



# Coated steel demand to recover the past slump

- Steelworld Research Team

“As a thumb rule, the zinc coated steel enhances the life of structure at least five times than carbon steel”

The nature's frequent interferences in the smooth going life has called for long lasting structural steel and galvanized steel has, so far, proved beneficial for extended service life of steel. Galvanized steel products (GP/GC sheets) are used in construction sector in roofing, side cladding, agricultural sites, railway platforms, factory sheds and in various areas of housing. These coated products are also used in the automobile and appliance sector. The use of galvanized steel in automotive body panels allows automakers to guarantee a corrosion free life of over 12 years, adding only a fraction of a percentage to the total cost of production. In the appliance manufacturing sector, galvanized steel sheets are used in white goods and other household products providing a corrosion free life of over 15 years. In the construction sector, zinc coated products have a life of about 50 years. As a thumb rule, the zinc coated steel enhances the life of structure at least five times than carbon steel.

Galvanized steel is manufactured through a thick zinc layer coated on carbon steel for long life of structure. Zinc coatings can be applied to steel in two different ways: hot-dip galvanizing or electrolytic galvanizing. Hot-dip galvanizing is the deposition of a hot, liquid metallic coating. Electrolytic galvanizing is the deposition of a metallic coating by an electrolytic process. The term continuous galvanizing is used for the coating of steel sheet in a process by which coils of steel are welded end-to-end and fed continuously through the coating facility. Continuous galvanizing may be either hot-dipped or electrolytic. The term general galvanizing is used for an intermittent batch process in which steel elements are dipped in a molten bath of zinc. Electrolytic general galvanizing is feasible and is done on small parts such as fasteners. Continuous galvanizing is a capital-intensive, precise, factory-controlled process. The steel for coating

is always in coil form and can be either hot-rolled or cold-rolled. Cold rolling is an additional steel manufacturing process by which a hot-rolled coil is re-rolled cold to enhance its dimensional accuracy, its surface finish and its strength. Continuous coating lines do more than add a zinc coating to steel. In the continuous hot-dip process, coils of steel are continuously unwound and fed through cleaning and annealing sections before entering a molten zinc bath at speeds up to 200 metres per minute (650 feet per minute).

#### A corrosion-proof long-lasting material

Galvanized steel has gone through a chemical process to keep it from corroding. The steel gets coated in layers of zinc because rust doesn't attack this protective metal. For countless outdoor, marine, or industrial applications, galvanized steel is an essential fabrication component. The principal method of making steel resist corrosion is by alloying it with another metal, zinc. When steel is submerged in molten zinc, the chemical reaction permanently bonds the zinc to the steel through galvanizing. Therefore, the zinc isn't exactly a sealer, like paint, because it doesn't just coat the steel; it actually permanently becomes a part of it. The zinc goes through a reaction with the iron molecules within the steel to form galvanized steel. The most external layer is all zinc, but successive layers are a mixture of zinc and iron, with an interior of pure steel. These multiple layers are responsible for the amazing property of the metal to withstand corrosion-inducing circumstances, such as saltwater or moisture.

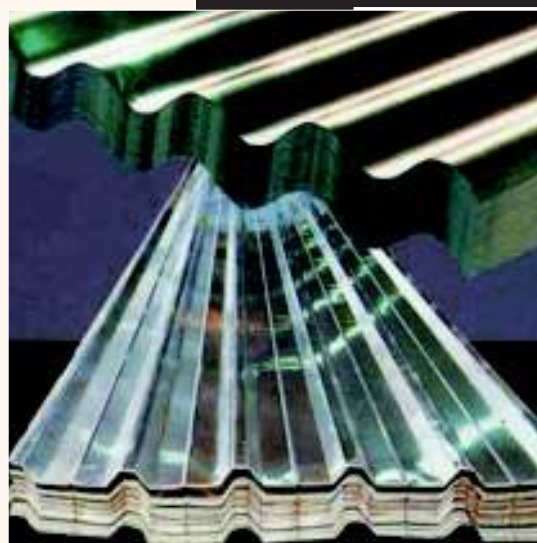
#### Market revival uncertain

Even as steelmakers anticipate a recovery in demand for steel in the next couple of months, mixed messages are coming through for the sector. JSW Steel and Bhushan Steel, the two big players in the galvanised steel market, have two different stories to tell as far as demand is concerned. Requesting anonymity, an official at the Delhi-based Bhushan Steel Ltd said the company's plants will continue to run at 30 percent less capacity for some more time as the demand for its flagship product, galvanised steel, hasn't picked up. The steelmaker produces 1 million ton of galvanised steel per annum at its Khopoli and Sahibabad works. It had announced a production cut on October 27 last year. However, JSW Steel's galvanised steel units at Tarapur and Vasind in Maharashtra have resumed production. The company has an installed capacity of 0.9 million ton per annum for galvanised, colour-coated cold-rolled products. A slump in demand for passenger as well as commercial vehicles had forced the two steelmakers to cut production. The magnitude of cut by JSW Steel at its Vasind and Tarapur plants is unknown but sources said it was significant.

But Bhushan Steel is seeing no such revival in demand. A company official, requesting anonymity, said the demand situation hasn't improved at all. The 30 percent capacity cut remains and production depends on the orders being placed. The demand for galvanised steel is still very low, a company official said. The company isn't looking at ramping up production at the moment. Galvanised steel accounts for 25 percent of Bhushan Steel's sales. Its major auto clients include Mahindra & Mahindra, Tata Motors and Ashok Leyland. With these automakers adjusting production of vehicles, Bhushan Steel may take some more time to reach optimum capacity.



“ Even as steelmakers anticipate a recovery in demand for steel in the next couple of months, mixed messages are coming through for the sector. ”





“Using galvanized steel not only protects the steel structure either of a building, bridge etc or auto parts, it also saves maintenance cost.”



Uttam Galva Steel, a major galvanized steel producer, however sees a better prospect ahead of coated steel demand following people's awareness towards economic development and maintenance-free life in construction. The company currently exports galvanized steel to over 130 countries across the globe.

#### Benefits of galvanized steel

While fixing of steel in structure, the cost comes lower than a number of other protective steel coatings (The application cost of labour intensive coatings such as painting has risen far more than the cost of factory operations such as galvanizing – the labour component of finished paint coatings averages about 60 percent, compared to about 30 percent for galvanizing.)

Less maintenance/lowest long term cost. Even in cases where the initial cost of galvanizing is higher than alternative coatings, galvanizing is almost invariably cheapest in the long term (because it lasts longer and needs less maintenance). And, maintenance causes problems and adds to costs when structures are located in remote areas, and when plant shutdown or disruption to production is involved.

Galvanized steel provides long life of structure. The life expectancy of galvanized coatings on typical structural members is far in excess of 50 years in most rural environments, and 20 to 25 years plus, even in severe urban and coastal exposure. Coating life and performance are reliable and predictable.

A galvanized coating has a unique metallurgical structure which gives outstanding resistance to mechanical damage in transport and service. Automatic protection for damaged areas. Galvanized coatings corrode preferentially to steel, providing cathodic or sacrificial protection to small areas of steel exposed through damage. Unlike organic coatings, small damaged areas need no touch up.

Every part of a galvanized article is protected even recesses, sharp corners and inaccessible areas. No coating applied to a structure or fabrication after completion can provide the same protection. Galvanized coatings are assessed readily by eyes, and simple non-destructive thickness testing methods can be used. The galvanizing process is such that if coatings appear sound and continuous, they are sound and continuous. As galvanized steel members are received they are ready for use. No time is lost on-site in surface preparation, painting and inspection. When assembly of the structure is complete, it is immediately ready for use, or for the next construction stage.

All types of zinc-coated galvanized steel products are recyclable. The Electric Arc Furnace (EAF) is the principal recycling route for zinc-coated steel. According to industry sources, about 80 percent of zinc available for recycling in India is being recycled.

#### Improving economic health

Using galvanized steel not only protects the steel structure either of a building, bridge etc or auto parts, it also saves maintenance cost. Initially, however, it requires 15-20 percent extra cost. Specifying zinc is an environmentally responsible choice. Zinc itself and all types of zinc-coated steel products are fully recyclable. When determining the environmental impact of zinc coatings, local impact as well as macro, long-term effects need to be considered. Zinc is a natural element that is essential to all forms of life, including humans, animals,



“ Zinc coated or galvanized steel offers a unique combination of high strength, formability, light weight, corrosion resistance, aesthetics, recyclability and low cost that is unmatched by any other material. ”



plants and micro-organisms. While small quantities of zinc will wash off from coatings exposed to outdoor environments, this zinc is usually not bioavailable and has little or no impact on the surrounding ecosystem. On a macro scale, the excellent corrosion protection provided by zinc coatings contributes significantly to the durability and life expectancy of steel products – this in turn helps to conserve natural resources and reduces the cost of maintenance and repair. Steel is a versatile product and has a wide range of applications. In fact, steel touches every sphere of our life. The only demerit of steel is its natural tendency to corrode. Corrosion eats away steel, causing significant economic loss. It has been estimated that corrosion costs about 4 percent of the GDP of an industrial country's economy. Zinc coatings provide an effective way of protecting steel against corrosion. Zinc coated or galvanized steel offers a unique combination of high strength, formability, light weight, corrosion resistance, aesthetics, recyclability and low cost that is unmatched by any other material. As a result, galvanized steel is an ideal material for a multitude of applications like buildings, manufacture of automobiles, household appliances to residential, commercial and industrial construction.

Apparent consumption, imports and exports ('000 tons)			
Year	Apparent consumption	Imports	Exports
1999-2000	1204	75	320
2000-01	1393	73	589
2001-02	1750	97	695
2002-03	1265	92	1610
2003-04	1691	102	1486
2004-05	1926	106	1843
2005-06	2051	134	1244
2006-07	2400	203	1841
2007-08	2622	268	2026

Sectorwise consumption of GP/GC sheets (%)	
Sector	Share in consumption (%)
Construction	48
Consumer Durables	11
Drums, barrels, containers	8
Railways, power, irrigation	6
CPWD, PWD, Other Govt. Depts.	6
Engineering Units	6
Furniture Makers	5
Tube Makers	4
Automobiles	4
Others	2

#### Conclusion

Although, global economic slowdown has badly impacted the demand of galvanised steel due to weakening demand in construction sector in the third quarter of the current fiscal, the fourth quarter is set to recover the slump. The construction activity has started resulting into a resumption in steel demand. The trend is likely to continue till next monsoon season with stimulus package announced of \$900 billion being proposed by the US and second round of \$535 billion being spent in China.