations of RCC members.
- High POTENTIAL for use in EARTHQUAKE resistant structures and other such critical structural locations.



## Substrate Pre-requisites:

Concrete or Cement screed surface is suitable for application of PUCRETE®. The moisture content of the subfloor should be below 5%. Use of moisture barrier membranes under the sub-floor is strongly recommended to prevent the rising moisture. The substrate should be prepared to make it dust free, free of laitance and other contamination. The floor level shall be checked and should to SR1 standard preferably.

## Service Installation:

PUCRETE® comes in pre-weighed kits which are mixed on site and can be laid as an in-situ casting, at a minimum thickness of 8mm.

## Overlay kit details:

RP Primer	2 component Epoxy primer, 2 coats recommended
	Epocoat 3144 - 30 kgs Hardener EP 35 - 30 kgs
	Coverage up to 6 Sqm/kg
<b>Sand Broadcast</b>	
<b>PUCRETE®</b>	PU mortar like screed, laid over the primed surface as an in-situ casting.
	Enaqua 1142 - 1.4 kgs Hardener PU 23 - 1.5 kgs Pigment paste - 0.3 kgs Filler set - 2.1/3.5/ 7.0 kgs based on End application
	Aggregates - Upto 10.0 kgs, based on End application
	Coverage up to 1 SqM per set, at 8mm thickness

## Technical Data:

The following technical data is of PUCRETE®DC samples cured for 7 days at ambient temperature, at an RH of 50%.

Results of UNREINFORCED PUCRETE - Mechanical testing

Post curing days, before testing	Test	Unit	7 days		
			PUCRETE	M20	M30
	<b>Uniaxial Compression</b>				
	Compressive Strength-Cube	MPa	30	29	40
	Compressive Strength-Cylinder	MPa	20	20	30
	Strain at 30% peak Stress		0.00082	0.000327	0.000327
	Ultimate Strain		0.01	0.0035	0.0035
	Initial Target Modulus	MPa	7475	20000	30000
	Secant Modulus at 30% peak Stress	MPa	7262	18348.6	27522.90
	Secant Modulus at 60% peak Stress	MPa	4328	16326.5	24489.70
	Secant Modulus at peak Stress	MPa	1145	10000	15000
	Toughness	MPa	0.33	0.056	0.084
	<b>Impact Strength - 1st crack</b>	J/m	16023	206	628
	<b>Impact Strength - Ultimate Failure</b>	J/m	23577	481	1056
	<b>Pull Out Strength</b>	MPa	3.93	1.2	1.5
	<b>Strength under Split Tension</b>	MPa	3.63	2.8	4.5
	<b>4 Point bending (Unreinforced)</b>	MPa	4.48	3.13	3.83

Results of UNREINFORCED PUCRETE - Mechanical testing

Test	Unit	Reinforcement with	
		PUCRETE	M40
<b>Post curing days, before testing</b>		<b>7 Days</b>	<b>28 days</b>
<b>4 Point Monotonic bending</b>	MPa	14.45	6.13
<b>3 Point Cyclic bending</b>			
Secant Modulus at 30% peak Stres	MPa	5712	13057
Secant Modulus at 60% peak Stres	MPa	3066	13057
Secant Modulus at peak Stres	MPa	1555	8161

## Curing:

The screed of PUCRETE® will cure for operation within 24 hrs. However, it will gain its complete strength in 7 days.

For best results, the application temp. should be within a range of 15 to 25 O C.

The maximum temperature PUCRETE® flooring overlay will withstand for continuous exposure will be 60 to 65 O C.

**Note:** Some staining or discoloration may occur with some chemicals depending upon the nature of the spillage and the standards of housekeeping employed.

## Impact Resistance:

PUCRETE® inherently possesses a very high impact strength due to its resilient and tough structure and will not chip off or flake due to brittleness. The excellent adhesion to the sub-floor normally results in prevention of failure of sub-floor under impact.

## **Permeability:**

**PUCRETE®** is completely impervious to water and has absolutely zero absorption. Hence it is highly recommended for floor subject to continuous water exposure. It is also fairly tolerant to surface moisture and works well on new and old RCC flooring having more moisture but the sub-floor should have a good membrane moisture barrier underneath to prevent the entry of ground moisture into the sub-floor concrete.



For further details on the product, please contact us at

## **Rand Polyproducts Pvt. Ltd.,**

Gat No. 3a/2, Old Gat No. 1649,  
Village Ghotawade Village, Tal. Mulshi,  
Dist. Pune, PIN - 412 115.

## **Contact:**

Sales/Admin 020-6790 8609/10  
Technical 020-6790 8621

## **Email:**

rand@randpoly.in