

BHUSHAN

The  
Future of  
Steel

ISO 9001:2008 | ISO 14001:2004

# COATED PRODUCTS







Colour  
Coated Coils



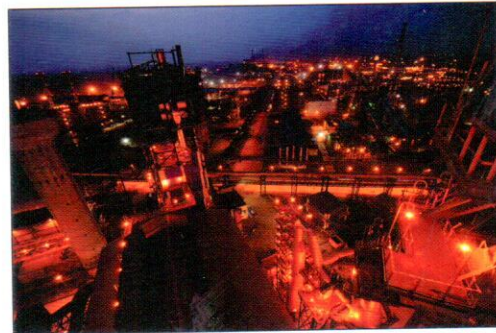
**B**hushan Steel Limited, with a turnover of over ₹10000 Crore (\$2 billion), is a globally renowned and one of the leading players in steel industry - producing primary as well as secondary steel products.

Starting as a secondary steel producer in the year 1987, with its first manufacturing unit at Sahibabad (Uttar Pradesh), In the year 2003 the company commissioned its Khopoli Plant (Maharashtra). The company grew at a scorching pace, driven by the vision of its Founder-Chairman, Shri Brij Bhushan Singal, to become the 3rd largest Secondary Steel Producer in India with an annual capacity of 2 million tons (approx) by the year 2010.

As part of backward integration, Bhushan Steel commenced 2.2 MTPA HR Coil mill at Angul, Odisha in the year 2010 - that is expected to reach 6 MPTA level by 2014.



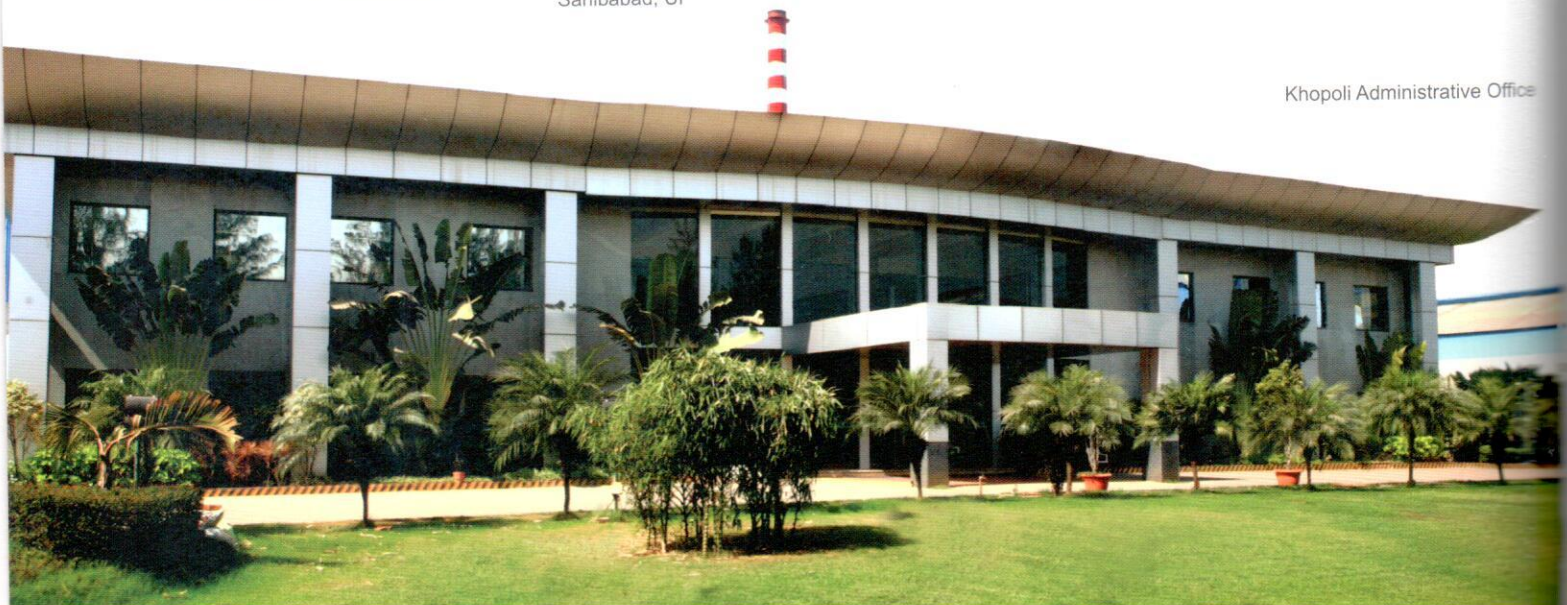
Sahibabad, UP



Angul, Odisha

Over the years, BSL has created an unblemished reputation by establishing unrivaled quality, flexibility and reliability in all its products and services. These are central tenets of company's achievement to exceed customer's expectations.

Primary steel products being produced at Odisha are Hot Rolled Coils, Plates, Billets and Sponge Iron. The company's secondary steel product range includes Cold Rolled Steel, Metal Coated Steel produced at Khopoli & Sahibabad plant. Galvanized (Zinc Coated) & Galume (Al-Zn Coated), Pre-painted Steel, Large Diameter Pipes (API), Precision Tubes (ERW & CDW), Hardened & Tempered Steel, High Tensile Steel Straps.

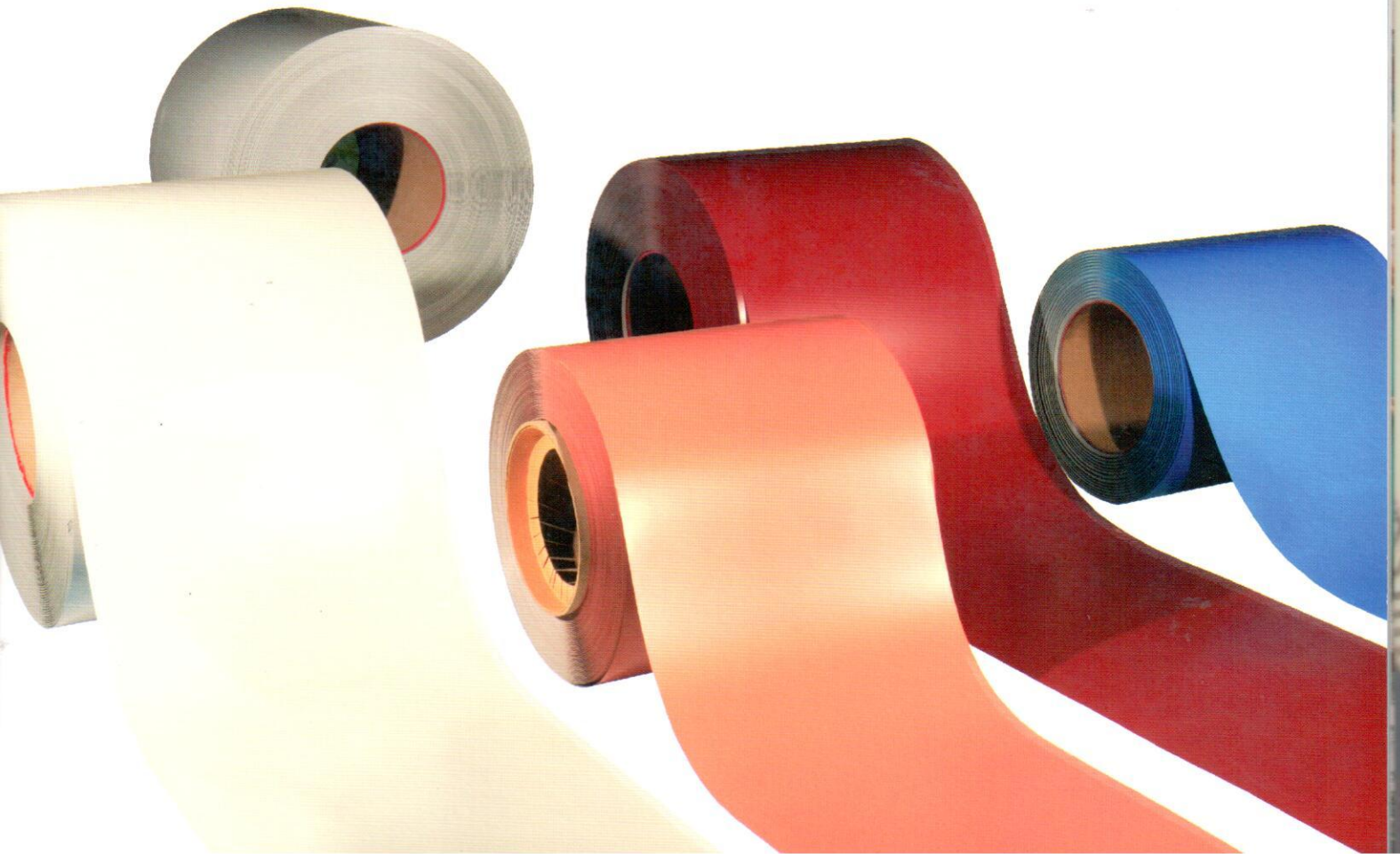


Khopoli Administrative Office





Colour Coating Line





# Bhushan Galume

## COATED PRODUCT

# BHUSHAN

*Bhushan Steel's manufactures Coated Products at Khopoli Plant, near Mumbai and Sahibabad Plant near Delhi. The products manufactured at the coated division are Bhushan Galume (Aluminium-Zinc Alloy Coated Steel), Bhushan Rainbow Plus (Colour Coated Galume) and Bhushan Rainbow (colour coated Galvanized).*

### **Bhushan Galume**

Bhushan Galume Steel coated with Zinc aluminium alloy was launched in 2004 for the first time in India. The alloy coating consists of 55% Al, 43.5% Zn and balance 1.5 % Silicon. It combines the barrier coat protection of aluminium with the corrosion resistance and galvanic protection of zinc. Galume manufactured by the continuous hot-dip process offers excellent corrosion resistance & heat reflectivity. It is available in thickness of 0.20 to 1.20 mm in plain /skin passed surface finish coils and sheets.

### **Galume Production Technology**

The Zinc-Aluminium alloy coating is coated on the cold

rolled substrate processed from selected hot rolled coils with selective chemistry for getting the desired mechanical properties specified by the international standards like ASTM A 792M, JIS G3321, AS1397, EN10346 and customer specific applications. The cold rolled coils are welded end to end and passed through 3 stage degreasing section for achieving excellent cold rolled strip surface. The coating system is two pot system, pre-melting pot and main coating pot. The bath chemistry is continuously controlled and monitored at the pre-melting pot which continuously feeds the main coating pot through the refractory tunnel. Galume coated steel is further coated with anti finger print layer of acrylic resin coating.





# N GALUME

## Technology

The modern coater technology is from GFG, USA and online coating monitoring by Thermo Radiometric – Germany and special High-Jet Cooling Tower from UK. Bhushan has technological tie up with reputed Surface Technologies for the supply of chromating chemicals, acrylic coating and online continuous monitoring for coating control & salt spray testing.

In India, Bhushan Steel supplies Galume and Pre-painted Galume to reputed PEB companies like, Zamil Steel, Lloyds Insulation, Multicolour, Tiger Steel, Jindal Mectec, Richa Ind., Everest, ERA Bldg, Kirby, SML, etc. as well as roll forming companies. Major percentage of production is exported to various countries all over the world. Bhushan has established its product in international market as per ASTM, EN and AS standards and we are working with BIS to establish Indian standard for this product.

## R&D Efforts

For continuous bench marking of product quality. Bhushan has been carrying out testing with in-house and NABL accredited independent laboratories. This has resulted in continuous upgrading of the process parameters confirming to international standards. Further, we have online backup SGS inspection for all test parameter up to the point of dispatch. Bhushan Steel Ltd is ISO 9001:2008, ISO 14001:2004 & OHSAS 18001:2007 certified company and all products are accompanied with mill test certificate and packing list.

## Advantages of Galume

- MASS COMPOSITION GALUME 55% Al-Zn 43.5%, 1.5% Si.
- RESISTANCE TO CORROSION.
- SUPERIOR HEAT REFLECTIVITY.
- BETTER YIELD.
- HIGH TEMPERATURE PERFORMANCE.
- SUPERIOR METAL SURFACE FINISH AND FORMABILITY.
- EXCELLENT SALT SPRAY





## Galume Technical Data

### Reference Standards

ASTM A 792 / A 792M

Other Standards: JIS G3321 / AS 1397 / EN 10346

### Substrate

Cold rolled low carbon steel

### Grade Designation

Gr 50, Gr 80, CS Type (A, B, C), DX 51 D,

S 350 GD, S 550 GD

### Steel Base – Chemical Composition

Maximum Limit (%) – as per ASTM A 792

| Element       | Gr 80 | Gr 50 | CS Types |           |
|---------------|-------|-------|----------|-----------|
|               |       |       | A        | B         |
| Carbon( C )   | 0.25  | 0.20  | 0.10     | 0.02-0.15 |
| Manganese(Mn) | 1.35  | 1.35  | 0.60     | 0.60      |
| Phosphorus(P) | 0.20  | 0.04  | 0.03     | 0.03      |
| Sulphur(S)    | 0.04  | 0.04  | 0.035    | 0.035     |

### Mechanical Properties

| Mechanical Properties  | Guaranteed Minimum |       | CS Types |   |
|------------------------|--------------------|-------|----------|---|
|                        | Gr 50              | Gr 80 | A        | B |
| Yield Strength (Mpa)   | 340                | 550   | 245      |   |
| Tensile Strength (Mpa) | 410*               | 570   | 330      |   |
| Elongation (%)         | 12                 | NA    | ≥20      |   |

\* For Class I Material

### Expected Product Performance

| Property                              | Test Method                     | Result                                   |
|---------------------------------------|---------------------------------|--|
| Resistance to corrosion               | ASTM B117 (1000 hrs Salt Spray) | Max 5 % red corrosion for acrylic coated |
| Heat Reflectivity & Solar reflectance | -                               | 80% (New Material)                       |
| Heat Transmission                     | -                               | 65 watts/m <sup>2</sup>                  |
| Heat (Oxidation) resistance           | -                               | No Surfing of alloy coating (till 315°C) |

### Product Range

| Particulars             | Dimension | Tolerance |
|-------------------------|-----------|-----------|
| Thickness (mm)          | 0.20-0.50 | ±0.025    |
|                         | 0.50-0.80 | ±0.030    |
|                         | 0.80-1.10 | ±0.050    |
| Width (mm)              | 610-1250  | -0.0/+5.0 |
| Coil wt.(max MT)        | 10        | N.A.      |
| Coil inner Diameter(mm) | 508/610   | N.A.      |

\* All dimensions are nominal

### Surface Conditions

- Acrylic coated and oil free / Chromated
- Chromated & Oiled / Oiled
- Skin passed / Non Skin Passed

### Metallic Coating

Al-Zn alloy coating

Nominal Bath Composition

55 % Al, 43.5% Zn, 1.5% Si

### Coating Mass

AZ 70/ AZ 100/ AZ150/ AZ 165

Coating Class as per ASTM Standard/Customer requirements

### Coating Mass Testing Method

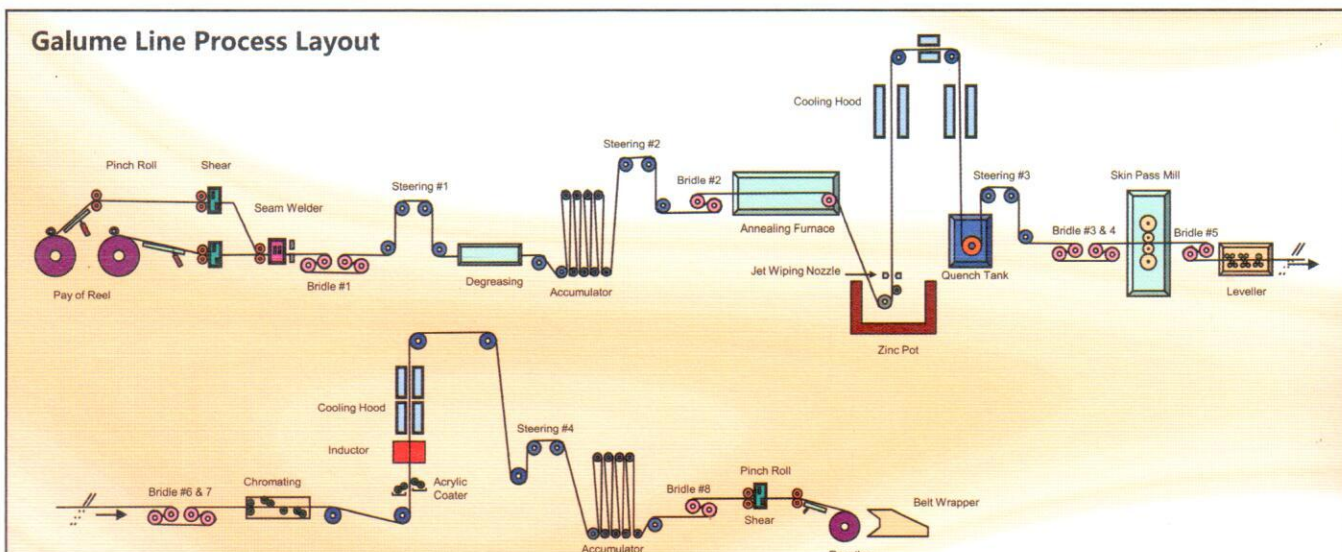
Triple spot

### Coating Adhesion

As per ASTM /AS standard



## Galume Line Process Layout





N GALUME





# Bhushan

## RAINBOW PLUS

BHUSHAN RAINBOW PLUS is a premium color coated steel that finds exclusive use in Roofing & Cladding applications. It is specially developed to withstand extreme environmental conditions and at the same time offering architects outstanding range of colors for aesthetic appeal.

Bhushan Rainbow Plus is coated with PU Primer and various types of top coats like RMP, SMP, PVDF, etc. according to customer requirements.

### Advantages

#### 1) Strength of STEEL

High tensile steel grades like 550 MPA & 350 MA are used in the manufacturing of Bhushan Rainbow Plus which adds strength to roofing & cladding.

#### 2) Superior Corrosion Resistance

Galume substrate multiplies the corrosion resistance and durability over traditional galvanized steel.

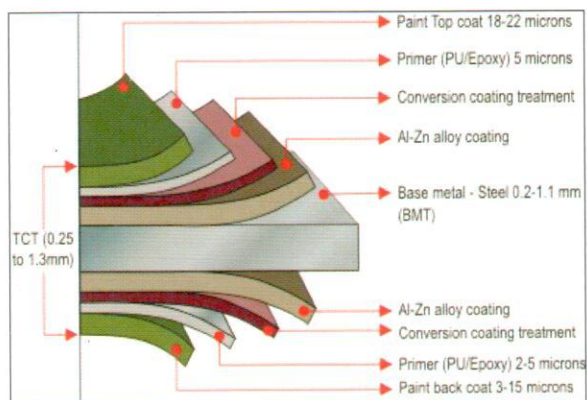
#### 3) Superior Technology

Bhushan's state of the art and modern Two Coat-Two Bake Coating line impart superior paint adhesion to steel which resists cracking & peeling during roll forming.

Owing to superior paint technology adopted, resistance to color change and long-term durability is assured.

The standard color range from Bhushan is wide and it also manufactures special colors according to customer requirement for a specific order quantity.

### Layers of Coated Steel



### Bhushan Rainbow Plus Technical Data

#### Reference Standards

ASTM A 755, AS 2728

Substrate Galume Steel with AZ 150

Conformance to other standards like IS, JIS, EN as per requirement.

#### Product Range

|                             |           |
|-----------------------------|-----------|
| Nominal Thickness (BMT, mm) | 0.20-1.10 |
| Nominal Width (mm)          | 610-1250  |
| Unit Coil Wt. (Max. MT)     | 10        |
| Coil Inner Diameter (mm)    | 508/610   |

#### Tolerance Limit

Thickness  $\pm 0.025$  mm or as per international standard.

Width: -0.0, + 5.0 mm or as per international standard.

#### Primer Coat

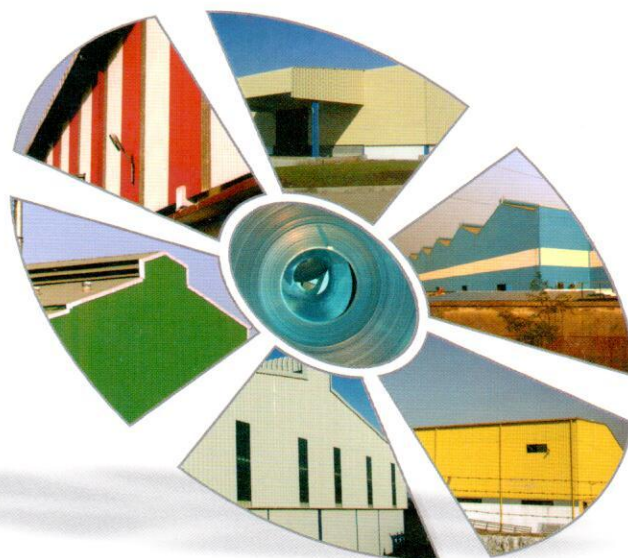
| Primer Type            | Polyurethane (PU) |        |
|------------------------|-------------------|--------|
| Nominal Primer coat    | Top coat          | 5      |
| Thickness ( $\mu$ ) ** | Back coat         | 2 to 5 |

#### Finish Coat

| Paint Type             | RMP / SMP / SDP / PVDF |          |
|------------------------|------------------------|----------|
| Nominal Paint Coating  | Top coat               | 18 to 22 |
| Thickness ( $\mu$ ) ** | Back coat              | 3 to 6*  |

\* optional upto 15 micron max.

\*\* tolerance  $\pm 2$  micron.







Blue



# BHUSHAN

## RAINBOW HSDR PLUS

As an innovator in the color coated segment for roofing and cladding industry, Bhushan Steel has launched its new market offer of BHUSHAN RAINBOW HSDR PLUS for the first time in India. Pre-painted steel product BHUSHAN RAINBOW HSDR PLUS reduces discoloration drastically due to deposition of dirt particles of polluted atmosphere.

BHUSHAN RAINBOW HSDR PLUS steel can be used in versatile projects for roofing and cladding, sandwich panels and accessories to highlight the building outlook.

Bhushan Rainbow HSDR Plus provides a new level of coating hardness and scratch resistance combined with excellent abrasion resistance which is remarkably resistance to chipping and cracking during handling. Above all, its excellent dust repellency and stain resistance properties makes this product unique in all coil coating systems available in the market. Its topcoats are formulated with a proprietary super durable polyester resin to provide excellent durability properties.

### PRODUCT HIGHLIGHTS

Very High Resistance to Scratch  
High Abrasion Resistance  
Excellent Dust Repellency  
Excellent Slip & Mar Resistance  
High Durability

### High Scratch Resistance

Bhushan Rainbow HSDR Plus has excellent mar and lip

resistance properties of top coat. This makes severe forming easier. It eliminates normal problems faced during severe forming operations. It withstands high scratch. It also minimizes damages during handling and fixing.

### High Dust Repellency

Dirt particles from pollution, haze and smoke are deposited on a building's exterior. In tropical climates, like that of India, dust particles are subjected to high temperatures and humidity levels causing them to bond permanently to the building's surface. Once bonded, the particles do not wash off with subsequent rainfall. Within a short span, dirt particles accumulate and form ugly stains that become permanent markings, which can only be removed by rubbing with strong detergents. The unique paint system of Bhushan Rainbow HSDR Plus has lesser slip resistance which makes the particles 'loose' on the surface. As a result, these particles are washed away easily with subsequent rainfall, so they do not accumulate into dark permanent unsightly stains. Rainbow HSDR Plus keeps the buildings beautiful for longer periods.

### Comparison with Normal RMP

| Property                       | Normal RMP    | Bhushan Dura Plus |
|--------------------------------|---------------|-------------------|
| Scratch Hardness               | Min. 1.5 K.g. | Min. 3.0 kg.      |
| Altek Slip Resistance          | ~0.10         | ≤ 0.05            |
| Cleansability of Coated Sheets | R=5           | R=9               |



RAL 5012  
BSL/245



RAL 5005  
BSL/147



Terracota  
BSL/177



RAL 9006  
BSL/203



Environmental Green  
BSL/199



Brick Red  
BSL/283



RAL 9002  
BSL/142 (A)



Caulfield Green  
BSL/139



Taurus Blue  
BSL/188



Appl. White  
BSL/240



Beige  
BSL/170



Mills Std. Grey. BIC



Mills Std. White B/c



Off White BIC







# HOT LAMINATED STEEL

Bhushan Steel has launched a hot laminated steel product which has attractive glossy, matt; design patterns of PET, PVC and PET-PVC film laminates.

BHUSHAN HOT LAMINATED steel can be used as high quality product especially for appliances industries like refrigerator doors, deep freezers, ship interiors, kitchen cabinets & interior applications.

The unique laminated system of BHUSHAN HOT LAMINATED steel provides the new level of coating finish, scratch resistance, bending properties.

## Product Highlights

- High appealing finish & patterns.
- High build laminates.

A variety of patterns with beautiful colors. High Formability & Durability, Excellent Corrosion & Rust Resistant. The laminated steel sheet is superior high-end product.

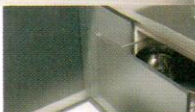
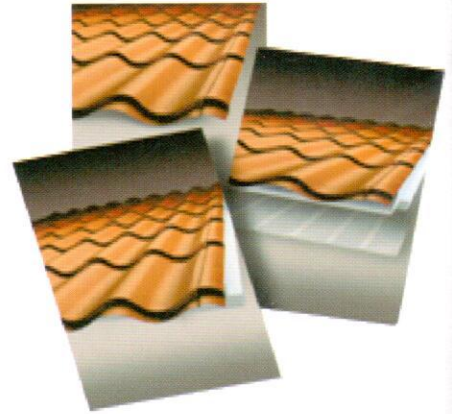
PET, PVC, PET+ PVC films range available from 30, 50, 120, 150, 200 microns. Lamination film does not cause VOC emissions.

Plain rigid PVC food safe application, Industrial white goods / white chambers. Mostly unembossed film available upon request with an anti-bacterial additive.

- **Plain Rigid PVC:** Food safe application.
- **Plain Semi-Rigid PVC:** Mostly furniture business.
- **Printed Semi-Rigid PVC Indoor use:** Furniture business but used extensively in Naval Industry.
- **Printed Semi-Rigid PVC Outdoor use:** Garage doors for instance.
- **PET + PVC:** White Goods appliances for very high gloss and special applications
- **PET :** Interior & exterior walling.

## BHUSHAN LAMINATE STEEL

- Thickness - 0.50 to 0.70 mm TCT
- Width - 1220 mm
- Temper - Soft/ LFQ
- Top Color LAMINATE - 30, 50, 100 - 150 MICRON , type – PET, PVC/PETPVC
- Back Coat - Mill's standard grey.





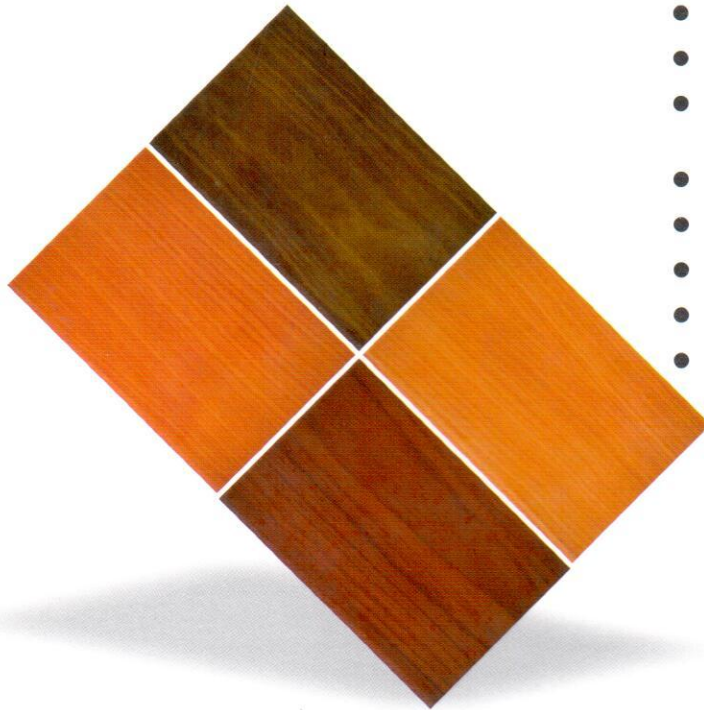
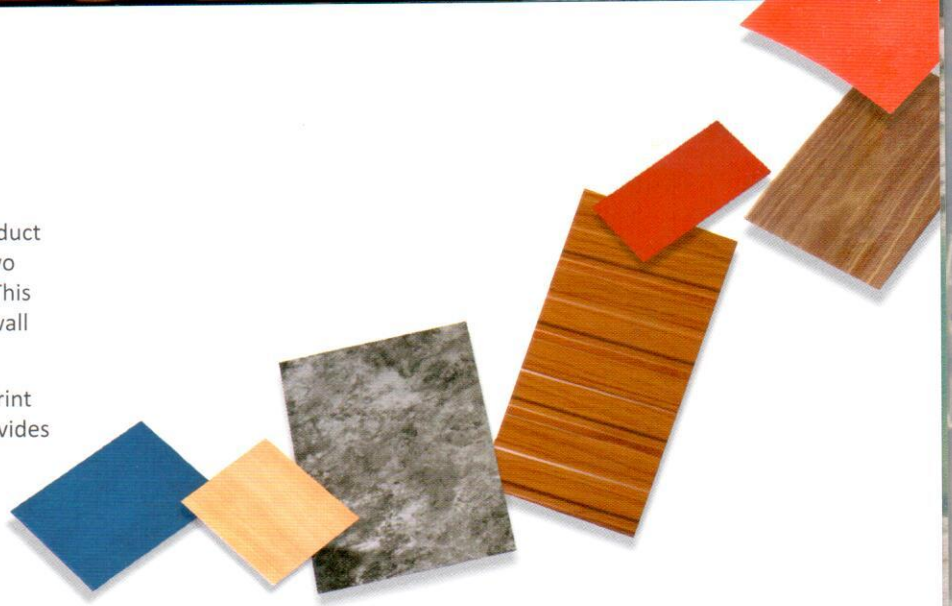
# PRINTED STEEL

Bhushan Steel has launched a prepainted steel product which has an attractive wood design pattern with two different shades mainly light and dark teakwood. This product is designed for internal applications, side wall cladding, tiles, etc.

The unique paint system (comprising base coat + print coat + clear coat) of BHUSHAN PRINTED STEEL provides the new level of wood finish coating.

## Product Highlights

- Standard teak wood pattern
- With or without clear coat finish
- Available in light and dark colors

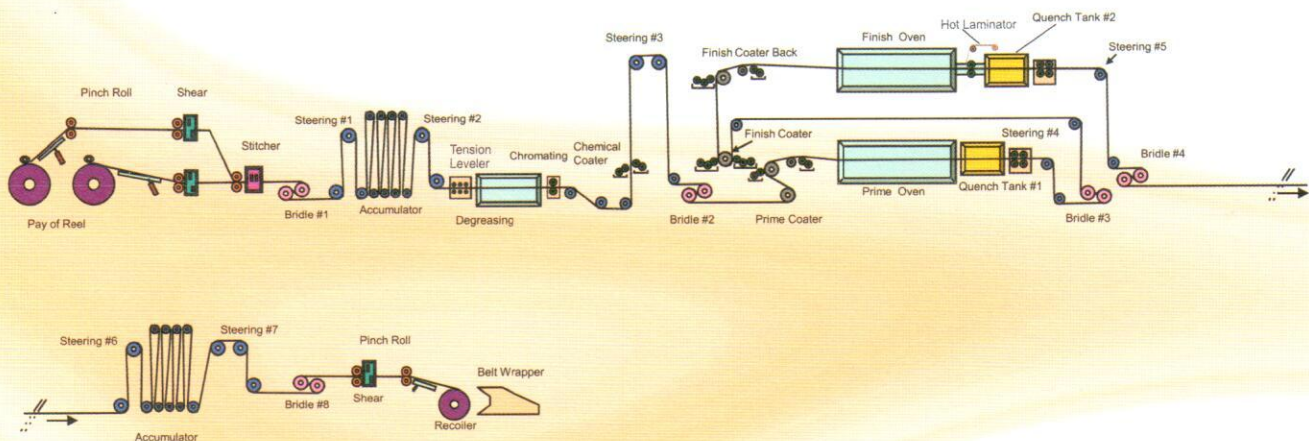


## Technical Specifications

- Thickness - 0.35 to 0.60 mm TCT
- Width - 1000 to 1220 mm
- Temper - Soft/ LFQ
- End use - Interior applications - e.g. furniture, ceiling, panels etc.
- Bend test - 2T NTO
- Gloss - 60 +/- 10
- Top Color - Print01-BC01BG01 and Print01-BC02BG02
- Back Coat - Mill's standard grey.
- Guard Film - Optional

All coated products are offered with videojet printing of manufacturers name and logo.

## Colour Coating Line Process Layout





# WRINKLE FINISH STEEL

Bhushan Steel has launched a prepainted steel product which has special wrinkle surface finish.

BHUSHAN WRINKLE FINISH STEEL steel can be used in versatile projects for roofing tiles and cladding, sandwich panels, rolling shutters and accessories to highlight the building outlook.

The unique paint system of BHUSHAN WRINKLE FINISH STEEL steel provides the new level of coating hardness and scratch resistance combined with excellent abrasion resistance which is remarkably resistant to chipping and cracking during handling.

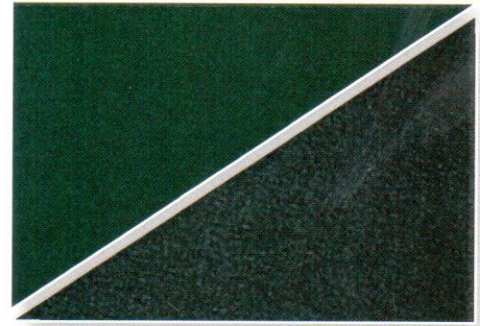
## Product Highlights

- High resistance to scratch
- High abrasion resistance
- High durable coating
- Smooth and Regular wrinkled top surface finishes.

The WRINKLE topcoat is an excellent choice for snow fall regions for exterior building market products like roof & side panels and garage doors, etc where some severe forming is the basic need of the end customer. This product is exclusively developed to answer and eliminate the problems which usually occur during the severe forming operation. During the forming operations, this product not only withstands to high scratch but also provides excellent slip and mar resistance properties.

## Available colors

- H.S.RED
- RAL 8017 BROWN
- DARK GREEN
- BRICK RED
- MAROON
- CHARCOAL GREY
- POTTERS CLAY
- SKY BLUE



## Technical Specifications

- Thickness - 0.30 to 0.60 mm TCT
- Width - 900 to 1220 mm
- Temper - Soft/ LPQ/FH
- End use - Interior applications - e.g. ceilings, panels for acoustic buildings, etc.
- Roof tiles in snow fall regions, rolling shutters.
- Bend test - 2T NTO
- Wrinkle Finish - smooth; regular.
- top color - Standard shades
- back coat - mill standard grey.









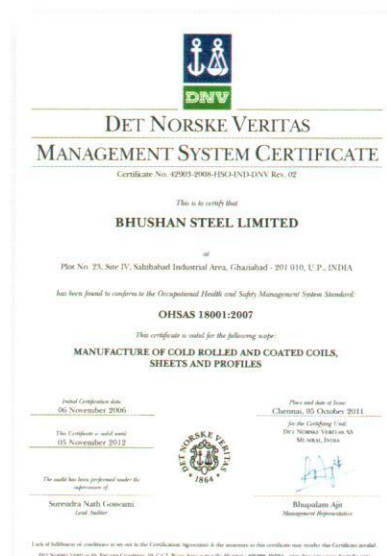
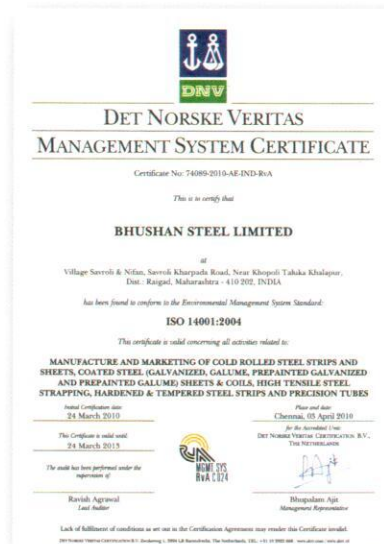
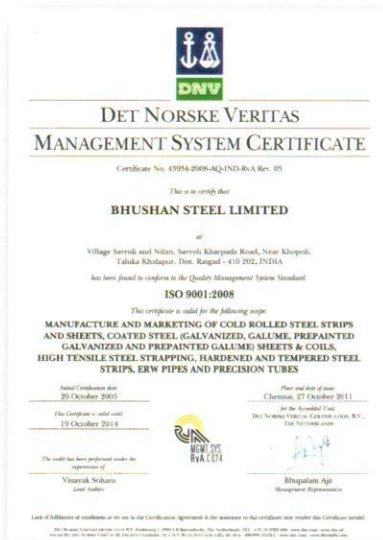


## Coil Storage

Coils are stored as per storage standards to protect from moisture & direct exposure to sunlight in packed condition.



# Accreditations







# Packed Coils