

Environmental Survey Of Hot Dip Galvanising Plant**Dr.A.Pramila* ShaziaNousheen******HOD&Associate Prof. Lecturer****Department of Botany,Andhra Mahila Sabha Arts and Science College for
Women, O.U. Campus Hyderabad* pramila21ams@gmail.com****Dept. of Botany******St.Anns College****Tarnaka****(Received:25February2019/Revised:10 March2019/Accepted:20 March 2019/Published:25 March2019)****Abstract**

Hot dip galvanizing is used to protect steel against corrosion. It is the process of coating iron or steel with a thin Zinc Layer, by passing the steel through a molten bath of zinc at a temperature of around 860 F (460° C). When exposed to the atmosphere, pure zinc reacts with oxygen to form zinc oxide, which further reacts with carbon dioxide to form zinc carbonate, a dull grey, fairly strong material that stops further corrosion in many circumstances, protecting steel below from the element. The objective of the study is to trace techniques that minimize environmental pollution caused by the hot dip galvanizing process. On the basis of the techniques selected as "Best Available Techniques" (BAT), recommendations concerning environmental legislation are forwarded to the "Aster Teleservices Pvt. Ltd". The BAT selected consists of a number of measures that improve the environmental performance of the galvanizing process without putting an unreasonable financial burden on the companies involved. The BAT are diverse, ranging from the organization of the production hall, housing, covering of the baths, rise digressing, peripheral exhaust techniques, increasing the life time of the baths to treatment of the emissions. By applying the BAT measures, the industry as a whole should be able to accomplish a 95% reduction of zinc, chlorine and dust emission, along with minimizing energy usage in the mining, processing and production of coating raw materials and in the processes that utilize coating, minimizing effluents and contamination entering the eco system (rivers, ground water and the atmosphere) from the weathering and rehabilitations of coating and Optimizing the recycling of Zinc coating material including galvanized scrap.

Key Words: Zinc, Galvanizing, Best Available Techniques, Environment, Pollution, Steel**Introduction**

Hot dip galvanizing is used to protect steel against corrosion. Hot-dip galvanizing is a form of galvanization. It is the process of coating iron or steel with a thin zinc layer, by passing the steel through a molten bath of zinc at a temperature of around 860 F (460° C). When exposed to the atmosphere, pure zinc reacts with oxygen to form zinc oxide, which further reacts with carbon dioxide to form zinc carbonate, a dull grey, fairly strong material that stops further corrosion in many circumstances, protecting the steel below from the elements. Galvanized steel is widely used in applications where rust resistance is needed, and can be identified by the crystallization patterning on the surface (often called a "spangle").

The process of hot-dip galvanizing results in a metallurgical bond between zinc and steel with a series of distinct iron-zinc alloys. The resulting coated steel can be used in much the same way as uncoated. Galvanized steel can be welded; however, one must exercise caution around the resulting zinc fumes. Galvanized steel is suitable for high-temperature applications of up to 392 F (200°C). Use of temperatures above this level will result in peeling of the zinc at the intermetallic layer. Galvanized sheet steel is commonly used in automotive manufacture to enhance corrosion performance of exterior body panels of some models.

Steel strip can be hot-dip galvanized in a continuous line. Hot-dip galvanized steel strip (also sometimes loosely referred to as galvanized iron) is extensively used for applications requiring the strength of steel and resistance to corrosion. Applications include: roofing and walling, safety barriers, handrails, consumer appliances and automotive body parts. One common use is in metal pails. They are also used in most heating and cooling duct systems in buildings

Individual metal articles, such as steel girders or wrought iron gates, can be hot-dip galvanized by a process called batch galvanizing. Other modern techniques have largely replaced hot-dip for these sorts of roles. This includes electro-galvanizing, which deposits the layer of zinc from an aqueous electrolyte by electroplating, forming a thinner and much stronger bond.

The hot dip galvanizing process may affect the environment by e.g. emissions into the air (predominantly zinc, chlorine, and dust), and waste (depleted pre-treatment baths, dross, etc). The BAT selected consists of a number of measures that improve the environmental performance of the galvanizing process without putting an unreasonable

financial burden on the companies involved. The BAT are diverse, ranging from the organization of the production hall, housing, covering of the baths, rinse baths, degreasing, peripheral exhaust techniques, increasing the life time of the baths to treatment of the emissions.

Objectives

To establish a system for identification of environmental aspects and evaluating the same for the possible impacts on the environment for the telecommunication tower products at Galvanizing Plant at Aster Teleservices Pvt. Ltd and suggest Best available techniques (BAT).

- Identification of significant environmental Aspect of Galvanizing Process for suggesting Best available techniques (BAT).
- Identification of all aspects and their Impacts on Environment by the Galvanizing process.

Materials And Methods

The Materials used in the survey of finding the best available techniques for Galvanizing Process are zinc, Sodium Hydroxide, Hydrochloric Acid, Sulphuric Acid, Ammonium Chloride, M. S material, Lead, Aluminum, Fresh Water.

Hypothesis

1. Environmental impacts of the aspects shall be identified considering the following conditions, whether the aspect
 - Occurs in a normal condition
 - Occurs in a abnormal condition
 - Can have a Direct impact
 - Can have an Indirect impact
 - Can create a Potential hazard to the environment
2. The identification of significant environmental aspects & its associated impact should cover, where relevant
 - Emission to Air
 - Discharge to water
 - Contamination of land
 - Effect on vegetation (Flora, Fauna) around & human beings

Place Of Conducting The Study

The study was conducted in one of the Towers Fabrication & Galvanization Plant of Aster Teleservices Pvt. Ltd. 142, ThallaSingaram, Choutuppal. Aster Teleservices

Pvt. Ltd. is a Telecommunication Infrastructure development company with 1250 Crores annual turnover and human resource of 5500 employees spread over 22 states of India and 9 International assignments.

Aster has a total production capacity of steel of 2, 13,000 MT/ annum and galvanizing capacity of 1, 53,000 MT/ annum.

Discussion

Hot dip galvanizing is used to protect steel against corrosion. It is the process of coating iron or steel with a thin zinc layer, by passing the steel through a molten bath of zinc at a temperature of around 860 F (460° C). When exposed to the atmosphere, pure zinc reacts with oxygen to form zinc oxide, which further reacts with carbon dioxide to form zinc carbonate, a dull grey, fairly strong material that stops further corrosion in many circumstances, protecting the steel below from the element.

The objective of this study is to trace techniques that minimize environmental pollution caused by the hot dip galvanizing process. On the basis of the techniques selected as 'Best Available Techniques' (BAT), recommendations concerning environmental legislation are forwarded to the Aster Teleservices Pvt. Limited.

The BAT selected consists of a number of measures that improve the environmental Performance of the galvanizing process without putting an unreasonable financial burden on the companies involved. The BAT are diverse, ranging from the organization of the Production hall, housing, covering of the baths, rinse baths, degreasing, peripheral exhaust techniques, increasing the life time of the baths to treatment of the emissions.

BY applying the BAT measures, the industry as a whole should be able to accomplish a 95% reduction of zinc, chlorine, and dust emission.

Summary And Conclusion

Process emissions from the galvanizing process are very low. Aqueous discharge waste liquids - which consist mainly of spent acids used to prepare Steel, are removed by licensed waste management companies in accordance with mandatory procedures, protecting surface and ground water. Spent acid is also increasingly used to neutralize other wastes and in the manufacture of water treatment chemicals, The industry has greatly improved its utilization of process chemicals in recent years - reducing the volumes of used per tonne of steel processed.

Emissions to the atmosphere are inherently very low and are strictly governed by the Environmental Protection Act. Galvanizing baths must capture their particulate

emission to air. This is successfully accomplished by the use of bath enclosures together with filters, A survey by the Environment Technology Best Practice Programme concluded that 'Galvanizers use less than 25 litres of water per tonne of product, compared with 2000 litres in the general metal finishing industry'

The BAT selected has proven to be valuable for three reasons. First, they support the existing legislation of this industry. Second, based on the selected BAT, suggestions have been made with respect to additional legislation on specific environmental permissions. Third, the BAT analyses have provided the foundation for suggestions on the granting of investment subsidies to specific environment friendly techniques.

By applying the BAT measures, the industry as a whole should be able to accomplish a 95% reduction of zinc, chlorine, and dust emission.

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