



SANDHYAFLEX

ISO 9001:2015 certified company

PVC Rungs/ PVC Foot step

TECHNICAL DATASHEET

SANDHYAFLEX, a trusted name in construction materials since 2015, has established itself as a leading manufacturer of high-quality **PVC Encapsulated Rungs**. Designed to provide safe and durable access in manholes, sewer systems, water tanks, and underground chambers, SANDHYAFLEX PVC Rungs offer superior strength, corrosion resistance, and long service life.

Overcoming Challenges, Delivering Excellence:

Traditional metal ladders and untreated steel rungs are prone to corrosion, rusting, and deterioration when exposed to moisture, chemicals, and sewage environments. These issues can compromise worker safety and increase maintenance costs.

Recognizing these challenges, **SANDHYAFLEX** developed **PVC Encapsulated Rungs** that combine a high-strength steel core with a tough PVC outer coating. This innovative design ensures:

- Enhanced corrosion and chemical resistance.
- Superior grip and user safety.
- Long-lasting performance in aggressive environments.
- Reduced maintenance and replacement costs.
- Compliance with modern construction and safety standards.

By offering a reliable, durable, and maintenance-free access solution, **SANDHYAFLEX PVC Rungs** have become a preferred choice for infrastructure, water management, sewage treatment, and civil engineering projects across the country.

Key Features:

Durable PVC Construction: These rungs are crafted from PVC material known for its exceptional durability and resistance to wear and tear. They are built to last through countless training sessions, indoors or outdoors.

Anti-Slip Design: Each rung is designed with a textured surface that provides excellent traction and grip, reducing the risk of accidents during agility drills and ladder exercises.

Easy Installation: PVC rungs are simple to install, making them a convenient addition to your training equipment. They can be easily attached to ladders, agility poles, or other exercise setups.

Versatile Use: Ideal for a wide range of activities, including speed and agility training, ladder drills, soccer, football, basketball, and more. They help improve footwork, coordination, and overall athleticism.

Variety of Sizes: PVC rungs are available in various lengths and widths to cater to different training needs and skill levels. Whether you're a beginner or a professional athlete, there's a size suitable for you.

Weather Resistant: The PVC material is resistant to moisture, making these rungs suitable for use both indoors and outdoors. They won't degrade or lose their grip even in adverse weather conditions.

Portable and Lightweight: Easy to transport and store, these rungs are perfect for coaches, trainers, and athletes who need agility training on the go. They can be rolled up or packed away when not in use.

History of PVC Rungs :

- **1950s – Growth of Underground Infrastructure:** Rapid urban development and expansion of sewerage networks created a need for safe access systems in manholes and underground chambers.
- **1960s – Introduction of Steel Rungs:** Mild steel and galvanized steel rungs began replacing traditional masonry steps, offering improved strength and ease of installation.
- **1970s – Safety and Durability Improvements:** Engineers focused on enhancing worker safety by developing standardized rung designs with better load-bearing capacity and slip resistance.
- **1980s – Emergence of PVC Encapsulation:** PVC-coated steel rungs were introduced to protect metal cores from corrosion in sewage, water, and chemically aggressive environments.
- **1990s – Wider Commercial Adoption:** PVC Encapsulated Rungs gained popularity in municipal sewer systems, water treatment plants, and industrial infrastructure due to their durability and low maintenance requirements.
- **2000s – Standardization and Quality Enhancement:** Manufacturers adopted stricter quality controls and compliance with national and international standards, improving product reliability and safety.
- **2010s – Advanced Manufacturing Techniques:** Improved PVC formulations and automated production processes enhanced bonding strength, impact resistance, and service life.

- **Modern Era:** PVC Rungs are widely used worldwide in manholes, inspection chambers, sewage systems, water tanks, drainage networks, and underground utility structures, providing a safe, corrosion-resistant, and long-lasting access solution.

COLOUR AND ITS APPLICATION:

PVC Encapsulated Rungs, colors are generally used for identification, visibility, aesthetics, or project-specific requirements rather than indicating different performance characteristics.

Colour	Typical Application
Orange	Standard manholes, sewer chambers, and municipal drainage systems
Yellow	High-visibility installations requiring enhanced worker safety
Black	Industrial structures, wastewater treatment plants, and utility chambers
Grey	Commercial and infrastructure projects where a neutral appearance is preferred
Blue	Water supply structures, overhead tanks, and potable water facilities
Green	Sewage treatment plants, environmental projects, and drainage systems
Red	Hazard-prone or restricted-access structures requiring clear identification
White	Specialized projects requiring color coding or aesthetic matching



For builders, contractors, municipal authorities, and infrastructure developers seeking safe and durable access solutions for underground structures, **SANDHYAFLEX** stands as a trusted partner. With a strong commitment to quality, safety, and innovation, SANDHYAFLEX offers premium **PVC Encapsulated Rungs** designed for use in manholes, sewer systems, water tanks, inspection chambers, and utility structures. Manufactured using high-strength steel cores and corrosion-resistant PVC encapsulation, these rungs provide exceptional durability, superior grip, and long service life in demanding environments. Their reliable performance, stringent quality standards, and customer-focused approach make SANDHYAFLEX a preferred choice for modern infrastructure and construction projects.

Materials :

The PVC Foot Step shall be manufactured using a high-quality PVC compound encapsulating a reinforced steel core or TMT bar to provide superior strength, durability, and corrosion resistance. The PVC compound may contain virgin PVC resin, plasticizers, stabilizers, fillers, lubricants, impact modifiers, pigments, and adhesion-promoting additives to ensure excellent mechanical performance, weather resistance, and long service life.

The steel reinforcement shall consist of mild steel, TMT steel, or galvanized steel rods of suitable diameter, securely bonded within the PVC body to provide high load-bearing capacity and structural stability. The PVC encapsulation shall form a continuous protective layer around the steel core, preventing corrosion and ensuring safe operation in wet, humid, and chemically aggressive environments.

RAW MATERIALS OF PVC FOOT STEP				
S. No.	Raw Material	Image	Typical Grade / Example	Function / Purpose
1	PVC Compound (Virgin PVC Resin + Additives)		PVC Resin (SG-5 / K-67) Impact Modifier Processing Aids	<ul style="list-style-type: none"> Main body material Provides strength, durability and weather resistance Ensures long service life
2	Steel Core / Rod (Reinforcement)		MS Rod / TMT Bar (8mm / 10mm / 12mm / 16mm) As per design	<ul style="list-style-type: none"> Provides high load bearing strength Ensures structural stability Prevents bending and breakage
3	Plasticizers		DOP (Di Octyl Phthalate) DOTP (Di Octyl Terephthalate) Epoxidized Oil	<ul style="list-style-type: none"> Improves flexibility and processability Enhances bonding with steel Prevents brittleness in PVC
4	Stabilizers		Calcium-Zinc Stabilizer Lead Stabilizer (Older systems) Heat Stabilizer	<ul style="list-style-type: none"> Improves heat and weather resistance Prevents degradation during processing and service life
5	Fillers		Calcium Carbonate (CaCO ₃) Talc / Kaolin Silica	<ul style="list-style-type: none"> Improve dimensional stability Enhance physical properties Reduce production cost
6	Lubricants		Paraffin Wax Stearic Acid EBS (External Lubricant)	<ul style="list-style-type: none"> Improves flow and smooth extrusion Reduces friction during processing Improves surface finish
7	Impact Modifiers		CPE (Chlorinated Polyethylene) Acrylic Impact Modifier MBS Impact Modifier	<ul style="list-style-type: none"> Improves impact strength Enhances toughness and durability Prevents cracking under load
8	Colorants / Pigments		Iron Oxide (Red, Yellow, Black) Titanium Dioxide (White) Organic Pigments	<ul style="list-style-type: none"> Provide desired color / identification Improve UV resistance Enhances product appearance
9	Adhesion Promoters		Silane Coupling Agent PVC – Metal Adhesion Promoter Resin Based Adhesion Promoter	<ul style="list-style-type: none"> Improves bonding between PVC and steel core Ensures strong encapsulation

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RAW MATERIALS		MIXING		HEATING		EXTRUSION / MOULDING		COOLING		CUTTING / TRIMMING		FINISHED PVC FOOT STEP

The material shall possess adequate resistance to water, sewage, chemicals, weathering, ultraviolet exposure, impact loads, and ageing so that it meets the performance requirements specified in relevant construction, municipal infrastructure, and public safety standards. The finished PVC Foot Step shall provide a non-slip surface, reliable structural support, and long-term performance in manholes, sewer systems, water tanks, inspection chambers, and other underground structures.

Usage Tips:

To maximize the benefits of PVC rungs in your training routine:

- **Warm-Up:** Always start your training session with a proper warm-up to prevent injuries.
- **Progressive Training:** Begin with simpler drills and gradually advance to more complex exercises as your skills improve.
- **Proper Foot Placement:** Focus on placing your feet accurately on the rungs to develop precise footwork.
- **Safety First:** Ensure a safe training environment, free from obstacles or hazards that could cause accidents.
- **Combine with Other Equipment:** PVC rungs can be combined with agility ladders, cones, or other equipment to create diverse and challenging workouts.
- **Consult a Trainer:** If you're new to agility training, consider seeking guidance from a fitness trainer or coach to ensure you're using PVC rungs effectively and safely.





Packing standard of PVC Foot step

S. No.	Length (mm)	Breadth (mm)	Thickness (mm)	Steel Reinforcement	Steel Standard
1	265	165	25	12 mm Steel Rod	As per IS 1786
2	265	165	25	12 mm Steel Rod	As per IS 1786
3	265	165	25	16 mm TMT Bar	As per IS 1786
4	265	170	32	16 mm TMT Bar	As per IS 1786
5	370	263	25	Reinforced Steel Core	As per IS 1786
6	170	165	25	8 mm Anchor Bolt (3")	As per IS 1786
7	170	165	25	8 mm Anchor Bolt (4")	As per IS 1786
8	265	165	25	12 mm TMT Bar	As per IS 1786
9	265	165	25	10 mm TMT Bar	As per IS 1786

10	340	280	25	Reinforced Steel Core	As per IS 1786
11	300	300	25	Reinforced Steel Core	As per IS 1786
12	370	170	25	12 mm Steel Rod	As per IS 1786
13	370	170	25	12 mm Steel Rod	As per IS 1786
14	357	227	25	12 mm GI Rod	As per IS 1786
15	300	300	16	PVC Coated Steel Rod	As per IS 1786

PVC Rungs/ PVC Footstep with Specifications

S.No.	Description	Images
1	PVC FOOT STEP (Balck 12mm) size:265x165x25mm, Weight 0.775kg/Nos	
2	PVC FOOT STEP (UB-Orange) size:265x165x25mm, Weight 0.775kg/Nos	
3	PVC FOOT STEP (UB-Orange) with 16mm Dia TMT Bar size:265x165x25mm, Weight 1.150kg/Nos	
4	PVC FOOT STEP (UB-Orange) size:265x170x32mm, Weight 1.5kg/Nos in side 16mm Dia TMT Rod	
5	PVC Wide Foot Step (size:370x263x25mm) Weight 1.0kg/Nos	
6	PVC Anchor Fast Foot Step (170x165x25mm) Weight 0.900kg/Nos with 3" Long 8mm Dia Bold	
7	PVC Anchor Fast Foot Step (170x165x25mm) Weight 0.900kg/Nos with 4" Long 8mm Dia Bold	
8	PVC FOOT STEP (UB-Orange) size:265x165x25mm, Weight 0.750kg/Nos with 12mm TMT Bar	
9	PVC FOOT STEP (UB-Orange) size:265x165x25mm, Weight 0.650kg/Nos with 10mm TMT Bar	

10	PVC Foot Step (BL) (340x280x25mm), Weight 1.10kg	
11	PVC Foot Step (BL) (300x300x25mm), Weight 0.900kg	
12	PVC Foot Step (BL) (370x170x25mm), Weight 1.0kg 12mm Rod	
13	PVC Foot Step (BL) (370x170x25mm), Weight 1.0kg 12mm Rod	
14	PVC Foot Step (BL) (357x227x 25mm THickness, GI Rod: 12mm Weight: 1.150 kg. Approx. Packing: 25 pcs/bag (it may be changed) weight capacity 500 kg	
15	PVC Coated 300x300x16mm as per Drg weight 2kg/nos	

Maintenance and Care:

- ✓ Maintaining your PVC rungs is simple, ensuring their longevity and continued performance:
- ✓ **Regular Cleaning:** Wipe down the rungs with a damp cloth after each use to remove dirt, sweat, or debris. This helps maintain their non-slip properties.
- ✓ **Storage:** Store the rungs in a cool, dry place when not in use. If they become wet, allow them to air dry thoroughly to prevent mold or mildew growth.
- ✓ **Avoid Sharp Objects:** Be cautious when handling or transporting the rungs to prevent damage from sharp objects or rough handling.
- ✓ **Inspect for Wear:** Periodically check the rungs for signs of wear and tear, such as cracks or loose parts. Replace any damaged rungs to ensure safety during training.
- ✓ **Indoor vs. Outdoor Use:** If you use the rungs outdoors, consider using a protective covering or storing them indoors when not in use to prolong their lifespan.

STANDARD TECHNICAL FEATURES:

<i>Property</i>	<i>Specification</i>
<i>Base Material</i>	Virgin PVC Compound
<i>Reinforcement</i>	MS / TMT / GI Rod
<i>Steel Standard</i>	IS 1786
<i>Surface Finish</i>	Anti-Skid
<i>Colour</i>	Black / Orange
<i>Water Resistance</i>	Excellent
<i>Corrosion Resistance</i>	Excellent
<i>Load Capacity</i>	Up to 500 kg (depending on model)
<i>Application</i>	Manholes, Sewer Chambers, Water Tanks, STPs, Utility Chambers
<i>Packing</i>	Generally 25 Nos./Bag (Model Dependent)

SANDHYAFLEX PVC FOOT STEPS							
STRONGER • SAFER • DURABLE ACCESS SOLUTIONS							
S. No.	PRODUCT DESCRIPTION	TYPE	SIZE (L x W x T) (mm)	STEEL CORE / ROD	WEIGHT (Approx.)	PACKING	FEATURES / APPLICATION
1	 PVC FOOT STEP (Black 12mm)	Standard	265 x 165 x 25	12mm Steel Rod	0.775 kg/Nos	25 Nos/Bag	General use in manholes, chambers & structures
2	 PVC FOOT STEP (UB-Orange)	Standard	265 x 165 x 25	12mm Steel Rod	0.775 kg/Nos	25 Nos/Bag	General use in manholes, chambers & structures
3	 PVC FOOT STEP (UB-Orange) with 16mm Dia TMT Bar	Heavy Duty	265 x 165 x 25	16mm TMT Bar	1.150 kg/Nos	25 Nos/Bag	Heavy duty applications for high strength
4	 PVC FOOT STEP (UB-Orange) with 16mm Dia TMT Rod	Heavy Duty	265 x 170 x 32	16mm TMT Rod	1.500 kg/Nos	25 Nos/Bag	Extra strength for critical applications
5	 PVC WIDE FOOT STEP	Wide Type	370 x 263 x 25	Reinforced Steel Core	1.000 kg/Nos	25 Nos/Bag	Wide platform for better grip & safety
6	 PVC ANCHOR FAST FOOT STEP (170x165x25) with 3" Bolt	Anchor Type	170 x 165 x 25	8mm Dia Bolt (3")	0.900 kg/Nos	25 Nos/Bag	Anchor fixing for secure installation
7	 PVC ANCHOR FAST FOOT STEP (170x165x25) with 4" Bolt	Anchor Type	170 x 165 x 25	8mm Dia Bolt (4")	0.900 kg/Nos	25 Nos/Bag	Anchor fixing for secure installation
8	 PVC FOOT STEP (UB-Orange) with 12mm TMT Bar	Standard	265 x 165 x 25	12mm TMT Bar	0.750 kg/Nos	25 Nos/Bag	General use in manholes, chambers & structures
9	 PVC FOOT STEP (UB-Orange) with 10mm TMT Bar	Light Weight	265 x 165 x 25	10mm TMT Bar	0.650 kg/Nos	25 Nos/Bag	Light weight applications
10	 PVC FOOT STEP (BL) (340x280x25mm)	Heavy Duty	340 x 280 x 25	Reinforced Steel Core	1.100 kg/Nos	25 Nos/Bag	Heavy duty applications
11	 PVC FOOT STEP (BL) (300x300x25mm)	Square Type	300 x 300 x 25	Reinforced Steel Core	0.900 kg/Nos	25 Nos/Bag	Square platform for better stability
12	 PVC FOOT STEP (BL) (370x170x25mm) with 12mm Rod	Long Type	370 x 170 x 25	12mm Rod	1.000 kg/Nos	25 Nos/Bag	Long type for easy climbing
13	 PVC FOOT STEP (BL) (370x170x25mm) with 12mm Rod	Long Type	370 x 170 x 25	12mm Rod	1.000 kg/Nos	25 Nos/Bag	Long type for easy climbing
14	 PVC FOOT STEP (BL) (357x227x25mm) with 12mm GI Rod	Long Type	357 x 227 x 25	12mm GI Rod	1.150 kg/Nos	25 Nos/Bag	Long type for extra support
15	 PVC COATED FOOT STEP (300x300x16mm)	Special Type	300 x 300 x 16	16mm Steel Rod	2.000 kg/Nos	20-25 Nos/Bag	PVC coated for extra corrosion resistance



HIGH LOAD BEARING CAPACITY
Designed to withstand heavy loads



CORROSION & CHEMICAL RESISTANT
PVC coating protects against rust, water & chemicals



ANTI-SLIP SURFACE DESIGN
Textured surface for better grip & safety



DURABLE & LONG LASTING
Strong PVC coating with high strength core



EASY TO INSTALL
Quick and simple installation with secure fixing



SUITABLE FOR
Manholes, Chambers, Sewage Systems, Water Tanks & more

ILLUSTRATIONS OF THE GIVEN SIZES

PHYSICAL AND MECHANICAL PROPERTIES

S. No.	Property / Test	Requirement
1	Product Type	PVC / Polypropylene Encapsulated Foot Step
2	Shape	Rectangular Anti-Skid Foot Step
3	Colour	Orange / Black
4	Standard Size	263 × 165 × 25 mm (or as specified)
5	Reinforcement	8 mm / 10 mm / 12 mm / 16 mm MS or TMT Rod
6	Steel Grade	As per IS 1786
7	Encapsulation	Complete PVC Encapsulation around Steel Core
8	Surface Finish	Anti-Skid Ribbed / Chequered Surface
9	Water Absorption	Negligible
10	Corrosion Resistance	No corrosion of steel core due to PVC protection
11	Chemical Resistance	Resistant to sewage gases, wastewater and mild chemicals
12	Load Test	Minimum 225 kg Vertical Load
13	Deflection Under Load	Within Permissible Limits
14	Impact Resistance	No Cracking or Fracture
15	Weather Resistance	Suitable for Outdoor and Underground Use
16	Service Life	Long-Term Durable Performance

RELEVANT STANDARDS:

Component	Standard
PVC / PP Foot Step	IS 10910
Reinforcement Steel	IS 1786
Surface Finish / Tread Pattern	IS 5455
Dimensional Verification	Manufacturer's Standard Drawing

The above tests are carried out under given standards are satisfactory.

APPLICATIONS BY COUNTRIES :

India:

- Widely used in manholes, sewerage networks, drainage systems, and municipal infrastructure projects.
- Commonly installed in water tanks, underground chambers, and sewage treatment plants (STPs).
- Increasing demand in smart city projects, metro rail infrastructure, and utility corridors.

China:

- Extensive use in urban sewer systems, underground utility tunnels, and municipal drainage networks.
- Widely adopted in water treatment plants, industrial facilities, and large-scale infrastructure projects.
- Commonly installed in inspection chambers and underground maintenance structures.

United States:

- Used in wastewater treatment plants, stormwater management systems, and utility vaults.
- Widely installed in municipal manholes, underground access chambers, and public infrastructure projects.
- Increasing use in transportation, industrial, and environmental engineering applications.

Europe:

- Preferred for sewerage systems, water treatment facilities, and underground utility networks.
- Commonly used in precast concrete manholes and inspection chambers.
- Strong demand due to stringent safety, durability, and corrosion-resistance requirements.

Middle East:

- Extensively used in desalination plants, water reservoirs, and sewage infrastructure.
- High demand in underground utility systems due to harsh environmental conditions.
- Commonly installed in commercial developments, smart cities, and large-scale infrastructure projects.

Africa:

- Used in water supply schemes, drainage systems, and municipal sewer networks.
- Important for underground access in water storage tanks and sanitation projects.
- Growing adoption in urban development, rural infrastructure, and public utility projects due to durability and low maintenance requirements.

Get in touch:

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