



PVC Handrail As Per IS:12867

TECHNICAL DATASHEET

Sandhyaflex PVC Handrail is a durable and aesthetically appealing safety solution designed to provide a comfortable grip, enhanced protection, and long-lasting performance for staircases, balconies, walkways, bridges, industrial platforms, and public infrastructure. Manufactured from high-quality flexible PVC compounds, Sandhyaflex PVC Handrails are engineered to withstand continuous usage while maintaining their appearance and structural integrity over extended service life.

Designed for installation over mild steel flat bars, the Sandhyaflex PVC Handrail system combines the strength of a rigid metal core with the comfort, safety, and weather resistance of a premium PVC outer cover. This unique combination ensures excellent durability, impact resistance, and user comfort while reducing maintenance requirements in both indoor and outdoor environments.

The specially formulated PVC compound offers superior resistance to weathering, moisture, corrosion, UV exposure, and everyday wear and tear. Its smooth, ergonomic profile provides a secure and comfortable hand grip, making it suitable for residential, commercial, industrial, and infrastructure applications. Available in a variety of sizes, colours, and profiles, Sandhyaflex PVC Handrails can be customized to meet specific project requirements and architectural preferences.

With its combination of safety, durability, aesthetics, and ease of installation, **Sandhyaflex PVC Handrail** is an ideal choice for modern construction projects requiring reliable handrail protection, enhanced user comfort, and long-term performance in demanding environments.

Overcoming Challenges, Delivering Excellence:

Traditional handrail systems often face challenges such as corrosion, paint deterioration, uncomfortable grip surfaces, weather-related damage, and high maintenance requirements. Continuous exposure to sunlight, moisture, dust, chemicals, and heavy usage can significantly reduce the lifespan and appearance of conventional handrails, resulting in increased maintenance costs and compromised user safety.

Recognizing these challenges, **SANDHYAFLEX** developed its **PVC Handrail System**, combining a robust steel support structure with a premium-quality flexible PVC cover to deliver superior durability, safety, comfort, and aesthetic appeal. This advanced design ensures:

- Comfortable and ergonomic grip for enhanced user safety.
- Excellent resistance to weathering, moisture, corrosion, and UV exposure.
- Durable PVC covering that protects the underlying steel structure.
- Smooth, seamless finish with an attractive appearance.
- High impact resistance and long service life in demanding environments.
- Low maintenance requirements compared to conventional painted handrails.
- Easy installation on staircases, balconies, walkways, bridges, industrial platforms, and public infrastructure.
- Availability in various sizes, profiles, and colors to suit project-specific requirements.
- Compliance with relevant quality standards and modern construction practices.

By delivering a durable, cost-effective, and low-maintenance handrail solution, **SANDHYAFLEX PVC Handrails** have become a preferred choice for residential buildings, commercial complexes, industrial facilities, transportation infrastructure, public spaces, educational institutions, hospitals, and other projects where safety, durability, and aesthetics are essential.

Key Features:

- **Comfortable Ergonomic Grip:** Specially designed PVC profile provides a smooth, comfortable, and secure handhold, enhancing user safety and convenience.
- **Weather & UV Resistance:** Manufactured using high-quality PVC compounds that offer excellent resistance to sunlight, rain, humidity, and changing environmental conditions.
- **Corrosion Protection:** Acts as a protective covering over the steel core, preventing direct exposure to moisture and significantly reducing the risk of corrosion.
- **High Impact Resistance:** Engineered to withstand daily usage, accidental impacts, and mechanical stresses without cracking or deformation.
- **Smooth & Aesthetic Finish:** Provides an attractive appearance with a uniform surface finish suitable for residential, commercial, industrial, and infrastructure applications.

- **Low Maintenance Requirements:** Unlike conventional painted handrails, PVC handrails require minimal maintenance and retain their appearance for extended periods.
- **Easy Installation:** Designed for quick and efficient installation over steel flat bars, enabling reliable performance and reduced installation time.
- **Long Service Life:** Manufactured from durable, high-quality PVC compounds that ensure long-lasting performance even in demanding environments.
- **Chemical & Moisture Resistance:** Resistant to moisture, mild chemicals, and common atmospheric contaminants, making it suitable for both indoor and outdoor applications.
- **Available in Multiple Sizes & Colors:** Can be supplied in various dimensions, profiles, and color options to meet specific architectural and project requirements.
- **Enhanced Safety:** Provides a non-abrasive, comfortable contact surface that improves user confidence and safety in stairways, walkways, balconies, bridges, and public access areas.
- **Durable Construction:** Combines the strength of a steel support structure with the protection and flexibility of premium PVC, delivering dependable long-term performance.

Applications:

- **Residential Buildings:** Widely used in apartments, villas, and housing complexes to provide safe, comfortable, and aesthetically appealing handrail systems for staircases, balconies, and terraces.
- **Commercial Complexes:** Ideal for offices, shopping malls, hotels, and business centers where durability, appearance, and user safety are essential.
- **Industrial Facilities:** Suitable for factories, warehouses, power plants, and manufacturing units requiring robust handrail protection in demanding environments.
- **Public Infrastructure:** Commonly installed in railway stations, metro stations, bus terminals, airports, and other public facilities to ensure safe pedestrian movement.
- **Pedestrian Bridges and Walkways:** Provides a durable and comfortable handrail solution for foot overbridges, skywalks, and elevated pedestrian corridors.
- **Educational Institutions:** Used in schools, colleges, universities, and training centers to enhance safety along staircases, corridors, and access routes.
- **Healthcare Facilities:** Suitable for hospitals, clinics, and healthcare centers where secure hand support and easy maintenance are important.

- **Hospitality Sector:** Installed in hotels, resorts, convention centers, and recreational facilities to combine safety with an attractive architectural finish.
- **Sports and Recreational Facilities:** Ideal for stadiums, sports complexes, parks, and public recreational spaces requiring reliable handrail systems.
- **Infrastructure Projects:** Used in bridges, flyovers, elevated corridors, and other infrastructure developments where durable and weather-resistant handrails are required.
- **Marine and Coastal Installations:** Performs effectively in environments exposed to moisture and humidity, offering enhanced protection against corrosion and weathering.
- **Renovation and Upgradation Projects:** An excellent solution for refurbishing existing handrail systems, improving both appearance and long-term performance while reducing maintenance requirements.

History of PVC Handrails:

- **1950s – Traditional Metal Handrails:** Handrail systems were primarily manufactured from steel, iron, and wood, offering structural strength but requiring frequent maintenance and protection against corrosion.
- **1960s – Introduction of PVC Materials:** The growing use of Polyvinyl Chloride (PVC) in construction applications led to the development of protective coverings and profiles for enhanced durability and user comfort.
- **1970s – Early PVC Handrail Systems:** PVC handrail covers began gaining acceptance as a practical alternative to painted metal surfaces, providing improved aesthetics and corrosion resistance.
- **1980s – Expansion in Building Infrastructure:** PVC handrails became increasingly popular in residential, commercial, and public buildings due to their low maintenance requirements, durability, and ease of installation.
- **1990s – Material Quality Improvements:** Advances in PVC compounding technology enhanced UV resistance, weatherability, impact strength, and color retention, making PVC handrails suitable for outdoor applications.
- **2000s – Growth in Infrastructure Applications:** PVC handrails were widely adopted in bridges, pedestrian walkways, railway stations, airports, and industrial facilities where safety and long-term performance were critical.

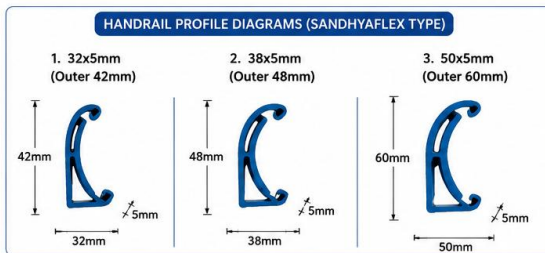
▪ **2010s – Enhanced Design and Customization:** Manufacturers introduced a wider range of profiles, colors, finishes, and installation systems to meet modern architectural and infrastructure requirements.

▪ **2020s – Modern Safety and Durability Solutions:** PVC handrails continue to be a preferred choice for residential, commercial, industrial, and infrastructure projects, offering excellent durability, weather resistance, aesthetic appeal, and low maintenance throughout their service life.

Dimensions Of Handrails:

PACKING DIMENSION IN CBM – WATER PVC HANDRAIL (SAN DHYAFLEX TYPE)

S No	Dimension	Weight/mtr	Each Roll	Packing in Total Box	Weight Kg/Pkd	Packing Box Dimension (Meter)			CBM
						Lenght	Width	Thickness	
1	32x5mm (Outer 42mm)	360 gram	25 Mtr	2 Roll/Box	18 kg/Roll	1.0	1.0	0.084	0.084
2	38x5mm (Outer 48mm)	440 gram	20 Mtr	2 Roll/Box	22kg/Roll	1.0	1.0	0.096	0.096
3	50x5mm (Outer 60mm)	520gram	25 Mtr	2 Roll/Box	13 Kg//Roll	1.0	1.0	0.120	0.120



Colours and Their Applications:

For **Sandhyaflex PVC Handrails**, colours are selected based on architectural preferences, safety requirements, visibility, and project specifications. While the colour does not affect the functional performance of the handrail, it plays an important role in aesthetics, identification, and environmental integration.

Colour	Typical Application
Black	Standard choice for industrial facilities, bridges, public infrastructure, and high-traffic areas due to its durability and professional appearance.
Brown	Commonly used in residential buildings, villas, hotels, and architectural projects requiring a traditional or wood-like appearance.
Grey	Preferred for commercial complexes, offices, airports, metro stations, and modern infrastructure projects with contemporary designs.
Blue	Suitable for hospitals, educational institutions, public facilities, and project-specific identification requirements.
Green	Used in parks, gardens, eco-friendly developments, and environmentally sensitive infrastructure projects.
Red	Applied in safety-critical areas, emergency access routes, industrial facilities, and locations requiring enhanced visibility.
Yellow	Ideal for high-visibility applications such as factories, warehouses, stairways, and public access areas where safety identification is important.
White	Preferred for premium residential, healthcare, and commercial projects requiring a clean and elegant appearance.
Custom Colours	Available as per client specifications, branding requirements, and architectural design preferences.

Materials:







The **Sandhyaflex PVC Handrail** shall be manufactured using a high-quality flexible PVC compound designed to provide superior durability, weather resistance, safety, and long-term performance in both indoor and outdoor applications. Railing handrail profiles are crafted from soft PVC, a thermoplastic material, which means their characteristics are influenced by temperature (immersing them in hot water makes the installation process easier). By alternating heating and cooling, they can be seamlessly fitted into tight arches of stair balustrades. These rail profiles enhance the visual appeal of pathways in residential buildings, office buildings, and single-family houses. The utilization of PVC railing cladding not only enhances functionality and safety but also brings life and aesthetics to the interior spaces.

The PVC handrail cover shall consist of premium-grade Polyvinyl Chloride (PVC) formulated with suitable plasticizers, stabilizers, UV-resistant additives, pigments, impact modifiers, and processing aids to ensure excellent flexibility, dimensional stability, colour retention, and resistance to environmental degradation. The material shall maintain its appearance and performance under varying climatic conditions and continuous usage.

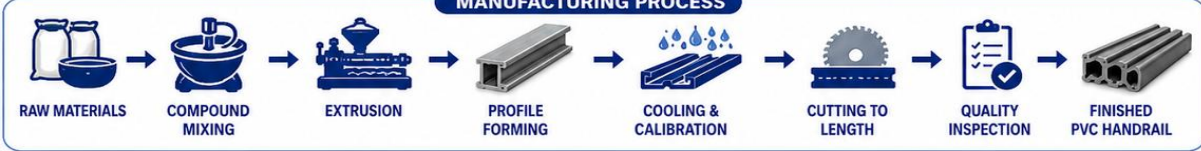
The materials shall possess adequate resistance to moisture, ultraviolet radiation, weathering, abrasion, impact, corrosion, and common atmospheric contaminants, ensuring dependable performance in residential, commercial, industrial, and infrastructure environments.






The finished **Sandhyaflex PVC Handrail** shall provide a comfortable and secure grip, attractive appearance, excellent durability, low maintenance requirements, and long-term

protection for staircases, balconies, walkways, bridges, public infrastructure, industrial facilities, transportation hubs, and other applications requiring reliable handrail systems.

RAW MATERIALS OF PVC HANDRAIL BY SANDHYAFLEX				
S. No.	Raw Material	Image	Typical Grade / Example	Function / Purpose
1	PVC Resin (Polyvinyl Chloride)		<ul style="list-style-type: none"> Suspension PVC Resin (K-67 / K-65) 	<ul style="list-style-type: none"> Provides the primary body of the handrail Ensures strength, durability and dimensional stability
2	Plasticizers		<ul style="list-style-type: none"> DOP, DINP, DOTP 	<ul style="list-style-type: none"> Improves flexibility and softness Ensures easy installation and long-term performance
3	Stabilizers		<ul style="list-style-type: none"> Calcium-Zinc Stabilizers 	<ul style="list-style-type: none"> Protects PVC from degradation during processing Enhances thermal stability and long service life
4	Impact Modifiers		<ul style="list-style-type: none"> Acrylic Impact Modifier, CPE 	<ul style="list-style-type: none"> Improves impact resistance Enhances durability under daily usage
5	Fillers		<ul style="list-style-type: none"> Calcium Carbonate (CaCO₃) 	<ul style="list-style-type: none"> Enhances strength and dimensional stability Improves cost efficiency
6	Lubricants & Processing Aids		<ul style="list-style-type: none"> Paraffin Wax, PE Wax, Stearic Acid 	<ul style="list-style-type: none"> Improves extrusion performance Ensures smooth surface finish and manufacturing consistency
7	Pigments & UV Additives		<ul style="list-style-type: none"> Color Masterbatches, Titanium Dioxide, UV Stabilizers, Antioxidants 	<ul style="list-style-type: none"> Provides uniform colour and attractive appearance Protects against UV rays, fading and weathering
8	Metal Support & Protective Coating (If Applicable)		<ul style="list-style-type: none"> MS Flat / GI Flat / SS Flat Zinc Coating, Primer, Powder Coating 	<ul style="list-style-type: none"> Provides structural strength and support Enhances corrosion resistance and extends service life

MANUFACTURING PROCESS



 COMFORTABLE GRIP
 WEATHER RESISTANT
 UV STABLE
 LOW MAINTENANCE
 CORROSION PROTECTION
 LONG SERVICE LIFE

Standard Technical Features

Property	Specification
Product Type	PVC Handrail
Material	Flexible PVC Compound
Base Polymer	Polyvinyl Chloride (PVC)
Support Material	MS Flat / GI Flat / SS Flat (as applicable)
Applicable Standard	IS 12867:1989
Manufacturing Process	Extrusion

Surface Finish	Smooth, Glossy / Matte Finish
Colour Options	Black, Brown, Grey, White, Red, Yellow, Blue, Green & Custom Colours
UV Resistance	Excellent
Weather Resistance	Excellent
Moisture Resistance	Excellent
Corrosion Resistance	Excellent
Impact Resistance	High
Grip Comfort	Ergonomic & Non-Slip Surface
Application	Staircases, Balconies, Walkways, Bridges, Pedestrian Bridges, Industrial Platforms & Public Infrastructure
Maintenance Requirement	Low
Installation Method	Hot Water Assisted Installation Over Metal Flat
Service Life	Long Lasting
Packing	Supplied in Standard Coil Lengths or Cut Lengths as per Project Requirements

PVC HANDRAIL as per IS: 12867 With Specification:

S.No.	Descriptions	HSN Code
1	<i>32x5mm (Outer 42mm), Weight 360gm Color Black</i>	<i>68101110</i>
2	<i>38x5mm (Outer 48mm) , Weigh 440 gm, Color Black</i>	<i>68101110</i>
3	<i>50x5mm (Outer 60mm, Weight 520gm, Color Black</i>	<i>68101110</i>

Physical and Mechanical Properties

S. No.	Property / Test	Requirement
1	Product Type	PVC Handrail
2	Handrail Configuration	Flexible PVC Cover with Metal Support (as applicable)
3	Standard Colour	Black (Other Colours Available)
4	Material	Flexible Polyvinyl Chloride (PVC) Compound
5	Base Polymer	PVC Resin

6	Applicable Standard	IS 12867:1989
7	Surface Finish	Smooth and Uniform
8	UV Resistance	Excellent
9	Weather Resistance	Excellent
10	Moisture Resistance	Excellent
11	Corrosion Resistance	Excellent Resistance to Moisture and Atmospheric Exposure
12	Chemical Resistance	Resistant to Mild Acids, Alkalis, Cleaning Agents, and Common Chemicals
13	Impact Resistance	High
14	Abrasion Resistance	Good
15	Colour Stability	Excellent Colour Retention Under Normal Service Conditions
16	Grip Characteristics	Comfortable, Ergonomic, and Non-Slip Surface
17	Operating Environment	Suitable for Indoor and Outdoor Applications
18	Service Life	Long-Term Durable Performance
19	Maintenance Requirement	Low
20	Typical Applications	Staircases, Balconies, Walkways, Bridges, Industrial Platforms, Railway Stations, Airports & Public Infrastructure

Relevant Standards

Component	Standard
PVC Handrail	IS 12867:1989
PVC Compound	IS 10151 (PVC Compounds for General Applications) / Manufacturer's Specification
PVC Resin	IS 17658 (where applicable) / Industry Standard PVC Resin Grades
Metal Support Flat (MS Flat)	IS 2062
Galvanized Support Flat (GI Flat)	IS 277
Protective Coating / Galvanization	IS 4759
Colour & UV Stability	As per Manufacturer's Specification
Dimensional Verification	Approved Manufacturer's Drawing
Installation Requirements	Manufacturer's Recommended Installation Procedure
Performance Requirements	IS 12867:1989 and Approved Project Specifications

Packing Standard of PVC Handrail:

S. No.	Handrail Type	Nominal Size	Material	Support Material	Applicable Standard
1	PVC Handrail	40 mm	Flexible PVC Compound	MS Flat	IS 12867:1989
2	PVC Handrail	50 mm	Flexible PVC Compound	MS Flat	IS 12867:1989
3	PVC Handrail	65 mm	Flexible PVC Compound	MS Flat	IS 12867:1989
4	PVC Handrail	40 mm	Flexible PVC Compound	GI Flat	IS 12867:1989
5	PVC Handrail	50 mm	Flexible PVC Compound	GI Flat	IS 12867:1989
6	PVC Handrail	65 mm	Flexible PVC Compound	GI Flat	IS 12867:1989
7	PVC Handrail	40 mm	UV Stabilized PVC Compound	SS Flat	IS 12867:1989
8	PVC Handrail	50 mm	UV Stabilized PVC Compound	SS Flat	IS 12867:1989
9	PVC Handrail	65 mm	UV Stabilized PVC Compound	SS Flat	IS 12867:1989

Packing Details:

- Supplied in standard coil lengths or cut lengths as per project requirements.
- Packed in protective polythene wrapping to prevent dust, moisture, and surface damage during transportation.
- Coils secured using straps and protective end coverings to maintain profile shape and dimensional stability.
- Metal support flats, where supplied, are bundled separately with suitable corrosion protection.
- Each package marked with product size, colour, batch number, quantity, manufacturing date, and project reference.
- Packing suitable for road transport, warehouse storage, and site handling without deformation or damage.
- Custom packaging and labeling available as per client specifications and export requirements.

Usage Tips:

- **Install Properly:** Ensure installation is carried out according to the manufacturer's guidelines and approved project specifications.
- **Use Suitable Support Flats:** Verify that the MS, GI, or SS flat used is of the correct size and properly fixed before installation.
- **Maintain Proper Alignment:** Ensure the handrail is uniformly fitted along the entire length for a smooth and professional finish.
- **Avoid Excessive Bending:** Do not bend the PVC handrail beyond the recommended radius to prevent deformation or damage.
- **Use Recommended Installation Method:** Follow the hot-water installation process to achieve proper fitting and ease of installation.
- **Inspect Periodically:** Check the handrail regularly for signs of damage, loosening, or unusual wear.
- **Prevent Mechanical Damage:** Avoid impacts from heavy tools, equipment, or sharp objects that may damage the handrail surface.
- **Use Genuine Components:** For replacements or extensions, use compatible Sandhyaflex PVC Handrail products to ensure consistent performance and appearance.

Maintenance and Care:

- **Regular Inspection:** Periodically inspect the handrail for wear, damage, discoloration, or loose sections.
- **Keep the Surface Clean:** Clean regularly using mild soap and water to remove dust, dirt, and stains.
- **Avoid Harsh Chemicals:** Do not use strong solvents, acids, or abrasive cleaning agents that may affect the PVC surface.
- **Check Support Structure:** Inspect the underlying metal support for corrosion, damage, or loose fasteners.
- **Monitor Outdoor Installations:** In exposed environments, periodically verify the condition of the handrail and supporting structure.

- **Replace Damaged Sections Promptly:** Replace damaged or severely worn sections to maintain safety and appearance.
- **Protect During Construction Activities:** Prevent damage from welding, grinding, cutting, or other construction operations near the installed handrail.

Applications by Countries:

India

- Widely used in residential buildings, commercial complexes, railway stations, metro stations, bridges, and public infrastructure.
- Commonly installed in staircases, balconies, walkways, hospitals, and educational institutions.
- Growing demand in smart city, transportation, and infrastructure development projects.

China

- Extensively used in residential towers, public buildings, transportation hubs, and industrial facilities.
- Commonly installed in metro stations, pedestrian bridges, and large-scale infrastructure projects.
- Preferred for projects requiring durability, safety, and low maintenance.

United States

- Widely used in commercial buildings, healthcare facilities, airports, schools, and public access areas.
- Commonly installed in stairways, ramps, corridors, and accessibility-focused infrastructure.
- Increasing adoption in renovation and modernization projects.

Europe

- Preferred for residential, commercial, and public infrastructure applications.
- Commonly used in hospitals, transportation facilities, educational institutions, and pedestrian walkways.
- Strong demand due to emphasis on safety, accessibility, and long service life.

Middle East

- Extensively used in airports, shopping malls, hospitals, hotels, and transportation infrastructure.
- High demand in projects exposed to extreme temperatures and harsh environmental conditions.
- Commonly installed in large-scale urban development and smart city projects.

Africa

- Used in residential developments, public buildings, transportation facilities, and infrastructure projects.
- Increasing adoption in urban development, healthcare, and educational infrastructure.
- Preferred for its durability, weather resistance, and low maintenance requirements.

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