



Highlights of this Issue

Types of Alloy Coated Steel
How does Coating Protect?
JSW Steel- COVID Warriors

Dear Reader

At JSW Steel Coated Products, we believe in fulfilling the latent requirements of our partners in progress in the form of information, to use steel with knowledge and sharing. In this inaugural issue of newsletter our endeavor is to share the knowledge of coated steel and its working with our readers along with keeping abreast with the latest happening at JSW.

Coated steel is all around us and plays a vital role in our everyday lives. It is used in construction, transport, agriculture, consumer durables and everywhere that good corrosion protection and long life are essential. There are many other important industries that make use of coated steel.

JSW Steel Coated products Ltd has achieved unrelenting progress through the economic cycles and is one of the world's leading coated steel producer with a focus on sustainability. Our innovative technology and product mix has enabled us to lead ahead of the curve in the Indian and also global market. Our diversified product portfolio addresses growing demand for value - added steel. A transformative landscape envisioned by us for making India a sustaining & stronger nation.



Sharad Mahendra
CEO - JSW Steel Coated Products

Protecting Steel for a Better and Beautiful World Around Us

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The first use of coated or specifically galvanized corrugated iron is believed to be for the Royal Navy at Pembroke Docks, Wales in 1844. The notable use of galvanized corrugated iron is that of its use during the first and second world wars in the form of Nissen Huts. The idea came to an American born engineer serving with the Royal Engineers stationed at Ypres in 1916. Having experienced problems with lack of billets for soldiers, Lieutenant Norman Nissen envisioned a semicircular form composed of corrugated iron sheets supported on a steel frame. These has led to the birth of Nissen huts which used as barracks.

This event has led to realizing the importance of coating as it has enhanced the longevity and performance of steel. These coatings provide the most effective and economical way of protecting steel against corrosion.

Galvanized and Galvalume (Aluminum and Zinc coated) steels are an ideal material for a multitude of building applications. In the

residential construction market, coated steel has particular and cost-effective applications in framing, roofing, rain ware (gutters and downspouts), ductwork (heating/cooling and venting) and household appliances.

Coated steel resists corrosion. Since, for the industrialized nations, at least 4% of GDP is lost to corrosion each year, the trend of at least the past twenty years has been toward customer and manufacturer demands for increased protection through both higher contents of zinc / Aluminum zin coated steel. Zinc-coated (galvanized) steel offers a unique combination of positive features, of which the ones of key interest to residential construction are as follows:

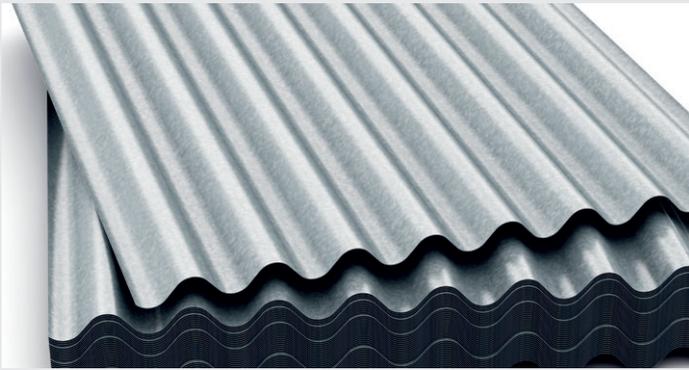
- i)** High strength, determined by the steel substrate
- ii)** Formability, a key feature for roll forming coated steel sheet
- iii)** Light weight of steel framing and roofing, as compared to competitive materials
- iv)** Corrosion resistance, for both long life and the maintenance of esthetic appearance

At every step in life we need a customised manual named Teacher Recyclability, both for the scrap materials of construction and end-of-life demolition

- vi)** Low cost, competitive with all construction materials of matching quality.



Types of Alloy Coated Steel



Galvanized Steel

A zinc coating, usually hot-dipped, in which the zinc and steel form a metallurgical bond. The thickness of a hot-dipped coating can be varied from a thin zinc/iron alloy layer to heavy applications suitable for extended outdoor exposure. Electrogalvanized also a zinc coating, but applied in a cold, electrolytic bath rather than a molten zinc bath. Traditionally the coatings are thinner than hot-dipped and not suitable for extended outdoor exposure.

A proprietary zinc alloy coating (5% aluminum) with improved corrosion resistance and formability compared to zinc alone. The ownership rights to Galfan® technology is with Galfan Technology Centre Inc. USA.

Galvalume Steel / Al-Zn coated steel

A proprietary zinc alloy coating (55% aluminum) with superior corrosion resistance. GALVALUME® is an internationally recognized trademark of BIEC International Inc. This product is suited for most types of roofing and siding applications as well as unexposed automotive parts, appliances and miscellaneous applications like furniture, outdoor cabinetry, computer cases, gutters, pipe, etc.

The product is a 55% aluminum-45% zinc alloy coated steel sheet developed first by Bethlehem Steel and sold commercially under the trademark Galvalume®, starting in 1972. Bethlehem Steel later licensed other major steel companies to produce and sell the product using its patents and technology.

JSW Steel is the first company in India to produce GALVALUME®

Galvanneal

A zinc-iron coating produced by post-heating a hot-dipped coating. It is often used where paint is to be applied to the coated sheet. The galvanization is made through the hot-dipping (Hot-dip galvanizing) process and an immediate in-line annealing and gives a very fine greyish matte finish. Galvanneal does not flake off its galvanized coating when formed, stamped, and bent. The very fine matte finish acts like a primer, allowing paint to adhere easily, and is very rust proof. Galvanneal has better weldability.

Galfan®

A proprietary zinc alloy coating (5% aluminum) with improved corrosion resistance and formability compared to zinc alone. The ownership rights to Galfan® technology is with Galfan Technology Centre Inc. USA.

ZAM®

ZAM® is a hot-dip Zinc-Aluminum-Magnesium alloy coated steel sheet that

Due to the effects of magnesium and aluminum, corrosion resistance, scratch resistance. It has harder coating layer than hot dip galvanized and usually used for substitute for hot dip galvanized.

How does Coating Protect?

When left unprotected, steel will corrode in almost any environment. Alloy coatings stop corrosion by providing two protections - a physical barrier and cathodic action.

Barrier Protection

Alloy coatings provide a continuous, impervious metallic barrier that does not allow moisture to contact steel. Without direct moisture contact, there is no corrosion. However, since zinc gradually erodes due to its much slower degradation in the presence of water and atmospheric pollutants in open air applications, barrier life is proportional to coating thickness. This subject has been researched for many years and the literature is well supplied with reports on zinc's performance in different climates, with different alloy additions to the coating and at different coating thicknesses.

Within the interior of a structure (wall framing and roof trusses) corrosion is not a consideration provided the exterior membrane maintains its integrity. Barrier coating longevity can be improved a number of ways other than by just increasing coating thickness

Cathodic Protection

Another outstanding protection mechanism is remarkable ability to galvanic ally protect steel. When bare steel is exposed to moisture, such as at a cut edge or surface scratch, steel is protected by the sacrificial loss of zinc in the vicinity of the exposed steel. In the immediate presence of zinc, steel will not corrode until all the zinc has been sacrificed. This is particularly important for coated steel sheet since corrosion will continually undercut both aluminum or paint barrier coatings.

The presence of zinc is the key to cathodic protection. All zinc-containing metallic coatings, including Galfan® and Galvalume®, share this beneficial characteristic.



Bonding of Alloy and Steel : Continuous Hot-Dip Coating Process

For many applications, all zinc or alloy coatings are continuously applied by dipping pre-treated, pre-heated sheet steel in a bath of molten zinc or zinc alloy, a process called "Continuous hot-dip coating process".

The bond between the alloy and steel is metallurgical so that a coil of alloy coated steel can be cut, punched and formed without damaging the alloy coating. (There are steel thickness, bending radius and coating weight limitations, but they are well known and respected by the producers of coated steel sheet, framing and roofing products.)

Continuous hot-dip coating process begins by cleaning the steel in a process unit that typically uses an alkaline liquid combined with brushing, rinsing, and drying. Then, the steel passes into the heating or annealing furnace to soften it and impart the desired strength and formability. In this annealing furnace, the steel is maintained under a reducing gas atmosphere, composed of hydrogen and nitrogen, to remove any oxide that may be on the steel surface.

The exit end of the furnace is connected with a vacuum

chamber, known as a "snout," to the molten coating bath to prevent any air from re-oxidizing the heated steel product. In the bath, the steel product is sent around a submerged roll and reacts with the molten metal to create the bonded coating, and then removed in a vertical direction.

Once the product is removed from the bath, high-pressure air is used to remove any excess molten zinc to create a closely controlled coating thickness. Then the steel is cooled to allow the metal to solidify onto the steel surface, which is done before the steel contacts another roll to avoid transferring or damaging the coating.

The hot-dip process for sheet product is used today to make seven different types of hot-dip coated products, including galvanized (zinc), galvalume (90-92% zinc / 8-10% iron alloy), two alloys of zinc and aluminum (55% aluminum / 45% zinc alloy and 95% zinc / 5% aluminum alloy), two aluminum based alloys (100% aluminum, 89-95% aluminum / 5-11% silicon alloy), and the terne coating (85-97% lead / 3-15% tin alloy).

Base Metal for Coated Steel

The base metal for Galvanneal, Galvalume depends upon the end application. Majorly these are carbon steel and widely used across industries like auto, consumer durables, construction, HVAC, roofing to name a few. In this write up we shall limit our discussion to flat steel.

Widely referred standards for coated (metal) and corresponding General Standards are-

S. No.	Product	Metal Coated Standard			Corresponding General Standard		
		Indian	American	Australian	Indian	American	Australian
1	Galvanized Iron	IS277	ASTM A653		IS513	ASTM A924	
2	Al- Zn coated steel	ISI5963	ASTM A792	AS 1397		ASTM A924	AS 1365
3	Galvanneal		ASTM A653			ASTM A924	
4	Galfan		ASTM A875			ASTM A924	

Typical Steel Grades

Standard	Grade
IS 277	Ordinary, Ordinary Hard, Corrugated Ordinary, Drawing (Lock Forming), Deep Drawing, Extra deep drawing and IF
ASTM 653	Commercial Steel (CS), Forming steel (FS), Deep Drawing steel (DDS), Extra deep drawing steel), Structural steel (ST), High Strength low alloy steel (HSLAS).
AS 1397	G300, G350, G450, G500 , G550 , G2 and G3
ASTM 875	Commercial Steel (CS), Forming steel (FS), Deep Drawing steel (DDS), Extra deep drawing steel), Structural steel (ST), High Strength low alloy steel (HSLAS).

JSW Fabricator Loyalty Program (FLP)

FLP is a flagship program of JSW Steel to reward our fabricator partners for continues patronage & loyalty with our brand. Program started in 2019 and more than 7000 fabricators have already enrolled themselves. Program values long-term association with brands and which reflects in schema of rewards as well. Monthly rewards facilitate the top performers in each region, whereas annual rewards take cumulative performance into account. With the help of FLP, JSW Steel has managed to clock-in loyalty sales volume of more than 13000 MT.

Under FLP more than 2000 monthly rewards have already been rewarded and recently we have also concluded annual rewards. Reward scheme is designed such a way that maximum number of unique fabricators can be rewarded & there is less repetition as far as possible, which gives the program a wide arena to access and keeps the competitiveness high among the influencers. Rewards range include household items, laptops, bikes, car and many others, which we keep updating month on month. Above all, on enrollment every partner is provided with a welcome kit which includes an accidental insurance and other job tools.

Picture below is of Mr. Deepak Patel, National Winner of FLP'20 with JSW officials



Few more pictures of Regional Winners, as below:



Glossary

Density

Fe	7.85 gm/cm ³
Zn	7.14 gm/cm ³
Al	2.7 gm/cm ³
Al-Zn	3.75 gm/cm ³

Conversions

100 gsm = 0.014 mm of Zn coating thickness. 100 gsm = 0.027mm of Al Zn coating thickness.

Weight of steel sheet in t

$$t \text{ mm} \times W \text{ mm} \times L \text{ mm} \times 7.85 / 100000$$

Weight of Zn coated steel in t

$$(Gsm / 7140 + (TCT \text{ mm} - Gsm / 7140)) \times W \text{ mm} \times L \text{ mm} \times 7.85 / 1000000$$

Weight of Al Zn coated steel in t

$$(Gsm / 3750 + (TCT \text{ mm} - Gsm / 3750)) \times W \text{ mm} \times L \text{ mm} \times 7.85 / 1000000$$

Weight of profiled sheets steel in t

$$(Gsm / 3750 + (TCT \text{ mm} - Gsm / 3750)) \times W \text{ mm} \times L \text{ mm} \times 7.85 / 1000000$$

Coil OD mm

$$\sqrt{162000X \text{ Coil Weight Kg} + ID^2 (\text{mm}^2) / \text{Width (mm)}} \\ \text{I unit} = 24.7 \times S^2 (S = \text{Height mm} / \text{Length mm} \times 100)$$

t*= Tonne

JSW Steel- COVID Warriors

Last few months have been a worry for humankind and all of us have struggled in some way or the other. In this grim situation our channel partners came forward to help the society in every possible way. Without worrying about the business uncertainty and cash flows, channel partners came forward to fight the pandemic in whatever way they could contribute. Some of them helped to provide food essentials to stranded laborers, providing needy people with basic hygiene items, helping healthcare workers, feeding meals to poor people and even some went way ahead to feed stray animals who were suffering to get food.



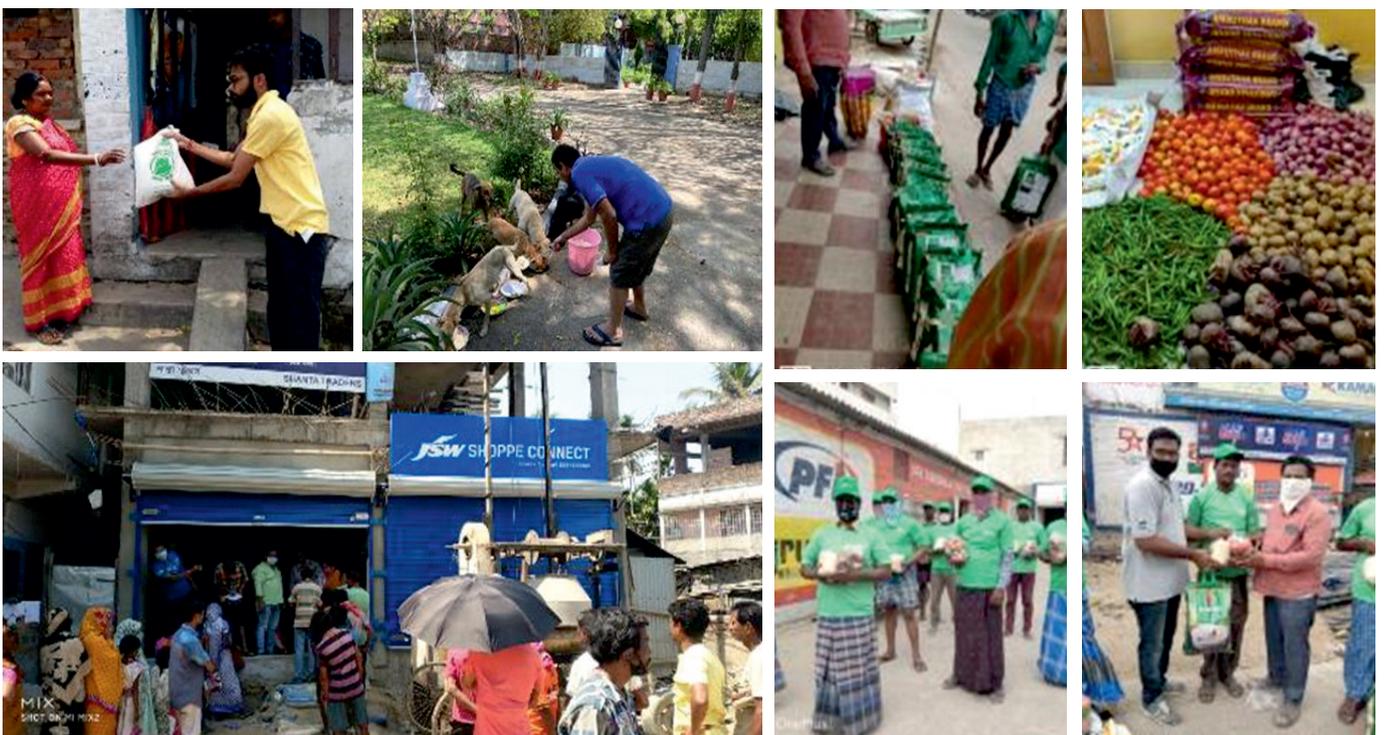
Shree Sivabalaaji Steels our distributor based out of Madurai in association with chamber of commerce Madurai provided 3 meals on daily basis to 800-1000 needy peoples, pic below.



SEPL Steel and Cement of Hubli helped healthcare workers and poor with 500 face masks, 200 PPE kits and 300 food and relief packages, a glimpse of the same below:



Every employee & almost every channel partner contributed their bit to make needy & poor withstand the pandemic. A collage of activities below depicts how actively we came forward and helped the society.



New Product Launch- JSW Radiance

Demand for tailor made solution in B2B segment is very high and customers of niche segments look for product which suits their requirement rather than a generic solution, which led to genesis of JSW Radiance. It comes in colour coated coil & sheet form with superior quality paint technology to restore radiance & luminosity of the surface. The offering is not only limited to the advance product but it also comes with an extendable warranty of 25 years making it the preferred choice of businesses. The launch of JSW Radiance enables JSW Steel to increase its market share in colour coated market of 2.3 million MT which includes 1.8 million MT of roofing & cladding, 3.9 lakhs MT of PEB segment, 1.45 lakh MT of appliance segment and 1.30 Lakh MT of sandwich panel annual demand. Roofing & PEB segment which is growing at a CAGR of 11-13% has got a push because of increasing warehousing demand triggered by e-commerce companies. On the other hand, white goods demand is also rising given the rural livelihood improvement in India and its aspiration to own luxury goods.



JSW Radiance comes with a 'power of 6' variants to cater the wide variety of applications. Appliances will be smarter with Anti-Microbial & High Gloss colour coated sheets. In PEB segment Anti-dust, Anti-Graffiti, Cool Roof, Anti-Static will take away worries of end users & making the building more efficient with less maintenance cost. Product is available in highest thickness of 1.5 mm & width of 1550 mm which is unique offering in the segment. JSW radiance is available in various colours and combination of variants as well which aim to provide tailor made solution to its customers.

From Action to Accolades, JSW Steel Shines on Digital Media

Today, every brand wants to register its presence on the dynamic and fast-paced digital media to establish a strong connect with its customers. But it is easier said than done. Doing it the right way and at the right time holds key to making impressions on the digital platforms. JSW Steel has been doing this precisely for quite some time now and it has been acknowledged by the digital industry strongly and decisively. In a span of just six months, we have won two prestigious awards in the digital space and the whole digital world is talking about it.

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JSW Steel has won a Silver at the prestigious SAMMIEs 2019 Awards by Social Samosa. It has been adjudged as the 'Best Brand on Social Media' in the Steel and Infrastructure Category. There were 200+ nominations across 120 brands and agencies fighting for the prestigious recognition. Conceptualized with the thought of promoting the best practices of bench-marking in the Indian Social Media Industry, 'Best Social Media Brands' is an industry mandate which adjudges a Brand's Social Media Performance among peers. Each entry is judged on a relative scale, an inclusive process to derive #TheGoldenDNA for Brands to win over new audiences, drive consideration, enable advocacy and more.

From Action to Accolades, JSW Steel Shines on Digital Media.... (Continued from page 6)



The second recognition for JSW Steel's digital endeavors has come at the much-acclaimed Global Digital Marketing Awards by the World Digital Congress, in February, 2020. Its campaign #RoofToDream has been awarded as the 'Best Social Media Campaign' in the presence of industry's who's who at the Taj Lands End, Mumbai. The awards recognize and reward leader brands for pioneering online marketing assets, covering a variety of topics like Search Engine Marketing, Search Engine Optimization, Social Media Marketing, Content Marketing, Email Marketing, Affiliate Marketing, Innovation, Mobile, Performance Marketing, Video Marketing and Local Marketing.

The #RoofToDream campaign has been conceptualized to provide better infrastructure to 1000 schools across India, which lack basic infrastructure like roofs, toilets, etc. The campaign's launch video garnered 1.1 million views on Social Samosa's Facebook page. The follow-up video, a case study, reached out to 13 million people across social platforms. It clocked 7+ million views and 15 million impressions across platforms besides 1800 Shares on Facebook. On Twitter, #RoofToDream trended for nearly 2 hours at 3rd position garnering over 1300 conversations and collectively reaching out to over 3.3 million users. The campaign has brought positive Brand Sentiment among the stakeholders and resulted in an influx of recognition from within the industry. TEDx Gateway 2020 displaying this campaign on its site is a strong illustration of the success of this campaign all across.

Apart from the digital space, on the ground too, the campaign has been appreciated from various sections of the society as it has brought smiles on the faces of children and teachers while significantly reducing the number of drop-out students in these schools. Watch out for some more action from us in the coming days.



@jswsteel



JSWSteelOfficial



JSW Steel