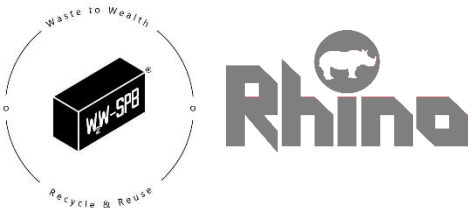


# Waste as an Economic Resource

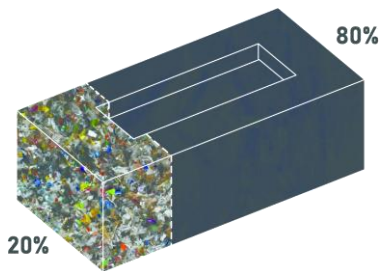
**Swachhta,  
Circularity  
Liveability**

Manish Kothari  
Rhino Machines Pvt. Ltd.  
26 Dec 2024

Name of organisation- **Rhino Machines Pvt Ltd**  
Name of initiative- **Silica Plastic Block**  
Date of commencement- **2 November, 2018**  
Location- **Anand, Gujarat**



## Silica Plastic Block Solution



### Technology: A new composite material

Combines a mix of **low value plastic waste** and **industry silica waste** to replace traditional material with a composite mouldable green material

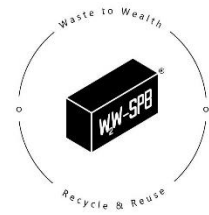


### Impact: Waste as an Economic Resource

Create positive climate action (SDG13)	Livelihood creation (SDG8)	Responsible consumption (SDG12)	Sustainable Cities (SDG13)
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# Silica Plastic Block Material and Application



## SPB Interlocking Paver Blocks - 9"

Composite mix of plastic waste and Industry Silica Waste to replace traditional material with green material by using wasted resources



Moisture Resistant



Termite Resistant



UV Resistant



Frost Resistant



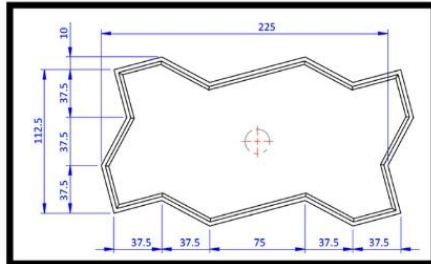
Abrasion Resistant



Carbon Negative



Machinable



Composition : 30 to 50% plastic, 50-70% foundry sand/industry waste

Thickness	40 mm	50 mm
Compression Strength N/mm2 as per IS 15658:2021 (varies with plastic composition)	20-25	30-35
Water Absorption	0.2 - 0.3 %	
Suggested Application	Light traffic	Medium Traffic
Weight per pc (kgs)	1.7	2.1
Avg nos per square feet	3.6 Nos	

Ecofriendly, Sustainable, Durable and Reusable Products

### Test Report Physical Properties of Paver Block

Sample ID No. » 01/20230331/PB Date of Report » 01-Apr-23  
Report Ref No » OIS-2023-24-01/20230331/PB

Customer » Rhino Machinery Private Limited  
Name of Work » For Quality Purpose

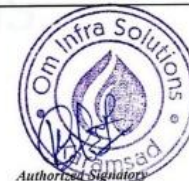
Date of Letter » 31-Mar-23 Test Started » 01-Apr-23  
Material Received » Paver Block Test Completed » 01-Apr-23  
Area (cm<sup>2</sup>) » 240 Shape of Block » Zig Zag \*\*  
Avg. Thickness of Block (cm) » 5

Sr. No.	Sample Mark	Weight (gm)	Failure Load (KN)	Comp. Strength (N/mm2)
1	ACE-1	2109	888.6	37.0

\*\* End of Report \*\*

#### Note :-

1. The results are given only for the sample submitted by the Customer.
2. The test report shall not be reproduced except in full, without written approval of the laboratory.
3. Om Infra Solutions not responsible for any kind of interpretation of test results
4. The results/report is not used for publicity.
5. \*\* As informed by client

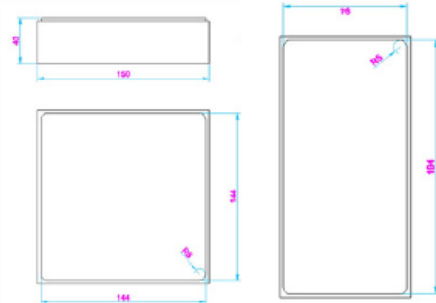


# Silica Plastic Block Material and Application



## SPB Cobblestone Blocks 4" / 6" / 8"

Composite mix of plastic waste and Industry Silica Waste to replace traditional material with green material by using wasted resources



Composition : 30 to 50% plastic, 50-70% foundry sand/industry waste

Thickness	30 mm	40 mm
Compression Strength N/mm <sup>2</sup> as per IS 15658:2021	15-20	20-25
Water Absorption	0.2 - 0.3 %	
Suggested Application	Walkways	Light Traffic
Weight 100 x 100 mm in grams	420	560
Weight 150 x 150 mm in grams	1030	1380
Weight 200 x 100 mm in grams	920	1230

Weights may vary +/- 5% depending on mix ratio

## SPB IB9 - Interlocking Brick 9"

An **ECO FRIENDLY** alternative to **RED CLAY BRICK**



Size - 9" x 4.5" x 3"  
Weight ~ 1.1 kgs Hollow

- 2.5 Times Lighter
- Unbreakable
- 50% Plastic / 50% Industry Waste
- Reusable, Recyclable
- No Pollution
- Uses Clean Energy
- Easy Assembly

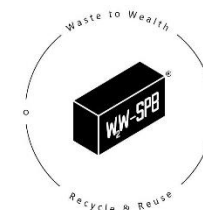


Sample Room - 6' x 4' - 4 Hours x 2 Persons  
No cement | No water | No Curing  
Build it Yourself | Just One Hammer

**Pre-Engineered Sustainable Construction Solution**



# Socio-Economic Models since 2021 – foundation for scalability



## AIA Engineering, Ahmedabad

- 100 kg/hr pilot plant
- Commissioned in January 2021

Industry - CSR



## Green India Eco Tiles, Hyderabad

- 100 kg/hr plant
- Commissioned in October 2021

Startup



## Green Banana e – Upcycle Chakra

- 100 kg/hr plant commissioned in October 2022

Incubation



## Anwesha Foundation CSR

- 5 kg/hr Education & Research Lab
- Commissioned Sep 2022

Social Awareness



## ACE Designers

- 250 kg/hr project – 500 kg/hr
- Plant under implementation
- Paver Blocks, Planks

Industry - CSR

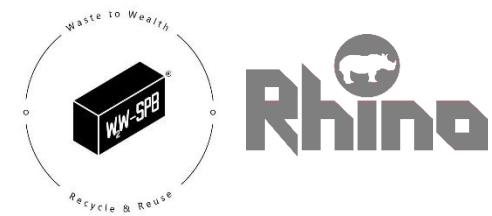


## MS University – Dept of Chemical Engineering

- 5 kg/hr Education & Research Lab

Institution Research

# Socio-Economic Models since 2021 – foundation for scalability



## Tribal Spun Repurpose Pvt Ltd, Manipur

- 5 kg/r plant for Lifestyle Products
- Commissioned 20<sup>th</sup> Feb 2024

Social Development



## Meemansa, Anand

- 10 kg/hr for Lifestyle products
- Commissioned 5<sup>th</sup> April 2024

Lifestyle



## Kankai Municipal Corporation – Nepal

- 100 kg/hr common facility
- Paver Block from MRF facility

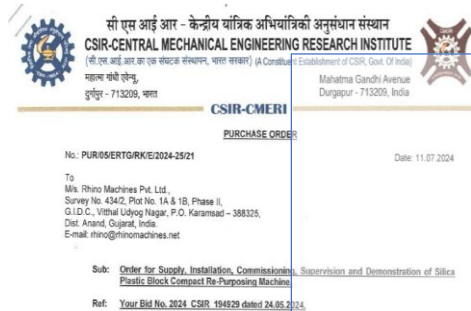
Urban Local Body



## Circular Seed – Australia

- 10 kg/hr for Lifestyle product
- Expected commissioning August 2024

Global partnership



## CSIR - CMERI

- 10 kg/hr for reserach
- Expected commissioning September 2024

Institution Research





# THANK YOU



## Transforming Today's Waste Into Tomorrow's Resource

BEST INITIATIVE IN  
PLASTIC RECYCLING  
& WASTE  
MANAGEMENT BY  
**SME/MSME**

RHINO MACHINES  
PRIVATE LIMITED



I was also happy to see the work of Rhino Machines Pvt Ltd that launched the Silica Plastic Block (SPB) initiative to address the issue of waste management, focusing specifically on low-value plastic waste and foundry dust. Their technology combines plastic waste and silica industry waste to create a composite, moldable green material that can replace traditional materials like paver blocks and bricks. It is a sustainable product aimed at reducing waste while generating economic value. The initiative is structured under a Public-Private Partnership (PPP) model that leverages support from Urban Local Bodies (ULBs), corporate social responsibility (CSR) contributions, and grants.

**R.A. Mashelkar**

Chair, India Sanitation Coalition-FICCI Sanitation Awards, and Former  
Director General, Council of Scientific & Industrial Research