





# HOT DIP GALVANIZING PROCEDURES

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## Material Receiving

- Upon receiving of incoming raw materials, the Receiving Department shall check for:
  - Quantity and description as per DO and/or purchase requisition.
  - Surface and over-all condition of items.
  - Any visual damage.
  - Adequate hole for venting and drainage.
- After confirmation the status of materials are in order, steel articles will be accepted and clients will be issued with a Good Received Note.
- Should defects / non-conformities be found during receiving inspection, clients will be notified and while we wait for client's further instructions. Meanwhile, these steels will be labelled "Hold" / "Return to Supplier" accordingly.



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## Pre-treatment

### A) Degreasing (Fig 1)

Articles are immersed in a hot alkaline cleaner (Sodium Hydroxide - Caustic Soda) solution at a temperature of approx. 50 -70 Deg.C to remove dirt, oil, grease, soil and soluble paints.



Fig. 1

### B) Water Rinsing - After Degreasing

To prevent alkaline solution from reacting with pickling solution, minimizing unnecessary acid wastage.

### C) Acid Pickling (Fig. 2)

- Articles are immersed in the acid bath (Hydrochloric Acid) to remove surface rust and mill scales and provide a chemically clean metallic surface.
- Residing time in pickling acid varies considerably, depending on the work being processed. Only a few minutes may be required for a relatively clean steel, but up to an hour or more for heavily scaled steel.



Fig. 2

### D) Water Rinsing - After Pickling

To prevent any carryover of acid into the Pre-flux Tank and also to remove any adherent iron salt.

### E) Pre-Fluxing

The articles are immersed into a tank of zinc ammonium chloride solution. The purpose is to prevent further oxidation of the articles, and "re-activate" the surfaces of the steel to ensure a chemical and metallurgical reaction between steel and molten zinc.

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## Hot Dip Galvanizing

- The articles are immersed into the molten zinc bath (approx. 445 - 450 deg.C) where it immediately reacts to form the zinc-iron alloy layers.
- The period of immersion depends on the thickness/weight of the articles being done.





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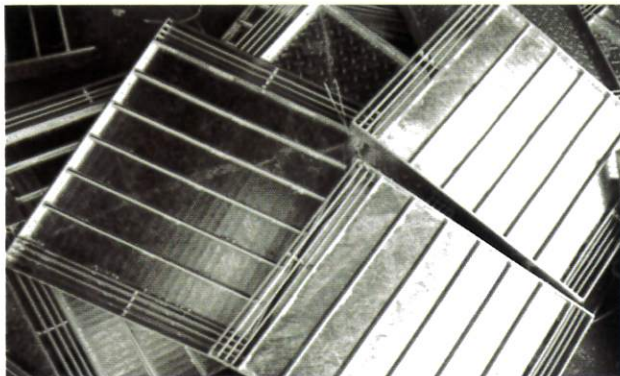
### Quenching & Passivation

- The galvanized articles are then immersed into the quenching tank filled with polymer.
- Quenching brings down the high temperature and also helps with the removal of ash particles.
- Passivation helps to delay the oxidation process of the freshly galvanized zinc coating.

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### Zinc Coating Thickness Test (Micron) & Final Inspection

The QC will do a microns thickness inspection to ensure sufficient thickness and a continuous surface of the galvanized articles. (See table for more information; ISO 1461)



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### Rejection of Galvanized Articles

Steel articles that are subjected to rejection includes; peeling & flaking of zinc coating, heavy white storage stain if it occurs during galvanizer's possession, black or bare spots cause by excess aluminium, bare spots that is above 0.5% of total surface area, and if each uncoated area exceed 10cm sq.

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### Blending & Removing of Sharp Edges

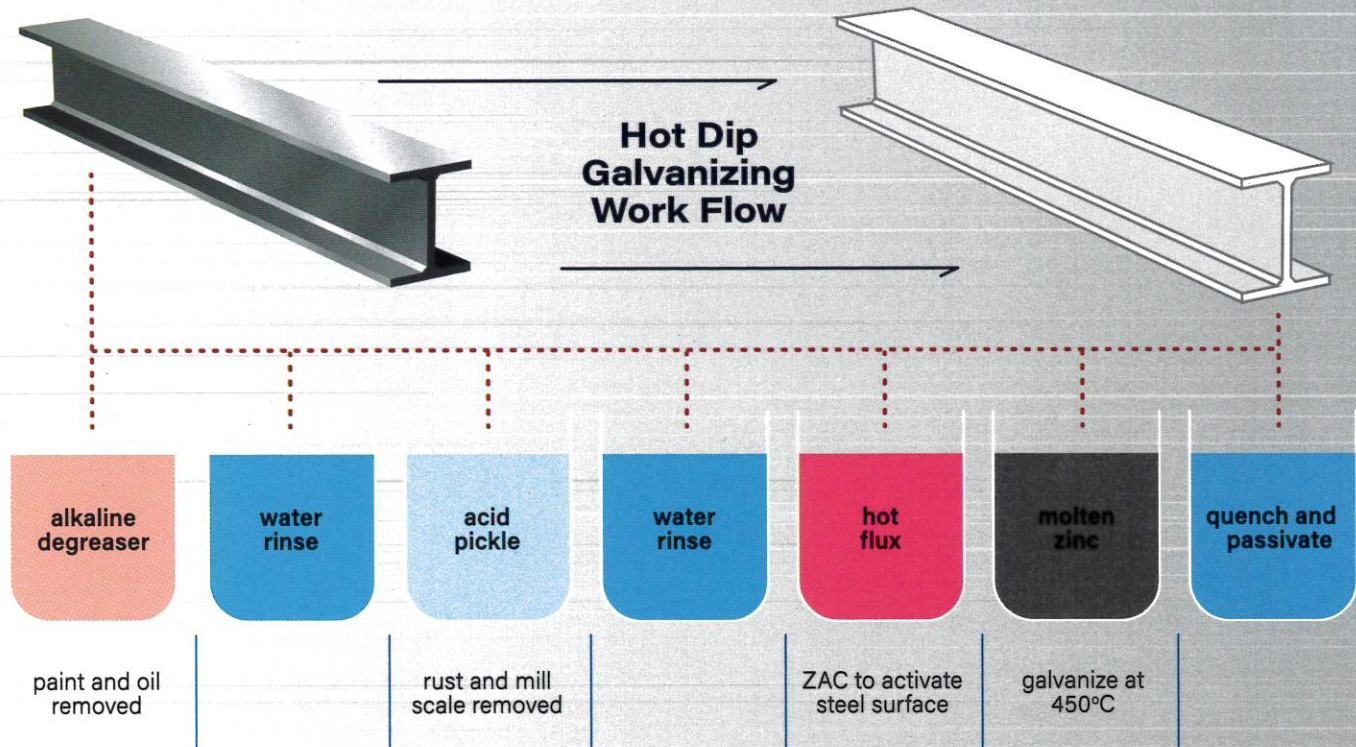
The galvanized articles are transferred to the de-racking station to be untie and all sharp edges will be sand down using file / grinder.





## Storage & Delivery

- Upon passing inspection, steel articles will be packed and stored in designated area.
- Customers will be notified that their orders are ready for collection.
- Transportation shall be arranged by customers.



Article and its thickness	Local coating thickness (minimum) <sup>a</sup> μm	Local coating mass (minimum) <sup>b</sup> g/m <sup>2</sup>	Mean coating thickness (minimum) <sup>c</sup> μm	Mean coating mass (minimum) <sup>b</sup> g/m <sup>2</sup>
Steel > 6mm	70	505	85	610
Steel > 3mm to ≤ 6mm	55	395	70	505
Steel ≥ 1.5mm to ≤ 3mm	45	325	55	395
Steel < 1.5mm	35	250	45	325
Castings ≥ 6mm	70	505	80	575
Castings < 6mm	60	430	70	505

**NOTE** This table is for general use individual product standards may include different requirements including different categories thickness. Local coating mass and mean coating mass requirements are set out in this table for reference in such cases of dispute.



# BENEFITS OF HDG

## Low Cost

HDG costs less than comparable alternative.

## Longevity

HDG can typically last decades in urban and industrial environments, and even more in rural areas.

## Complete Protection

HDG ensures complete surface coverage including inaccessible areas, edges, and sharp corners.

## Ease of Inspection

HDG coatings are visually inspectable, allowing for easy and quick assessment of the coating's integrity without complex equipment.

## Sustainable

Zinc is a naturally occurring element and is 100% recyclable. The availability and abundance make it a sustainable choice for corrosion protection.

## Reliability

The metallurgical bond between the zinc and the steel means providing heavy duty barrier to corrosive elements. Minimal to no inspection and maintenance is required.

# COMPETITIVE ADVANTAGES



## 24/7 Operation

We deliver with a shorter turnaround time with our 24/7 operation.



## Product & Service Quality

We strive to go beyond expectations by having a rigorous quality control program and delivering values attune to customers' needs.



## Business Partner Relations

We value our clients and business partners by building strong and meaningful business relationships with our reliability.



## Competent Team

Our competent team can offer effective solutions to address client's challenges or specific requirements.



## SG GALVANIZING (S) PTE LTD

-  22 Benoi Road Singapore 629892
-  [CS@sggalv.com](mailto:CS@sggalv.com)
-  +65 6252 1880 (6 lines)
-  +65 9896 1933 (Customer Service)
-  +65 6252 2677 / +65 6252 1366