

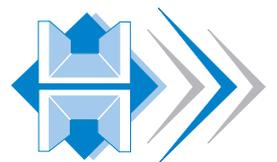
ANNUAL MEMBERS DIRECTORY

Volume 21 Issue 2
July 2024

HOT DIP GALVANIZING TODAY ⁸⁵

The Official Publication of the Hot Dip Galvanizers Association Southern Africa

CORROSION CONTROL OF STEEL



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THE ASSOCIATION IS AN INFORMATION CENTRE ESTABLISHED FOR THE BENEFIT OF SPECIFIERS, CONSULTANTS, END USERS AND ITS MEMBERS.



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Hot Dip Galvanizers Association Southern Africa

Bedfordview Office Park, Building 1, Ground Floor, 3 Riley Road, Germiston
P.O. Box 2212 Edenvale 1610 Tel: 011 456 7960 Email: hdgasa@icon.co.za Website: www.hdgasa.org.za

Executive Director: Robin Clarke Cell: 082 902 5119 Email: robin@hdgasa.org.za

Publication Liaison: Anthony Botha Cell: 082 326 6080 Email: anthony@hdgasa.org.za

Design and Layout: Sandra Addinall Tel: 011 868 3408 Email: cbtdesign@adcot.co.za

Reproduction and Printing: Camera Press Tel: 011 334 3815 Email: cpquotes@camerapress.co.za

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EXECUTIVE DIRECTOR'S Comment

The origin of the Hot Dip Galvanizers Association of Southern Africa can be traced back as far as 1965. It was then that the concept of a team be formed to promote – primarily through education and marketing channels such as print media and practical demonstration – the benefits of the hot dip galvanizing technology as a preferred corrosion control mechanism. This key objective has remained the focus of Association personnel over its nearly 60-year existence.

Education of corrosion control experts – inclusive of engineers, architects, fabricators, and general specifiers – remains a priority and is coupled with training of the galvanizers and their staff to ensure the correct application of standards and the attainment of the required standards. Under such circumstances, the hot dip galvanizing of steel will repeatedly deliver excellent corrosion control and service life to meet expectations.

This 85th edition of Galvanizing Today is aimed at profiling the hot dip galvanizers and our affiliate and associate members that provide the Association with operating resources as well as strategic guidance.

A very sincere thank you to our members for their ongoing support.





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EDITORIAL COMMENT:

Going forward

The impact of the loss of infrastructure is being felt everywhere. It is a time to make choices that best realize the goals we have in meeting the requirements of our sector and those whom we serve and support. The Association has been producing and distributing the "HOT DIP GALVANIZING Today" magazine since the early 2000's. This has been done in the form of a hard copy publication at least once a trimester.

The demise of the SAPO and the closure of more than 600 branches as well as the inevitable management chaos has seen the returns of the magazine skyrocket tenfold and in the latest editions even higher.

To provide a high degree of consistent communication with our recipients the Association has reviewed several models. The outcome after discussion with key supporters of the magazine is to provide a HYBRID solution.

The HYBRID solution will be that two of the three publications will be fully digital. That would be the September and March Issues, the May/June edition will be both digital and hardcopy and will combine all the editorials and articles of the other two issues as well as provide a hardcopy directory of members.

As our latest issue – Issue 85 – is the last hardcopy being posted in 2024 the Association will closely be monitoring the postal returns. It is important that with each magazine the coversheet lists details of the recipient and information such as contact numbers and e-mail addresses. We request that these be filled in and returned to us for recapture on a digital distribution list. The Association will continue to reach out to our recipients to gather pertinent details and feedback over the next several months.

We seek to continue to provide readers, editorial submissions and advertisers with pertinent mediums of communication supporting the industry and those it serves for years to come.

Please feel free to contact Anthony Botha at anthony@hdgasa.org.za in any magazine related matter and be assured of my best attention to the needs of all our stakeholders going forward.

HOT DIP GALVANIZERS ASSOCIATION SOUTHERN AFRICA

MEMBER CATEGORIES:

Affiliate Member (Company): Companies who sell products that are hot dip galvanized and who occasionally require the assistance of the Association.

Affiliate Member (Professional): Interested architects, consulting engineers or specifiers such as quantity surveyors, corrosion consultants, and designers from fabricating companies. This category is for individuals only.

Affiliate Member (Coating Inspector): Persons who have successfully completed and passed the Associations Level II Galvanizing Inspectors Course and wish to be registered as an approved HDGASA inspector. This category is for individuals only.

Associate Member (Galvanizer): Such galvanizers will be evaluated after a full years membership prior to attaining full Galvanizing Member status at the AGM.

Associate Member (Support): Companies that purchase from and sell to the industry.

Corporate Members: Corporations who have interests in the Association; be it product or mining related etc.

Galvanizing Member: Existing hot dip galvanizing companies who have been in operation for a year.

International Member: Any international member (beyond the borders of South Africa) interested in joining the Association.

International Galvanizing Member: Any hot dip galvanizer beyond the borders of South Africa.

THE ASSOCIATION



The importance of an association is that it plays a crucial role in our society, serving as a platform for like-minded individuals to unite, share ideas, and work towards common goals with a united purpose and powerful voice.

Whether it's a professional organisation, sports club, community group, union, federation, industry body, foundation, chamber or council, associations offer numerous benefits that contribute to personal and collective growth.

One of the critical reasons why associations are essential is the sense of community and belonging they provide. Being part of an association allows individuals to connect with others with similar interests and passions. Bridging the objectives of an association and the human beings that add life to it is critical.

Bringing this sense of belonging allows an association to foster camaraderie and support, creating a network of relationships that can be invaluable in both personal and professional spheres. The services and systems developed by the association offer opportunities for members to acquire new skills, knowledge, and experiences through workshops, seminars, and networking events.

Furthermore, an association advocates for their members, representing their collective interests and access to information and shared knowledge. Each point of access to a member provides a unified voice for issues affecting their members and works towards bringing about positive change in their respective industries. This collective advocacy can have a far-reaching impact, influencing policies, regulations, and public opinion.

In conclusion, an association is instrumental in fostering a sense of community, driving personal and professional development, advocating for collective interests, and positively impacting society. The importance of operational support and strategic co-creation cannot be overstated, for an association to flourish is insurmountable. Thoughtful appropriately directed collaboration offers a continued existence essential for the betterment of individuals and communities

The Hot Dip Galvanizers Association Southern Africa (HDGASA) is a not-for-profit trade association dedicated to serving the needs of end-users, specifiers, architects, engineers, contractors, fabricators and hot dip galvanizers throughout Southern Africa.

Founded in 1965, the Association's primary objective is to develop and expand the market for hot dip galvanizing and duplex systems as cost-effective corrosion control systems.

To further this aim, the Association provides training and information to end users, engineers, consultants, contractors, specifiers, designers and architects by way of courses, presentations, technical research papers, plant tours and advisory involvement at the design stage of projects.

The HDGASA publishes promotional literature such as our Steel Protection



Guide, Design Wall Chart and the "Hot Dip Galvanizing Today" magazine.

On behalf of our members, the Association liaises with regulatory and standards authorities governing corrosion control and associated industries.

Furthermore, the Association offers an independent inspection service, checking for compliance against the relevant standards.

Members of the Association shall at all times:

- Preserve the honour, integrity, dignity and good name of the Association.
- Promote and advance the objectives of the Association.
- Display professionalism, competence and ethics in terms of all actions and business dealings.
- Treat clients, associates and suppliers with fairness, respect and courtesy and foster good relations with them.
- Protect the interests of their clients and suppliers and not disclose any confidential or sensitive information regarding business affairs, trading secrets, technical methods or processes.
- Carry on business without causing harm other than by fair commercial competitive practices.
- Obey the laws of any country in which they are operating and observe accepted customs, codes and business practices.
- Timeously bring all cases of unethical conduct by other members to the

attention of the Association.

- Act in the interests of the public by actively contributing to public health and safety and to the protection of the environment.
- Make a concerted effort to participate in Association affairs and programmes and where possible, contribute towards the development of the hot dip galvanizing.

The Association is a technical information centre established for the benefit of specifiers, consultants, end-users and members. Contact the Association should you require a comprehensive presentation on various aspects of hot dip galvanized coatings. The contents of any presentation can be tailored to suit the requirements of the audience i.e. Individualised Presentations to Companies, Engineers, Consulting Engineers and Projects.

The Association provides technical support in the field with the Visual Evaluation Guide for referencing conditions applicable to galvanizing outcomes, the reasons, responsible parties and remedial actions recommended.

Case studies, codes of practice and a broad range of information sheets simplify the technology and its intricacies and are available online. This is supported by answers to Frequently Asked Questions (FAQ) and other channels of information and feedback on the galvanizing industry and the technologies applicable thereto, these include technical papers, the Steel Protection Guide and the Design For Hot Dip Galvanizing Wall Chart.

Benefits of joining the Association

The Association offers training in all aspects related to hot dip galvanizing. Training courses are available to members at a substantial discount.

Assists members for quality aspects during fabrication, hot dip galvanizing and site inspections. The Association will investigate and objectively report on coating quality issues without compromising its credibility or professional reputation.

Offers technical advice relating to specifications, steels suitable for hot dip galvanizing and the appropriate

corrosive control measures to suit various environments.

Actively develops increased awareness among current and future engineers, buying authorities and specifiers by way of presentations and plant tours and participation in relevant marketing events that promote the industry and its stakeholders.

We seek to identify capital projects and applications where hot dip galvanizing offers appropriate potential applications. Through direct involvement as early as possible in the conceptual, planning and design stages seek to successfully market the concept of corrosion control by hot dip galvanizing to relevant specifiers and key decision makers.

Provides free technical advice to galvanizing members relating to

their galvanizing plant, equipment, processes, environmental compliance and specialized training of galvanizing personnel.

Becomes involved at the earliest design and development stages of all development projects, to positively promote the use of hot dip galvanizing in applications for which it is suited.

Will, where possible, attend international hot dip galvanizing conferences for networking with international bodies and if required, provide technical input at these functions to maintain the Association's established reputation. Furthermore, the Association will make the papers published at these conferences available to members.

Has an extensive technical library for the exclusive use of members.

Seeks to provide focused events including the HDGASA Awards event as well as the annual HDGASA Golf Day. The Association's in-house publication "Hot Dip Galvanizing Today" promotes all members through editorial and advertising with articles of interest to specifiers, end users and specialists in the corrosion control arena. Recipients of the publication number approximately 3000 individual recipients active within the corrosion protection industry and the various segments served. The list includes government representatives, NGOs, Environmental Bodies, end users, consultants, specifiers, fabricators and organisations that operate in the corrosion control industry.

The tertiary strategic marketing goals of the Association are to establish, where they do not exist, mutually beneficial relationships and networks with stakeholders and influential participants in the marketplace. These include local governments, NGOs, Environmental Bodies, The South African Bureau of Standards, SANRA, SAISC, International Zinc Association and EGGA. This core strategy is founded on researching, identifying and forging mutually strategic alliances.

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TRAINING REVIEW 2023 / 2024

The HDGASA has been a hive of activity regarding training throughout the country. Level I and Level II courses, lectures at universities, fellow institutes and internal training of galvanizing members supervisory and operations staff has maintained high levels of active involvement across the spectrum of stakeholders in the galvanizing industry.

Participation by key galvanizing members, their staff and customer base seek to ensure the ongoing professionalism, levels of awareness of the benefits, standards and application of hot dip galvanizing are foremost in this role provided by the Association.

International delegates in the SADC region, South America and East Asia all showed growth in this period.

Training is however not a ONE TIME WONDER event and the stakeholders are encouraged and appreciated in their ongoing understanding of the impact of the latest revisions of standards, new processes and management / QC systems and the movement into a future where the industry and others reduce the environmental impacts of the plants and grow the benefits of the circular economy. Training is a requirement for development, sustained business and improved business and economic value.

The HDGASA thanks all who support the ongoing training across the industry and the markets being served and look forward to serving you all with on point pragmatic and up-to-date training in all areas of the hot dip galvanizing sector.

TRAINING Courses

LEVEL I INTRODUCTION TO HOT DIP GALVANIZING

This one-day course has been designed to provide an initial understanding of the concepts relating to the use of hot dip galvanized coatings as applied for corrosion control of carbon steel components. The course is presented as an introduction to the more advanced and detailed three-day qualification course needed for registration as a recognized hot dip galvanizing inspector.

Bookings are limited and will be treated on a first-come-first-serve basis. Please note that for the course to be viable we require at least six (6) candidates to attend. Arrangements can also be made for the course to be held at your premises for more than six (>6) candidates. The course is designed to provide a solid foundation for non-technical and support personnel and candidates who have a limited technical background and/or function.

The course comprises six lessons, each of approximately 45 minutes duration. The course may be run as a Workshop or be concluded with a one-hour examination designed to test course effectiveness. A standard grade pass of 50% is required to receive a certificate of achievement. Workshop participants will receive a certificate of attendance

Course Content

- Introduction to Corrosion
- Understanding Hot Dip Galvanizing & Zinc Coatings
- Inspection and Jigging before Hot Dip Galvanizing
- The Hot dip Galvanizing Process
- Inspection after Hot Dip Galvanizing
- Maintenance and Controls

Course Duration

This is a one-day course comprising six lectures and may include a one-hour examination to test the effectiveness of the course or it may be run as a workshop only.

Time

The course commences at 08h00 sharp and ends at 17h00. Lunch and refreshments will be provided.

Course Cost and Payment Terms

A quotation and availability of seats may be obtained by calling 011 456 7960 or e-mailing hdgasa@icon.co.za

Terms are on a strict payment before-attendance basis, unless by special prior arrangement. Upon receiving your Training Booking Form a reservation confirmation will be sent to the delegate as well as an invoice made out to the



Image by Drazen Zigic on Freepik



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payee. Failure to attend the course without a two-week prior advice will levy a 50% charge to cover logistical expenses incurred. No refunds or credits will be entertained for any withdrawal. Only one postponement will be granted.

ADVANCED LEVEL II
(Prerequisite for certification as an HDGASA-endorsed galvanizing inspector)

The purpose of the Advanced Level II course is to provide delegates with the necessary skills to assess the quality and conformance of hot dip galvanized coatings and Duplex Systems in compliance with the applicable specifications and prescribed test methods. The delegate will be introduced to a range of zinc coating specifications and their appropriate applications. Interpretation of the specifications will be examined. Candidates will be instructed in all aspects of testing in line with the prescribed procedure for determining acceptance of batch hot dip galvanized fabricated steel articles. A firsthand practical visual inspection and coating thickness/mass evaluation to ensure that the articles meet the requirements of appearance and minimum mean coating thickness/mass will be undertaken following a plant visit to an operating hot dip galvanizing facility.

Course delegates will undertake a three-part exam as well as the presentation and submission of an inspection report. Part

one will be a multiple choice closed book exam. Parts two and three are open-book exams. Part three is vital in attaining HDGASA endorsement as a certified inspector.

Following full attendance of the course, completion of all three exam papers, and the inspection report, a certificate will be issued to delegates that exceed the pass mark of 50% on the STANDARD GRADE. A HIGHER-GRADE pass will be acknowledged for an overall achievement of 75% in the exams. Part three must be passed with a score of 80% or greater to ensure registration as an HDGASA-endorsed GALVANIZING INSPECTOR and Membership of the HDGASA as an AFFILIATED MEMBER – GALVANIZING INSPECTOR.

Three (3) Continuous Professional Development (CPD) Points are available on request to delegates who attend this course. Delegates wishing to receive CPD credits must inform the Association at the time of booking to allow us to submit these points on behalf of candidates after the course.

Bookings are limited and will be treated on a first-come-first-serve basis. Please note that for the course to be viable it is required that six or more (≥ 6) candidates attend. Arrangements can also be made for the course to be held at a customer's venue for more than six (≥ 6) candidates – catering to be arranged by the customer.

Course Content**Day One (08h00 to 16h00)**

- Introduction to the Environment, Steel Types & Corrosion
- Understanding Zinc Coatings; ISO 9223 & ISO 12944
- Design, Fabrication and Inspection before Hot Dip Galvanizing SANS (ISO) 14713
- The General Hot Dip Galvanizing Processes
- SANS 121 (ISO 1461) Batch Type Galvanizing

Day Two (08h00 to 16h00)

- Duplex Coatings and Hot Dip Galvanized Reinforcement in Concrete
- Inspection after Hot Dip Galvanizing including test procedures, application of specifications and reporting.
- Conducting an Acceptance Inspection i.r.o SANS 121:2024 / ISO 1461: 2022

- Hot Dip Galvanizing Plant Visit followed by syndicate inspection of finished materials awaiting final release. Quality Assurances in Coating Applications, Application of Specifications and Control Documentation of a QA System.

Day Three (08h00 – 15h30)

- Practical Inspection Report Presentation by delegates and feedback from group.
- Three-part examination
 - 1-hour closed book multiple-choice Fundamental Theory Examination
 - 2-hour open book written Advanced Theory Examination
 - 2-hour open book written Inspector Examination

Course Duration

This three-day course comprises lectures on the first and second day concluding with a plant tour and a practical hot dip galvanized lot acceptance inspection and report. The third day comprises a report back on the practical undertaken on the afternoon of day 2, and the three qualifying examinations. Lunch and refreshments will be provided. Comprehensive course notes may be collected from our offices two weeks before the course by the delegate or requested to be sent via courier at an additional fee.

Course Cost and Payment Terms

A quotation and availability of seats may be obtained by calling **011 456 7960** or e-mailing **hdgasa@icon.co.za**

Terms are on a strict payment-before-attendance basis, unless by special prior arrangement. Upon receiving your Training Booking Form, a reservation confirmation will be sent to the delegate as well as an invoice made out to the payee. Failure to attend the course without a two-week prior advice will levy a 50% charge to cover logistical expenses incurred. No refunds or credits will be entertained for any withdrawal. Only one postponement will be granted.



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STANDARDS OVERVIEW

SANS 121:2024 / ISO 1461:2022

STANDARDS ARE A “COMMUNICATION” TOOL THAT ALLOWS ALL USERS TO SPEAK THE SAME LANGUAGE ABOUT PRODUCTS OR PROCESSES. THEY PROVIDE FOR LEGAL, OR AT LEAST ENFORCEABLE, MEANS TO EVALUATE ACCEPTABILITY AND SALE-ABILITY OF PRODUCTS AND/OR SERVICES.



Ultimately standards are a means to protect a purchaser from questionable designs, products and practices. They provide the means by which engineers can best meet environmental, health, safety and societal responsibilities.

Roughly 80% of global merchandise trade is affected by standards and by regulations that embody standards. Standards and conformity assessment programs play a key role in the transfer of technology ultimately to ensure success in the marketplace.

They can be learnt and applied globally. Industry participation in the standards development process is essential.

Standards should be part of a life-long learning process. Check often for changes as they will affect your products and processes as an engineer, manager and end user. Find out what Standards are appropriate to your project or product

and include these appropriate Standards a part of your specification.

Understanding which standards are applicable and how they are used is critical to the quality of the outcome and expectations of all stakeholders. The poor habit of 'cut-and-paste'-specifications, when it comes to standards will inevitably give rise to unscheduled delays and challenges which could have been easily avoided at the outset.

Standards can:

- Maintain uniformity in product quality,
- Reduce unnecessary duplication,
- Lower costs,
- Improve productivity,
- Ensure safety,
- Simplify product development,
- Permit interchangeability, compatibility, and interoperability,
- Enhance the acceptance of products and much more.

Standards are typically designed for voluntary use and do not necessarily impose any regulations. However, laws and regulations may refer to certain standards and make compliance with them compulsory. Any standard is a collective work.

The South African Bureau of Standards (SABS) has been mandated to produce standards in South Africa. SABS is a statutory body that was established in terms of the Standards Act, 1945 (Act No. 24 of 1945) and continues to operate

in terms of the latest edition of the Standards Act, 2008 (Act No. 8 of 2008) as the national standardisation institution in South Africa, mandated to:

- Develop, promote and maintain South African National Standards (SANS);
- Promote quality in connection with commodities, products and services;
- Render conformity assessment services and assist in matters connected therewith.

Committees of manufacturers, users, research organizations, government departments and consumers work together to draw up standards that evolve to meet the demands of society and technology. SABS Standards' staff act as secretaries to these committees and project manage the production of standards. Crucial to this process are 450 technical committees and subcommittees that are responsible for developing standards. At present, more than 6100 standards are maintained by SABS Standards Division and new standards are developed at a rate of approximately 500 a year.

The Standards watchdog, in the South African context, is SANAS (South African National Accreditation System). SANAS is responsible for carrying out accreditations in respect of conformity assessments mandated through the Accreditation for Conformity Assessment, Calibration and Good Laboratory Practice Act (Act 19 of 2006). They are directed and legally represented by a Board of Directors whose members are appointed by the Minister of Trade and Industry. This Board delegates to the Chief Executive Officer (CEO) of SANAS the responsibility to implement the SANAS policies and objectives. The CEO delegates decisions concerning the granting,

extending, suspending or withdrawing of accreditation to the Approval Committee Chairperson. SANAS operates in accordance with the requirements, criteria, rules and regulations laid down in the following documents:

- The Accreditation for Conformity Assessment, Calibration and Good Laboratory Practice Act, 2006 (Act 19 of 2006).
- The requirements of the international standard ISO/IEC 17011: Conformity Assessment – General Requirements for Accreditation Bodies Accrediting Conformity Assessment Bodies.
- The requirements as stipulated in the various Memorandums of Agreement with the international bodies and the national regulatory bodies.

SANAS grants accreditation, certification and the scope of accreditation for Conformity Assessment Bodies (CAB's). In the fields of hot dip galvanizing the following CABs include but may not be limited to:

- SABS COMMERCIAL SOC LTD FAN*: C07a
- SANS 121
- SANS 32
- SANS 675
- SOUTH AFRICAN TECHNICAL AUDITING SERVICES (PTY) LTD FAN*: C25
- SANS 121 addendum 8
- SANS 10244-2 addendum 21
- SANS 675 addendum 19

*FAN = Facility Accreditation Number

Without standards there can be no objective assessment of quality and no means to provide customers with reliable, repeatable, predictable and sustainable solutions.



DESIGN FOR hot dip galvanizing

Introduction

When designing a structure which is to be hot dip galvanized, it must be borne in mind that articles are immersed into and withdrawn from a bath of molten zinc heated to a temperature of 450°C. Design and fabrication is required to conform to acceptable standards which apply, regardless of whether a galvanized or a painted coating is to be applied. In the case of hot dip galvanizing, some additional requirements which aid access and drainage of molten zinc, will improve the quality of the coating and also reduce costs.

With certain fabrications, holes which are present for other purposes may fulfil the requirements of venting of air and draining of zinc; in other cases it may be necessary to provide extra holes for this purpose.

For complete protection, molten zinc must be able to flow freely to all parts of the surfaces of a fabrication. With hollow sections or where there are internal compartments, the galvanizing of the internal surfaces eliminates any danger of hidden corrosion occurring in service.

In addition to using the correct specifications in terms of coating requirements, the steel chemistry should be of a quality suitable for galvanizing (See Chapter 7 of the *Steel Protection Guide (SPG)*).

Some general principles for guidance are:

- Holes both for venting and draining should be as large as possible. The absolute minimum hole sizes are given in *Table 1*.
- Holes for venting and draining should be diagonally opposite one another at the high point and low point of the fabrication as it is suspended for galvanizing (*Figure 1*).
- With hollow sections sealed at the ends, holes should be provided, again diagonally opposite one another, as near as possible to the ends of the hollow member (*Figure 2 and Photos A & B*). In some cases it may be more economical to provide "V" or "U" shaped notches (*Figure 3*) in the ends of the tubes, or to grind corners off rectangular hollow sections. These procedures will provide ideal means for venting and draining.
- Where holes are provided in end plates or capping pieces, they should be placed diagonally opposite to one another, off centre and as near as possible to the wall of the member to which the end plate is connected (*Figure 4*).
- Internal and external stiffeners, baffles, diaphragms, gussets etc., should have the corners cropped and angle bracings should if possible be stopped short of the main boom flange to aid the flow of molten zinc and to prevent air entrapment (*Figures 7, 8, 9 & 10*).
- Bolted joints are best made after hot dip galvanizing.



A



B

GUIDELINES FOR MINIMUM VENT FILL AND DRAINAGE HOLE SIZES – REQUIRED BY SECTION LENGTH											
Tube Dia	" 50	60 - 76	89	102 - 114	127 - 152	165	219	245	273	324	355
RHS Sizes (mm)	50 x 30	80 x 40	80 x 80	90 x 90	160 x 80	200 x 100	180 x 180	200 x 200	300 x 200	400 x 200	300 x 300
	60 x 40	70 x 70	120 x 60	120 x 80	120 x 120	150 x 150	250 x 150	220 x 220	250 x 250		450 x 250
	50 x 50	100 x 50		100 x 100	150 x 100				340 x 200		
	60 x 60	76 x 76			140 x 140						
Length (m)	Hole size (mm)										
1	10 (12)	10 (12)	10 (12)	12 (2x10)	16 (2x12)	20 (2x16)	25 (2x20)	30 (2x25)	30 (2x25)	40 (2x30)	40 (2x30)
2	10 (12)	10 (12)	12 (2x10)	12 (2x10)	16 (2x12)	20 (2x16)	25 (2x20)	30 (2x25)	30 (2x25)	40 (2x30)	50 (2x40)
3	10 (12)	12 (2x10)	12 (2x10)	12 (2x10)	16 (2x12)	20 (2x16)	25 (2x20)	30 (2x25)	40 (2x30)	50 (2x40)	50 (2x40)
4	12 (2x10)	12 (2x10)	16 (2x12)	16 (2x12)	16 (2x12)	25 (2x20)	25 (2x20)	30 (2x25)	40 (2x30)	50 (2x40)	2x50 (3x40)
5	12 (2x10)	16 (2x12)	16 (2x12)	16 (2x12)	25 (2x20)	25 (2x20)	30 (2x25)	30 (2x25)	50 (2x40)	50 (2x40)	2x50 (3x40)
6	12 (2x10)	16 (2x12)	20 (2x16)	20 (2x16)	25 (2x20)	25 (2x20)	50 (2x30)	50 (2x40)	50 (2x40)	2x50 (3x40)	2x50 (3x40)
7	16 (2x12)	16 (2x12)	20 (2x16)	20 (2x16)	25 (2x20)	25 (2x20)	50 (2x30)	50 (2x40)	50 (2x40)	2x50 (3x40)	2x50 (3x40)
8	16 (2x12)	16 (2x12)	20 (2x16)	25 (2x20)	25 (2x20)	2x25 (3x20)	50 (2x30)	50 (2x40)	2x50 (3x40)	2x50 (3x40)	2x50 (3x40)
9	16 (2x12)	16 (2x12)	25 (2x20)	25 (2x20)	2x25 (3x20)	2x25 (3x20)	50 (2x30)	2x50 (3x40)	2x50 (3x40)	2x50 (3x40)	2x50 (3x40)
10+	20 (2x16)	25 (2x16)	25 (2x20)	25 (2x20)	2x25 (3x20)	2x25 (3x20)	50 (2x30)	2x50 (3x40)	2x50 (3x40)	2x50 (3x40)	2x50 (3x40)

Note: The hole sizes specified above may be substituted with a larger number of smaller holes (minimum ø 10mm for vent and ø 12mm for fill/drain hole)

Table 1.

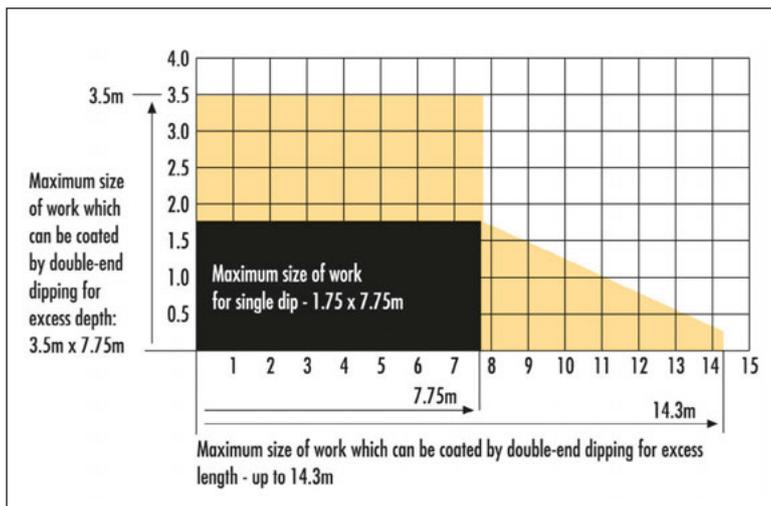


Table 2.

Hot dip galvanizing oversize objects

Facilities exist to hot dip galvanize articles of virtually any size and shape. (See *list of members with bath sizes – refer to www.hdgasa.org.za*). When an article is too big for single immersion in the largest bath available it may be possible to galvanize it by double-end dipping (Figure 5 and Table 2), depending on the handling facilities and layout of the galvanizing plant (check with the galvanizer). Note: The cost of double end dipping can be higher than the standard cost of hot dip galvanizing. Large cylindrical objects can often be

galvanized by progressive immersion (Figure 6).

These processes increase the potential for distortion as they introduce uneven heating into the object. The area immersed in the bath is raised to the full galvanizing temperature and therefore expands more than the portion remaining outside of the kettle. This is more pronounced during the first dip when the object is raised from room temperature. It is the differential heating and the resulting difference in expansion that may cause the product to distort. Dipping the second part of the fabrication will not remove any distortion that has already occurred.

This problem will be aggravated if vent and drain holes are undersized as this will require longer galvanizing times while the object fills with zinc and drains while removing. This increased time exaggerates the differential expansion along the steel and hence the possibility of distortion.

These problems can be overcome or reduced by:

- Large structures are also hot dip galvanized by designing in modules for later assembly by bolting or welding. Modular design techniques often produce economics in manufacture and

assembly through simplified handling and transport.

- Ensuring that vent and drain holes are adequately sized to enable rapid immersion and withdrawal of the object (Table 1).
- Allowing for linear expansion in the design so that any distortion is plastic and not constrained by cross bracing.
- Utilise the longest bath available for the galvanizing.

These problems are rarely experienced in simple pipes, poles or thin spiral sections because of their symmetry and simple design.

Steel grade

It is possible to hot dip galvanize all structural steels and the ultimate coating thickness achieved is determined by steel analysis, immersion time and to a lesser degree, zinc temperature. It is for this reason that hot dip galvanizing specifications provide for minimum coating thickness and no maximum limit is set (See NOTE 1 in Chapter 10 of the SPG). Reactive levels of silicon in steel and excessively high phosphorus even at relatively low silicon levels can result in thicker coatings. Thicker coatings provide extended corrosion protection but can occasionally be prone to brittleness. The resultant coating could be aesthetically less pleasing sometimes displaying dull grey to black surface patches. (See Chapter 7 of the SPG).

Fabrication

Bending

Steels that are susceptible to embrittlement and fatigue failure should be bent over a smooth mandrel with a minimum radius 2 to 3 times material thickness. Where possible hot work at red heat. Cold bending is unlikely to affect steels less than 3mm thick. Before bending, edges should be radiused over the full arc of the bend.

Bending and forming after hot dip galvanizing

Components which have been hot dip galvanized should not be bent or formed by applying heat above the melting temperature of zinc as this can cause embrittlement due to intergranular liquid zinc penetration between steel crystal boundaries.

Burrs

Unlike a paint coating, burrs will be overcoated by hot dip galvanizing but the removal of a burr after galvanizing may result in the presence of a small uncoated surface and for this reason, burrs must be removed prior to galvanizing.

Edges

Because a hot dip galvanized coating is formed by metallurgical reaction between molten zinc and steel, the coating thickness on edges and corners is thicker than that on flat surfaces. Thus the rounding of sharp edges, as required for paint coatings, is not necessary. If subsequent painting is required, sharp edges should be rounded during fabrication to a radius of 3mm or 50% of steel thickness.

Edge distances

In accordance with SANS 10162 Clause 22.3.2, which defines edge distance as *"the minimum distance from the centre of a bolt to any edge shall be in accordance with Table 8"*.

Punching

Full size punching of holes is permitted when (amongst other requirements such as distortion free, burr free, not subject to fatigue), according to Clause 4.3.6.3.c of SANS 2001-CS1, *"the thickness of the material is not greater than the hole diameter plus 3mm; nor greater than 12mm"*.

Clause 4.3.6.4 Punching and reaming reads: *"Punching is permitted without the conditions of 4.3.6.3 provided the holes are punched at least 2mm less in diameter than the required size and the hole is subsequently reamed to the full diameter."*

Material of any thickness may be punched at least 3mm undersize and then reamed, or be drilled. Good shop practice in relation to ratios of punched hole diameter to plate thickness, and punch/die diametral clearance to plate thickness should be observed.

For static loading, holes may be punched full size in material up to $\frac{4500}{F_y}$ mm thick

where F_y is material yield stress up to 360MPa.

Shearing and flame cutting

Edges of steel sections greater than 16mm thick subject to tensile loads should be machined or machine flame cut. Edges of sections up to 16mm thick may be cut by shearing.

Sheared edges to be bent during fabrication should have stress raising features such as burrs and flame gouges removed to a depth of at least 1.5mm.

Temperatures associated with flame cutting alter the surface properties of steel and if such surfaces are not thoroughly ground, a thinner galvanized coating will be formed (usually below the specified minimum).

Welding and weld slag

Welds should be continuous and free from excessive pin-holing and porosity. Weld slag, normally associated with stick welding, is not readily removed by acid cleaning and such slag must be removed by abrasive blast cleaning, chipping, grinding, flame cleaning or a pneumatic needle gun, prior to hot dip galvanizing. Shielded arc welding is preferred since this method does not result in the presence of tightly adhering slag (*Figure 11 and Chapter 14 of the SPG*). In order that the weld seals and continues at the end of a double sided fillet weld, consider chamfering the long edges and do a full penetration weldment along both sides with runouts on each end to ensure full seal welds (*Figure 19*).

Weld spatter

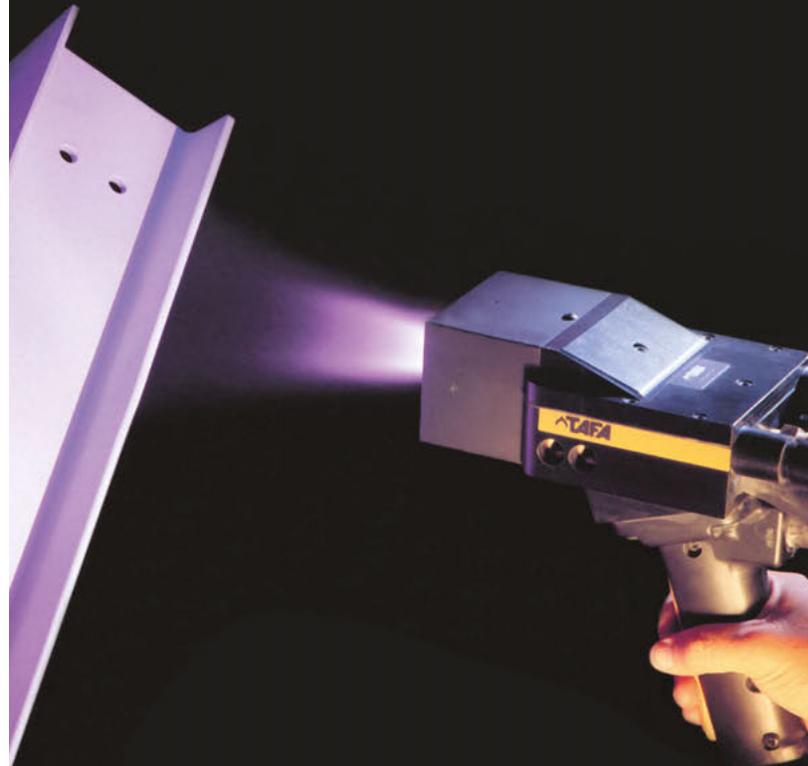
Weld spatter does not reduce the protective properties of a hot dip galvanized coating to the same extent as with a paint coating, but it is recommended practice to remove spatter prior to hot dip galvanizing.

Venting, filling and drainage

External stiffeners, welded gussets and webs on columns and beams and gussets in channel sections should have cropped corners. The gaps created should be as large as possible without compromising structural strength. If welding is required around the edge created, a radiused corner is desirable to facilitate continuity of the weld around the cut end to the other side. Circular holes are less effective: if used, they should be as close to corners and edges as practical. Where more

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convenient, the cropped corners or holes may be in the main beam. Consultation with the galvanizer, regarding the appropriate vent and drainage hole sizes is recommended (*Figure 7 and Table 1*).

Welded pipe sections

Closed sections must never be incorporated in a fabrication. Sections should be interconnected using open mitred joints as illustrated in *Figure 12*, or interconnecting holes should be drilled before fabrication as in *Figure 13*.

Alternatively external holes may be positioned as in *Figure 14*, a method which is often preferred by the galvanizer, since quick visual inspection shows that the work is safe to hot dip galvanize.

Pipe ends can be left open, or provided with removable plugs (*see Unwanted vent holes*).

Unwanted vent holes

These may be closed by hammering in lead or aluminium plugs after galvanizing and filing off flush with surrounding surfaces.

Small tubular fabrications

Small tubular fabrications must be vented, preferably with holes not less than 10mm diameter (*Table 1*).

Tubular fabrications / hollow structurals

Drain/vent hole sizes should preferably be 25% of internal diameter or diagonal dimension for components with a maximum cross sectional area of 180cm². This percentage can be influenced by the shape of the fabrication. Consultation with the galvanizer at the design stage is recommended.

Tubular fabrication after hot dip galvanizing

The requirement for bending tubes after hot dip galvanizing, ie. for the fabrication of gates etc. must be carried out according to the method set out in the Bend Test (galvanized tube). *See 11.6 Testing for Adhesion and Note 2, regarding coating thickness, Page 37 of the SPG.*

Tanks and closed vessels

When both internal and external surfaces are to be hot dip galvanized at least one filling and draining hole must be provided,

with a vent hole diagonally opposite to allow the exit of air during immersion (*Figure 15*). For each 0.5 cubic metres of volume, provide at least one fill/drain hole of minimum size $\varnothing 60\text{mm}$ and vent hole of minimum size $\varnothing 40\text{mm}$ or both at $\varnothing 60\text{mm}$ (*Figure 16*).

Internal baffles should be cropped as illustrated (*Figures 9 & 16*). Man-holes or pipes should finish flush inside to prevent trapping excess zinc (*Figure 17*).

Lifting lugs should be provided opposite the biggest and most accessible filling / draining holes and adjacent to the vent hole on the opposite end (*Figure 1*). The lugs must be designed to accommodate the excess mass of molten zinc within the cylinder / pipe on withdrawal.

Large vessels require an appropriate size manhole in the baffle.

When vessels and heat exchangers etc., are not to be galvanized internal, 'snorkels' or extended vent pipes must be fitted to allow air or steam to exit above the level of molten zinc in the galvanizing bath (*Figure 18*).

Masking, welding, handling, clearance for moving parts and identification

Masking

Masking materials have been developed, which if applied prior to hot dip galvanizing, will prevent the formation of the galvanized coating on surfaces where it is not required.

Combinations of ferrous surfaces

Fabrications containing a combination of castings and steels, or rusted and mill scaled surfaces must be abrasive blast cleaned before hot dip galvanizing.

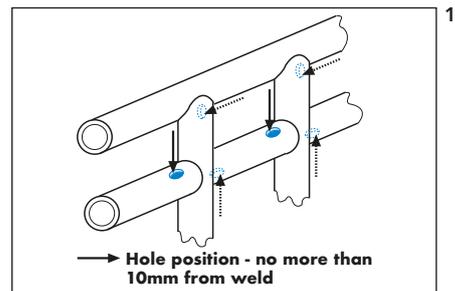
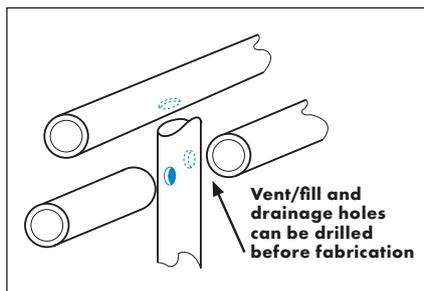
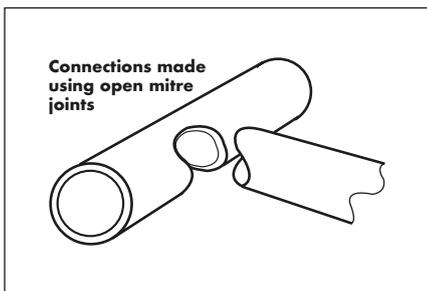
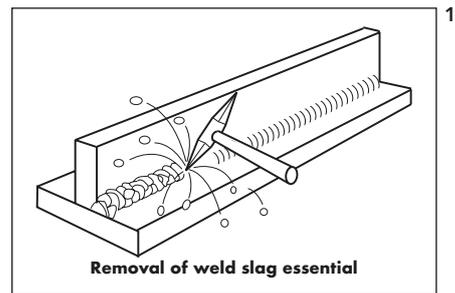
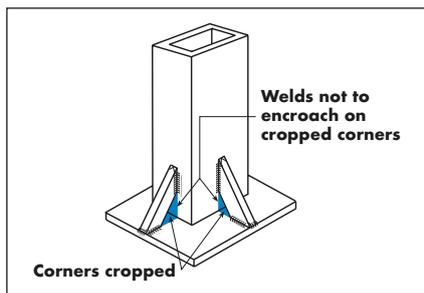
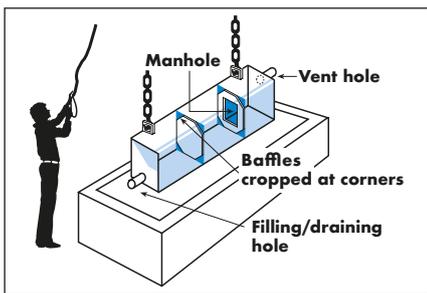
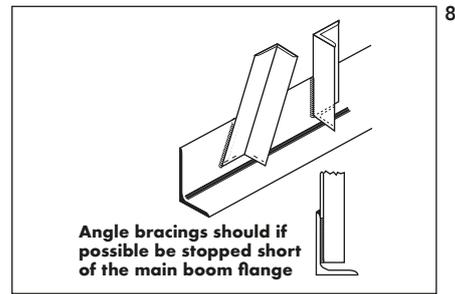
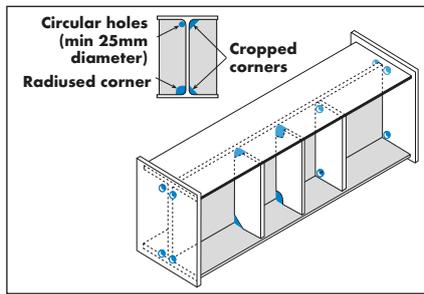
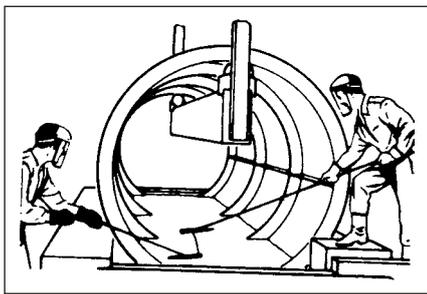
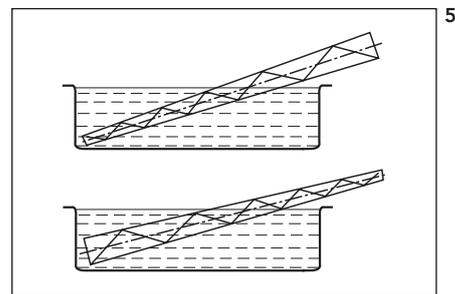
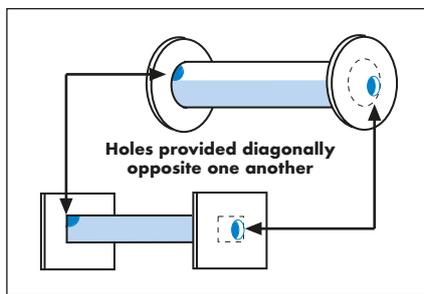
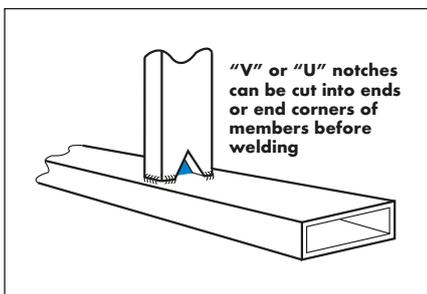
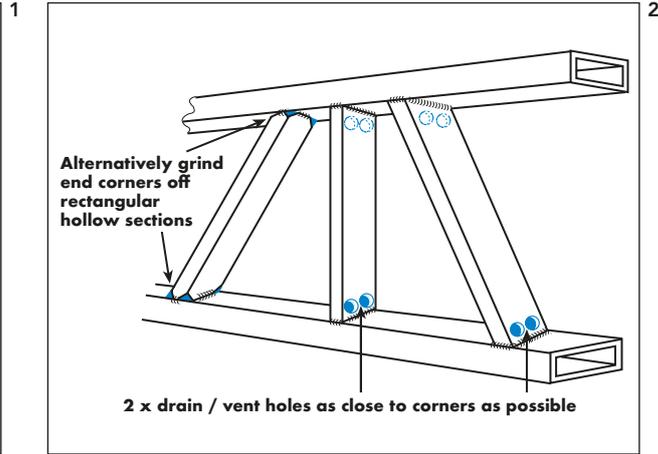
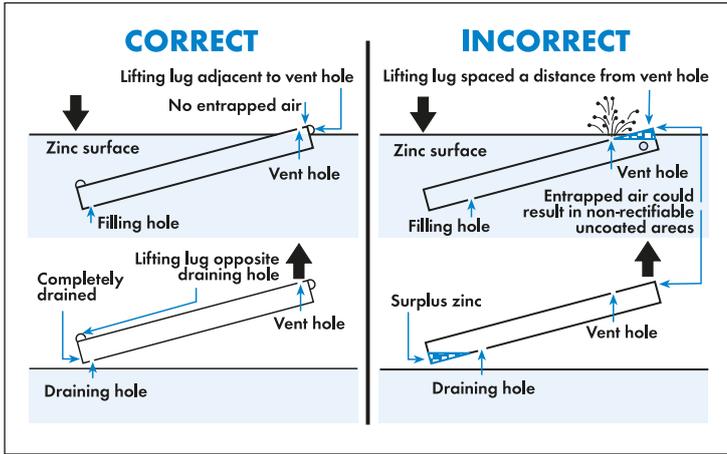
Provision for handling

Work not suitable for handling with chains, baskets, hooks or jigs must be provided with suspension holes or lifting lugs (*Figure 1*). If in doubt, consult the galvanizer.

Materials suitable for hot dip galvanizing

All ferrous materials are suitable, including sound stress-free castings.

Brazed assemblies may be hot dip galvanized but first consult the galvanizer. Assemblies soft soldered or aluminium rivetted cannot be hot dip galvanized.



Overlapping surfaces

A minimum gap of at least 2mm between overlapping surfaces and back-to-back angles and channels, must be provided (Figures 20, 21 & 22).

When small overlaps are unavoidable, seal edges by welding.

In circumstances where seal welding is not practical, a degree of temporary surface staining at crevices may be apparent after hot dip galvanizing and quenching. This is often incorrectly described as acid staining. Clean with a bristle brush and mild detergent if necessary. If necessary crevices of this nature can be sealed after hot dip galvanizing with an appropriate sealant.

Larger overlapping surfaces

If contacting surfaces cannot be avoided, one 10mm diameter hole should be provided in one of the members for every 100cm² of overlap surface. The perimeter of the contacting surface can be continuously welded. This requirement is of particular importance when using thin sections. Vent hole sizes for thicker steels >10mm thick and overlap areas >300cm² should be agreed upon by the galvanizer prior to fabrication (Figures 23 & 24). A vent hole in one member will ensure the safety of galvanizing personnel and prevent damage to the article. Alternatively provide at least a 2mm gap between members.

Strengthening gussets and webs

Welded strengthening gussets and webs on columns and beams, and strengthening gussets in members fabricated from channel or I-beam sections should have corners cropped or holed (Figures 7 & 10 and Photos C & D):

- to prevent the entrapment of air in pockets and corners allowing complete

Shaft or spindle size	Minimum radial clearance
Up to 30mm diameter	2,0mm
Over 30mm diameter	2,0 - 2,5mm

Table 3.

access of pickle acids and molten zinc to the entire surface of the product, and

- to facilitate drainage during withdrawal from degreaser, acid solutions, rinsewater, flux and molten zinc.

Clearance for moving parts

Drop handles, hinges, shackles, shafts and spindles require a radial clearance, to allow for the thickness of the hot dip galvanized coating (Figure 25 and Table 3).

Identification markings

For permanent identification use heavily embossed, punched or welded lettering (Figure 26). For temporary identification use heavily embossed metal tags wired to the work, water soluble paint or an appropriate marking pen.

Do not use paints, adhesive labels or any other product that cannot be readily removed by degreasing or pickling (Figure 27). If present, these coatings require to be removed by paint stripper or abrasive blasting prior to pickling and hot dip galvanizing.

Hot dip galvanized fasteners

Hot dip galvanized fasteners are recommended for use with hot dip galvanized or painted structures, but if SANS 121/ISO 1461 is not specified, there is every likelihood that thinner zinc electro plated coatings will be supplied. (See Chapter 13 of the SPG).

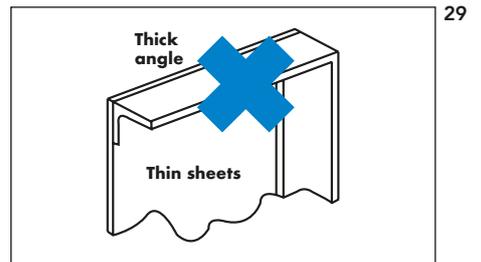
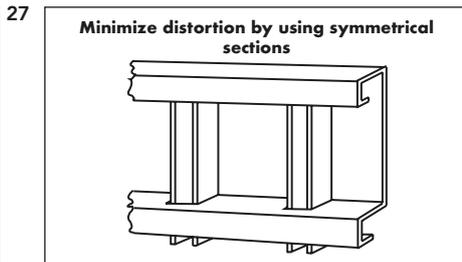
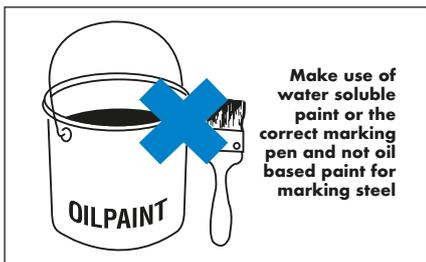
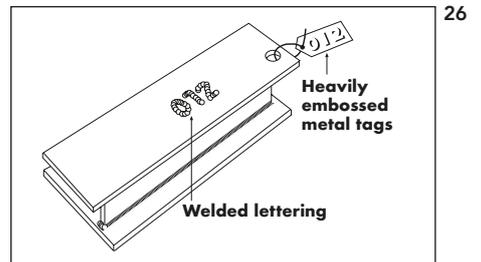
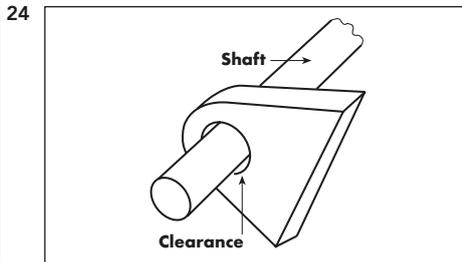
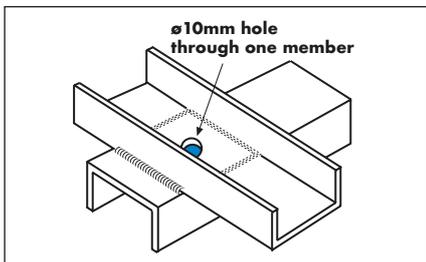
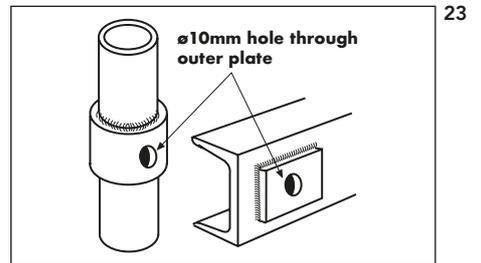
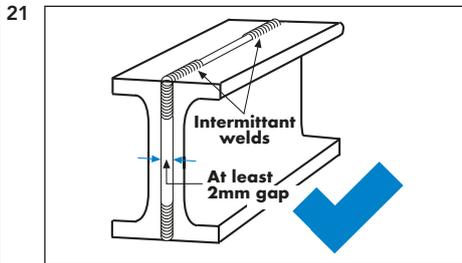
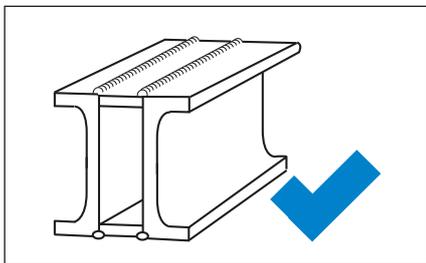
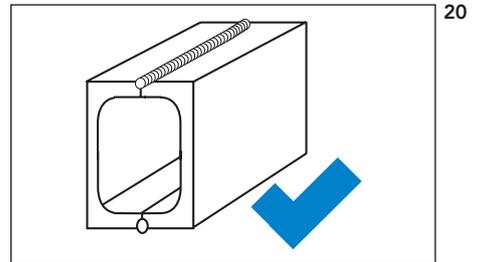
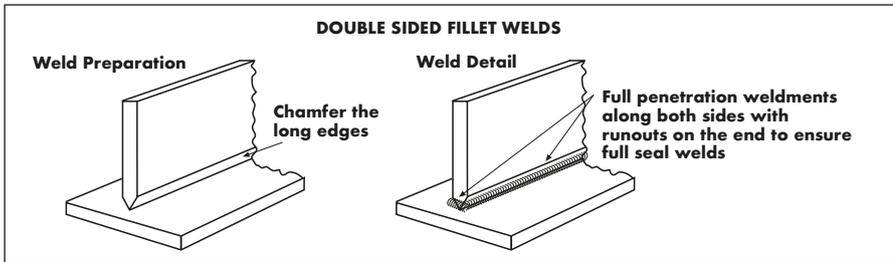
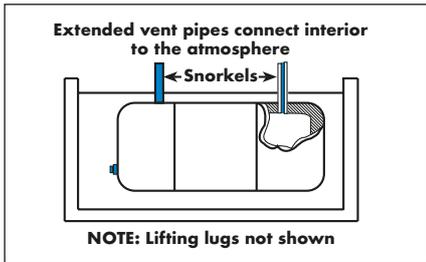
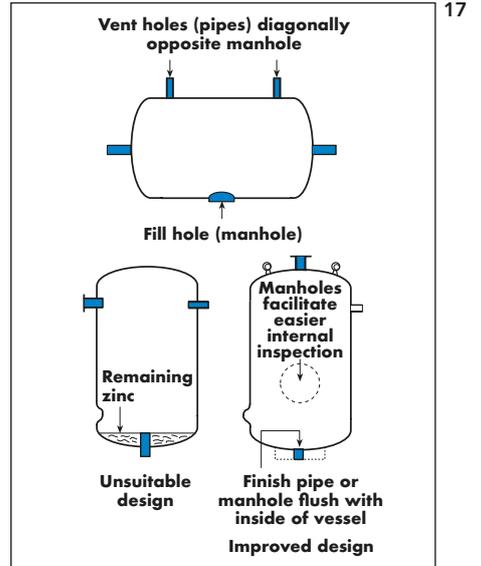
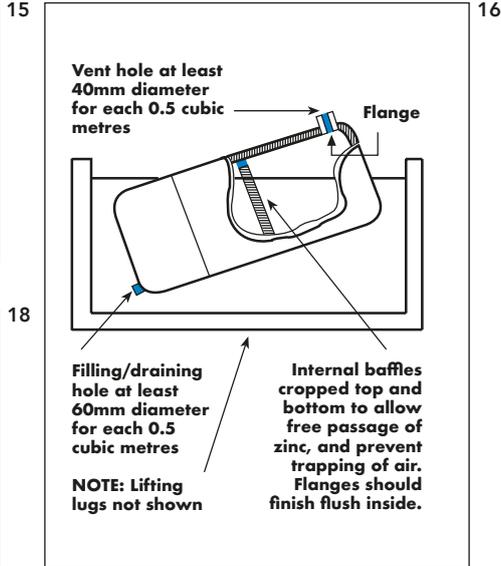
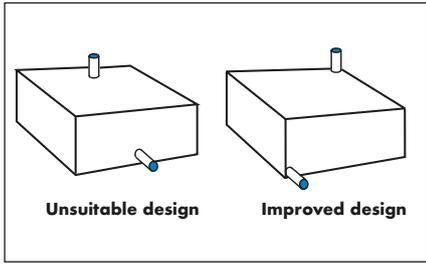
Preventing distortion

Distortion

Distortion can be minimised by:

- Use of symmetrical designs (Figure 28).
- Use of sections of a similar thickness (Figure 29).
- Use of stiffened sections, particularly when steel is unsupported and of less than 3 - 4mm thick (Figure 30 and Photo E).
- Use of preformed members with the correct minimum bend radius to minimise stress.





- Use of balanced or sequence welding techniques to minimise stresses.
- Large open fabrications, thin walled trough sections and rectangular tanks may require temporary cross stays to prevent distortion during hot dip galvanizing (*Figure 33 and Photos F & G*).
- Maximise fill, drain and vent hole sizes and optimize their relative positions (*Table 1*).
- Complete and rapid immersion of the item in the galvanizing bath i.e. avoid double end dipping if possible.
- Air cooling after hot dip galvanizing in preference to water quenching.

Use of symmetrical sections minimises distortion during hot dip galvanizing.

Products shaped by bending

Many items are formed by bending them to the correct shape at the fabricating stage. This process induces stress into the product, which may be relieved during the hot dip galvanizing operation. This

occurs as the molten zinc temperature of around 450°C is at the lower end of the stress relieving temperature for steel. Consequently the stresses used to shape the product may be released giving a resultant change in shape or dimension of the product.

Consider the case of a plate rolled to form part of a circle. During hot dip galvanizing, the release of stress will cause the radius of the circle to increase, and so the final fabricated circle pieces may not meet up (*Figure 31*).

These difficulties can be overcome by installing temporary braces across the section to ensure that the object retains its desired shape. The braces would be either welded or bolted in position, with a size proportional to the size and thickness of the plate they are retaining. If bolted, a flat washer may be used as a spacer between the brace and article to be hot dip galvanized (*Figure 32*). The smaller the spacer the smaller the final repair area.

The braces should be located at least at quarter points of the structure. Similar results can be obtained with bent troughs, angle frames or with channels (*Figure 33 and Photos F & G*).

It will be necessary to repair the area where the braces have been removed using an approved repair material.

Welding or fabrication induced stress

It has been said that the internal stresses due to welding play the greatest part in creating distortion. Because the steel is heated to 450°C during galvanizing, the stresses introduced by welding are released and this may occasionally give rise to distortion. Welding, however, plays an essential part in creating the fabrications which are to be hot dip galvanized. It is therefore important to understand how these forces are generated and to minimise them during the fabrication to obtain a satisfactory product after hot dip galvanizing.

Fortunately, by following a few simple rules it is possible to get much improved results. These basic rules are:

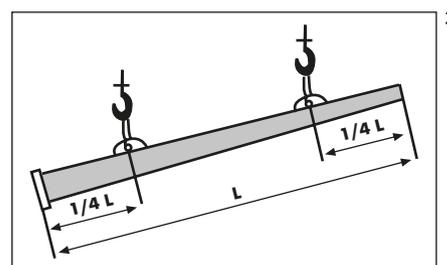
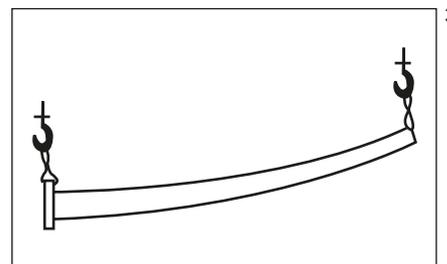
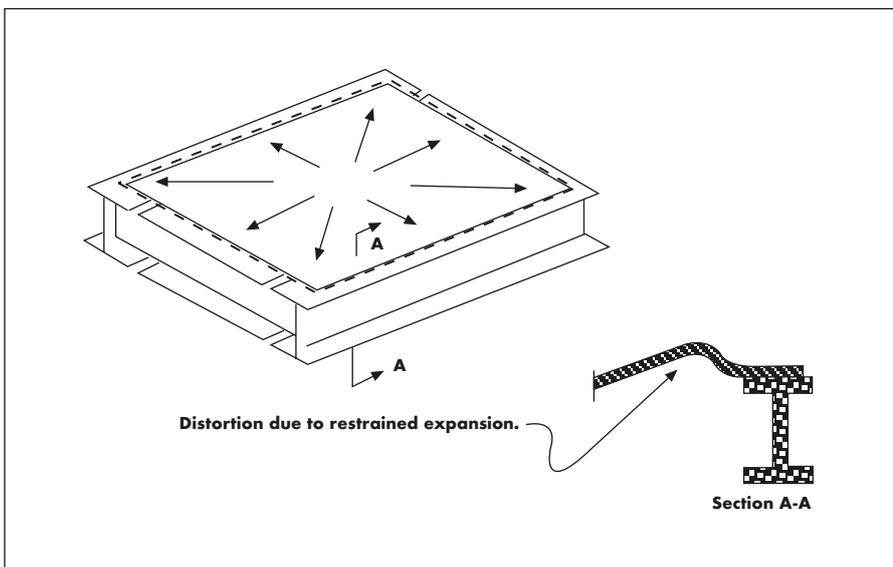
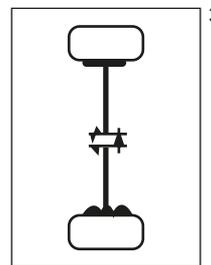
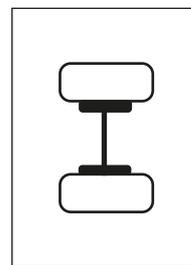
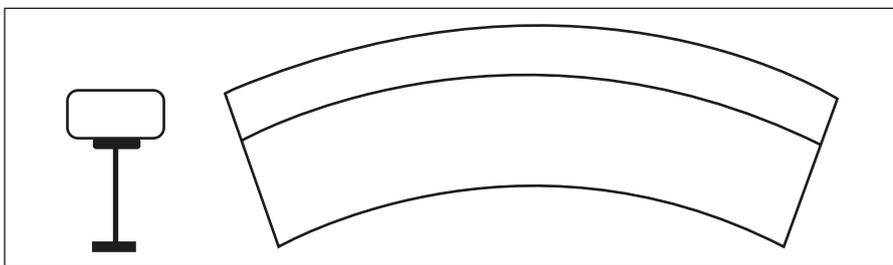
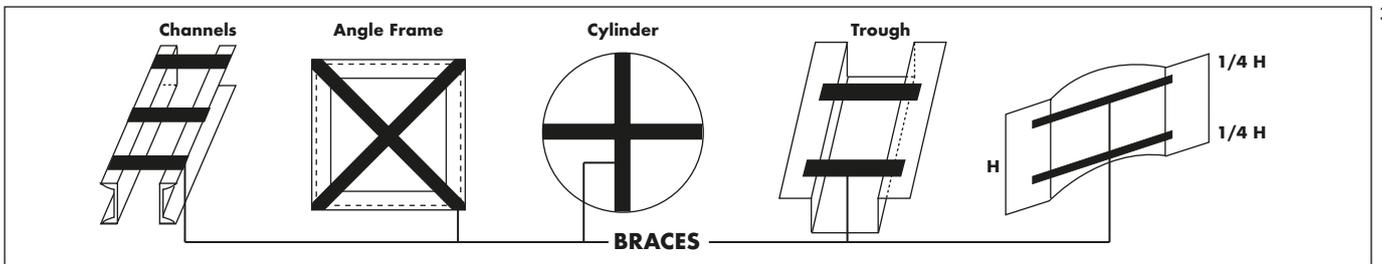
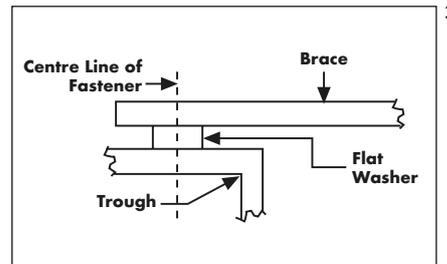
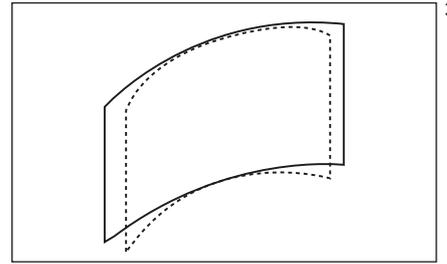
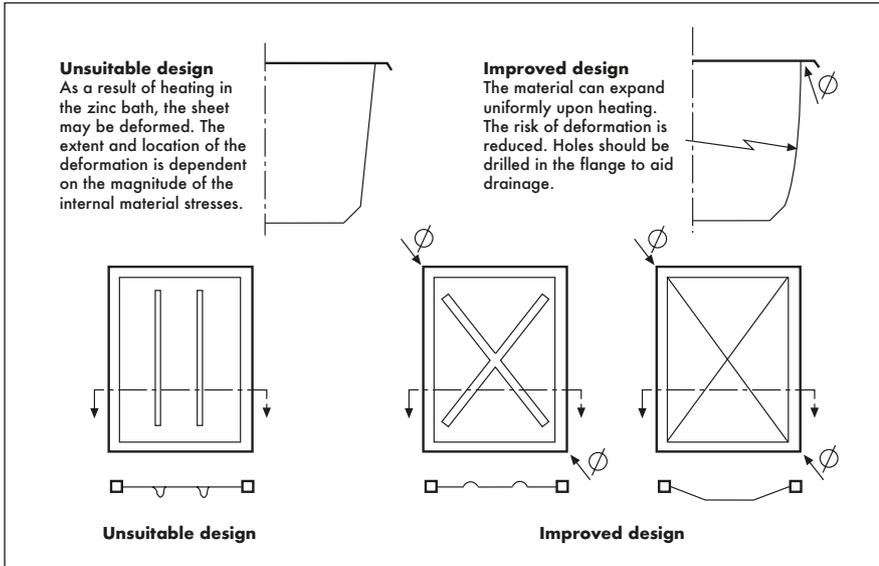
- Avoid overwelding, welds should be no larger than is essential for the structural integrity of the fabrication.
- Welding should be as symmetrical as



E



F



possible in order to ensure the stresses are balanced. This can be done by placing welds near the neutral axis or by balancing them around this axis.

- Use a well planned, balanced welding sequence. With large structures extra care should be taken that stresses are minimised by preparing and working to a welding plan.
- Weld seams which significantly reinforce the structural strength should as far as possible be welded last so that do not hinder the contraction of other welds.
- Use as few weld passes as possible and reduce the welding time to control the heat input.
- Make weld shrinkage forces work in the desired direction or balance shrinkage forces with opposing forces.
- Use backstep welding or staggered welding to minimise stresses.

If a steel fabrication distorts either after welding and before or after hot dip galvanizing due to these stresses, it is possible to restraighten the item. Best results are obtained by hot straightening either before or after hot dip galvanizing. Preference should be given to hot straightening before as the time required is less and the possibility of damage to the zinc coating is avoided. Tests confirm that hot straightened components which were within tolerance before hot dip galvanizing do not distort again during the galvanizing process as the stresses have already been relieved.

Fabrications that lack symmetry

When fabrications are substantially symmetrical in both the horizontal and vertical planes, they have a much lower potential to distort at galvanizing

temperatures. Under these conditions, the expansion forces are balanced and the product does not suffer any distortion. This condition exists with tubes, I-beams, RHS and other similar sections. When these sections are combined in a fabrication, it is possible to remove this symmetry.

Consider the case where a piece of thin walled RHS is welded to the top of an Ibeam section. In this situation, the geometric shape is no longer symmetrical, even though the two individual components are.

The thinner walled tube will reach the galvanizing temperature sooner than the thicker flange at the bottom. As a result, the RHS will expand faster than the bottom flange, causing the section to experience an upwards bow (Figure 34).

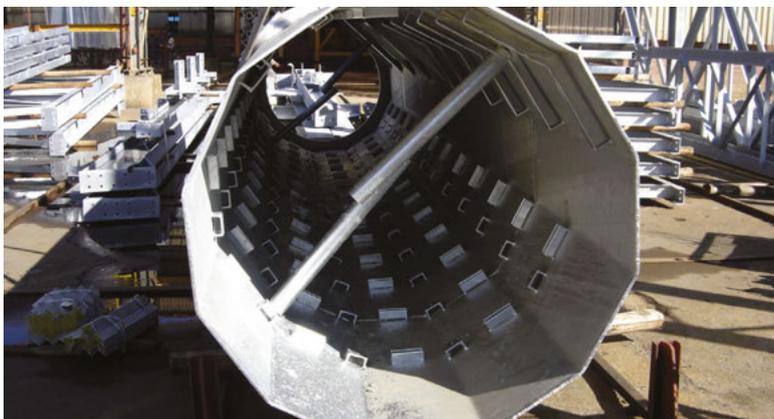
Sections which are not symmetrical, such as channels and angles will experience similar problems because of their inbuilt asymmetry. In the case of channels, the section will bow with the toes pointing outwards.

There are three recommended ways to overcome this type of problem.

- Redesign the fabrication to make the design symmetrical. This will enable the forces to balance each other and prevent distortion.
- Fabricate and galvanize the individual components as separate pieces, then weld them together after hot dip galvanizing. The welds can be touched up with a suitable galvanizing repair material.
- When multiple pieces are available they can be hot dip galvanized back to back by using bolts with pipe spacers to separate the pieces. The assembly would be separated after cooling completely and the spacer contact area repaired with a suitable galvanizing repair material (Figures 35 & 36).

Using thick and thin material in an assembly

When thin material is heated during galvanizing, it expands faster than any thick material heated at the same time. This is because the thinner material takes less time to be fully heated to the galvanizing temperature. The thinner material will therefore distort if its expansion is restrained by thicker material.



G

Consider the common case where a thin steel sheet is welded to the frame of a trailer to form a tray. This sheet is generally securely attached by welds around its perimeter. If, for example, the sheet is only half as thick as the material used in the frame, it quickly reaches the galvanizing temperature of around 450°C and so has reached the point where maximum expansion will occur.

The frame being made of thicker material will not yet have reached the same temperature and so will not have expanded as much as the thinner sheet. Because of the restraints from the welds around the perimeter, the sheet cannot push its growth outwards at the edges, and so the increase in size causes buckles to occur in the sheet surface (*Figures 29 & 37 and Photo I*).

There are two recommended methods of overcoming this problem:

- Hot dip galvanize the sheet and frame separately and then join them after galvanizing. This may be done using mechanical fasteners such as screws or bolts. If welding is used then the welds will need to be touched up with galvanizing repair material.
- Use the same thickness of material for both the frame and the sheet.

In some cases this buckling of the surface may be acceptable (*Photo H*), as the material is fully protected against corrosion, however once this type of distortion occurs, it cannot be readily corrected after galvanizing.

Long thin objects

Long thin objects include poles, tubes and larger RHS sections. Generally these objects will not distort due to their symmetrical nature, however if they are lifted at both ends, they may take on a characteristically bowed shape following

the galvanizing process (*Figure 38*).

This bowing is caused when the steel is heated to the galvanizing temperature of 450°C. When withdrawing from the galvanizing kettle, the products own weight may exceed the yield strength of the steel at this temperature, causing the object to bow. This bowing becomes permanent as the steel cools.

If the product has not been designed with sufficiently large vent and drain holes, the problem can be aggravated by additional zinc being trapped inside the object when it is lifted. Further problems are created by this as the time taken for the zinc to drain allows the deformation of the steel to continue for a longer period and the bowing to become worse.

There are two recommended ways to reduce this problem:

- Lifting lugs or holes should be provided at the quarter points of these products so that they do not need to be lifted at the ends (*Figure 39*).
- Vent and drain holes should be placed and sized to maximise the rate of drainage and minimise the retention of zinc inside the section (*Figure 1 and Table 1*).

Packaging and transporting of hot dip galvanized steel

Even though the hot dip galvanized coating is capable of withstanding fairly rough treatment it should be handled with care during storage and transportation. In the case of long sections, simple packaging and binding into bundles not only prevents handling damage but it often facilitates transportation itself. Packaging and binding should be done in such a way as to avoid the risk of wet storage stain. Spacers should be used to facilitate air circulation between components (*See Photo J*).



GAUTENG



ARMCO SUPERLITE

Consistently delivering superior quality galvanized products to all our customers



Andre Jacobs, GM



Jonathan Moraba,
Quality Manager



Duncan Ackerman,
Sales

ABOUT

Armco Superlite is a wholly owned subsidiary of O-Line Support Systems (Pty) Ltd who were acquired in 2012 by OBO Bettermann of Germany.

Armco practices a cradle to grave policy with regards to our chemicals which emphasizes who we buy from and what happens to the products after use. Our Isando and Randfontein plants have been licensed under the "National Environment: Air Quality Act, (Act No. 39 of 2004), standards and regulations.

CONTACT DETAILS

Randfontein:

Telephone:
+27 (0)11 693 5825

Physical Address:
23 Fiat Street, Aureus
Randfontein

Isando:

Telephone:
+27 (0)11 974 8511

Physical Address:
131 Anvil Road, Isando

Email:
mail@armco.co.za

Website:
https://www.armco.co.za

SERVICES OFFERED

- Fabrication / jobbing
- Degreasing System: – Alkali / Acid Pickle: – HCl
- Drying Oven
- Collection/Delivery
- SABS ISO 9001 listing

BATH SIZES (l x w x d):

Isando Bath: 13m x 1.45m x 2m

Randfontein Bath: 6m x 1.45m x 1.8m

Armco Galvanizers

Armco Superlite is listed in accordance with the BSI ISO 9001:2015 quality scheme which ensures the quality of all products and services produced by Armco Superlite. Specific customer quality plans are drawn up where required for any of our operations.

Armco holds the SATAS mark for Hot Dipped Galvanizing and all Galvanizing done at our premises is in accordance to the SANS 121 / ISO 1461 specifications. Galvanizing certificates are supplied on request.

ISANDO

Armco Galvanizers Isando has been operating since 1989.

Geared up to accommodate heavy structural steel of up to 13m in length, Isando has an average output of approximately 2000 tons per month.



RANDFONTEIN

Armco Galvanizers Randfontein is our second facility based in the Randfontein area.

Randfontein has an average output of approximately 800 tons per month and is geared up to handle light to medium structural steel of up to 6m in length.



GALVANIZING BATH SIZES



ISANDO

13m x 1.45m x 2m
(length x width x depth)



RANDFONTEIN

6m x 1.45m x 1.8m
(length x width x depth)

GAUTENG



LIANRU GALVANISERS (PTY) LTD

Exceeding our customers' expectations



Ockert Engelbrecht



Nelis Pienaar



Leroux Pienaar

ABOUT

Lianru Galvanisers was established in 1996 and currently has approximately 160 employees.

Specialising in hot dip galvanizing, we operate 24 hours per day, six days a week, servicing the requirements of the Gauteng area. We are registered members of the Hot Dip Galvanizers Association of Southern Africa and S.A.B.S ISO 1461 approved.

We have 4 x 8 ton trucks, 6 x 13 meter trailers, 2 x 1 ton L.D.V.'s and 2 x man horses.

SERVICES OFFERED

- Fabrication/General
- Degreasing System: – Alkali / Acid Pickle: – HCl
- Collection / Delivery Transport
- Abrasive Blasting

BATH SIZES (l x w x d):

Bath 1: 7.2m x 1.3m x 1.6m

Bath 2: 4.5m x 1.3m x 1.6m

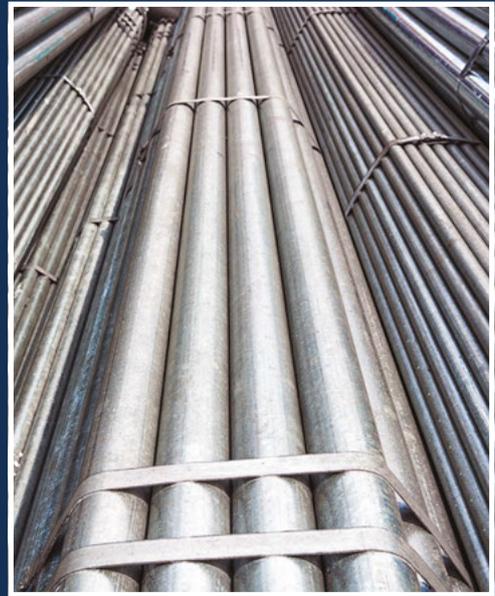
CONTACT DETAILS

Telephone:
+27 (0)11 814 3080

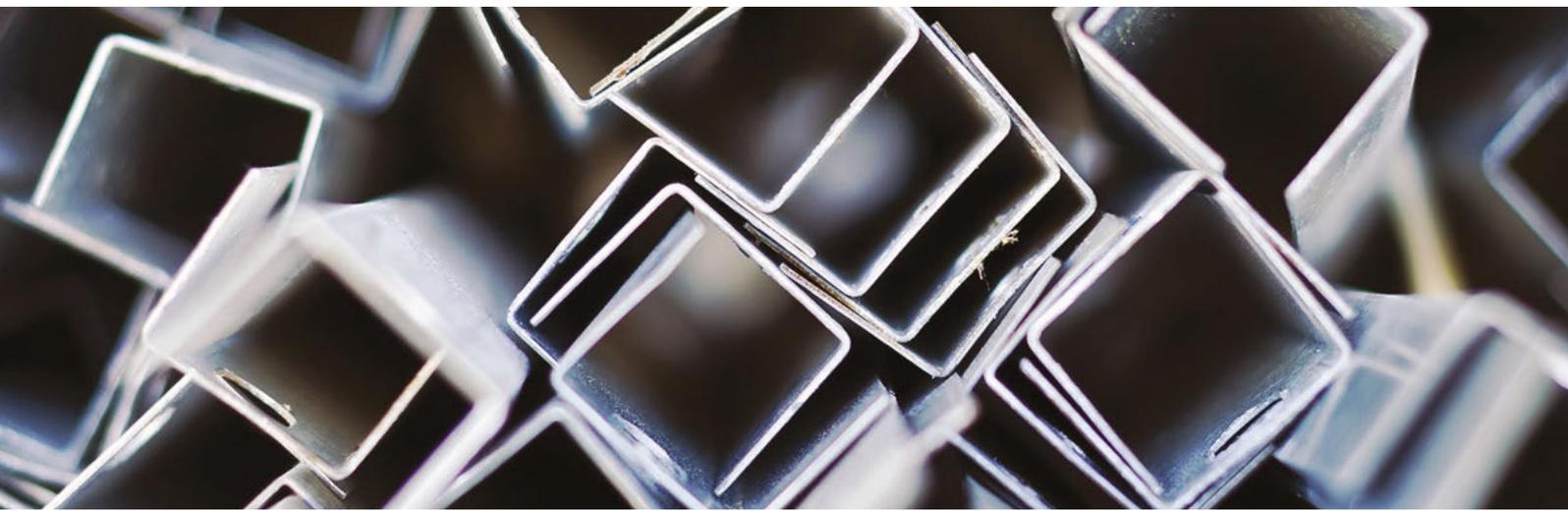
Email:
calis@lantic.net

Website:
www.lianru.co.za

Physical Address:
14 Fifth Street, Vorsterskroon,
Nigel



HOT DIP GALVANIZING SPECIALISTS



**CONTINUOUSLY MANUFACTURING
THE HIGHEST QUALITY PRODUCTS**



Registered members of Hot Dip Galvanising Association of S.A. and S.A.B.S ISO 1461 approved.

LIANRU GALVANISERS (PTY) LTD

Tel.: +27 (0)11 814 3080 Email: calis@lantic.net Website: www.lianru.co.za

14 Fifth Street, Vorsterskroon, Nigel

GAUTENG



MONOWELD GALVANIZERS

Superior capability

ABOUT

Monoweld Galvanizers is well equipped to handle any large project where speed of throughput is a critical requirement. This world class German-manufactured kettle from Pillings is complemented by a state-of-the-art, gas fired furnace system which should see the company reduce its dependence on electricity and working greener to reduce its carbon footprint. There is an abundance of space for loading, post galvanizing inspection and warehousing, with eight loading bays and in excess of 12 000m² of warehouse area. The facility is served by 30 overhead cranes and 5 forklifts.

BENEFITS

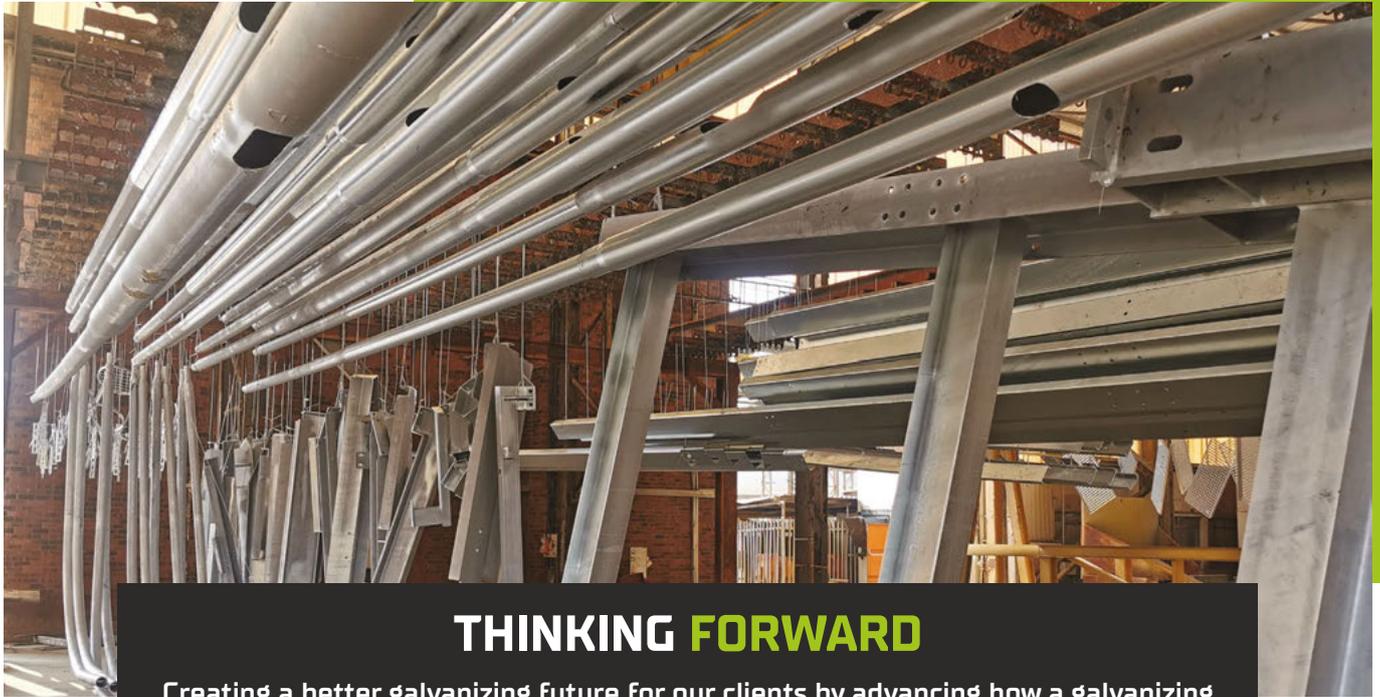
Total flexibility

- Throughput processing capability, especially on large contracts and projects, which results in faster delivery to site.
- Design and fabrication constraints on large and bulky products are significantly reduced.
- Enables the hot dip galvanizing of certain products which previously had to be painted.
- The Line 1 kettle eliminates the need for double-dipping on fabricated items between 2.3m and 3.4m in height, resulting in better quality finishes at a lower cost.
- Consistent good quality.

CONTACT DETAILS

Telephone:
+27 (11) 876 2900
Email:
monoweld@monoweld.co.za
Website:
www.monoweld.co.za
Physical Address:
Cnr Power & Sigma Roads,
Germiston, Industries West
Johannesburg





THINKING FORWARD

Creating a better galvanizing future for our clients by advancing how a galvanizing plant should function and operate, to effectively increase production, decrease turnaround time and eradicate environmental waste to 0%.

CORROSION PROTECTION SPECIALISTS

ADDITIONAL SERVICES

- Technical assistance on corrosion protection and correct fabrication for hot dip galvanizing.
- Post galvanizing backup services.
- Transport service for collection and delivery.
- Lay-down areas for inspection and collation.
- Dispatching direct to site.
- Shot blasting facility on site.
- Mobile thermal zinc metal spraying units.
- Subcontractor office space with data conversion capability.
- Full data pack on completion of the project.
- Containerization of projects.

CONSISTENT, REPEATABLE QUALITY IN ACCORDANCE WITH LOCAL AND INTERNATIONAL STANDARDS

Monoweld Galvanizers is ISO 1461 2022 Certified

Kettle Size: Length - 15m : Width - 1.9m : Depth - 3.25m



GAUTENG



Pro-Tech Galvanizers (Pty) Ltd

PRO-TECH GALVANIZERS (PTY) LTD

Hot dip galvanizing specialists

SERVICES OFFERED

- General / fabrication and centrifuge galvanizing
- Degreasing System: – Alkali / Acid Pickle: – HCl
- Blasting
- Spinning
- Collection and delivery transport

BATH SIZES (l x w x d):

Bath 1: 3m x 1.1m x 1.2m

Bath 2: 3.2m x 1.1m x 1.5m

CONTACT DETAILS

Telephone:
+27 (0)11 814 4292

Email:
jonathan@protechgalvanizers.co.za

Physical Address:
12 Fabriek Crescent, Vorsterskroon,
Nigel





Pro-Tech Galvanizers (Pty) Ltd

RELIABLE SOLUTION TO HOT DIP GALVANIZING



WE OFFER:

- Small to mid-size hot dip galvanizing
- Centrifuge galvanizing
- Collection and delivery service

Pro-Tech Galvanizers (Pty) Ltd

12 Fabriek Crescent, Vorsterskroon, Nigel

Tel.: +27 (0)11 814 4292 Email: jonathan@protechgalvanizers.co.za





Transvaal Galvanizers are the ***GALVANISING INDUSTRY LEADERS*** in Southern Africa.

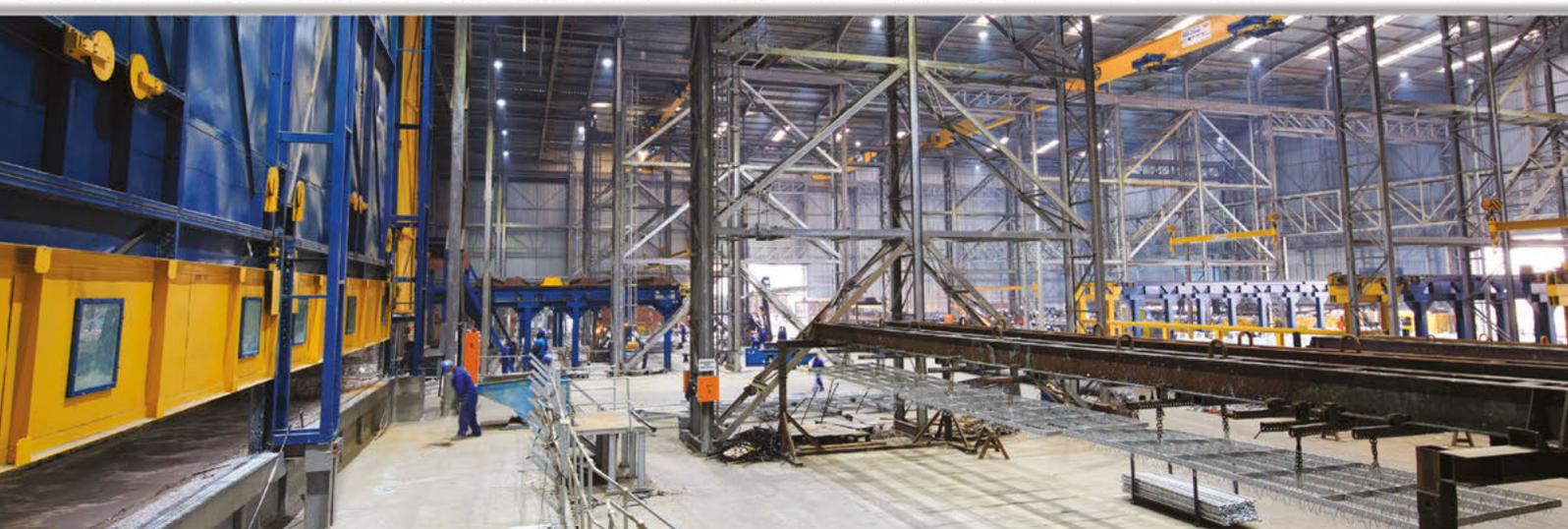
Transvaal Galvanisers was founded in 1984 by the directors of Imab engineering with the vision of revolutionizing the Galvanising industry.

In the decades that followed, the company has enjoyed sustainable growth, continually ensuring that it is at the forefront of galvanising innovation. As such, it has become a driving force within the greater galvanising industry and is a name synonymous with quality.

Over the years, what started out as a relatively small operation has expanded and evolved into a **highly skilled and knowledgeable staff** complement, led by a dynamic and forward-thinking management team, running the largest galvanising plant in the southern hemisphere. Our commitment to the company's vision of providing the best

hot dip galvanising service, while causing no harm, and using the business to inspire and implement solutions to the environmental crisis through leadership and direction, allows Transvaal Galvanisers to provide exceptional service and the highest quality outputs at unparalleled turnaround times.

Being part of a large group of companies mostly within the metal sector, has given us the ability to expand into large construction and renewable energy projects where we provide **full turnkey solutions**. Having successfully completed and supplied several intricate renewable energy and construction projects we can confidently state that we are your **one stop shop** when it comes to renewable energy and construction projects.



QUALITY SPECIALISTS IN SPIN, DIP & DRAGLINE GALVANISING

With the largest zinc kettle in Southern Africa we're able to
GALVANISE IN EXCESS OF 3 TONNES IN A SINGLE DIP
making us the perfect partner for large item galvanising.



Durban Galvanizing Pty (Ltd) **Trusted Since 1990.**

About:

Founded in 1990, the Company has been hot dip galvanizing products for the greater Durban area, Mauritius, Seychelles, and Germany for over 30 years. In 1995 the company moved into their current Briardene branch location in Briardene Industrial park.

Since 2014 the Company has seen a massive increase in volume and as a result, has recently acquired one of its competitors, Phoenix Galvanizing and the Centrifuge plant. Today the 3 plants dip in excess of 2000 tons of steel per month, while still boasting a 48 – 72-hour turnaround time.

Services Offered:

- Large structural steel hot dip galvanizing
- Small part spin/centrifuge hot dip galvanizing
- Transport and logistics

Facilities

Briardene

Zinc kettle size: 9.5m x 1.3m x 3.0m Lifting
Height: 3,5m Maximum Capacity: 1250 t/m
64 Marseilles Crescent, Briardene
031 563 7032

Phoenix

Zinc kettle size: 14m x 1.4m x 2.5m Lifting
Height: 5m Maximum Capacity: 1850 t/m

Phoenix Centrifuge

Maximum size article that can be spun:
600mm high Maximum Capacity: 200 t/m

274 Aberdare Drive, Phoenix
Industrial Park

031 563 7032

Marburg Depot

A convenient local drop off and
collection point for all KZN
South coast customers.

1463 Lind Road, Marburg, Port Shepstone

Trusted Since 1990

Committed to
Quality
Environmentally
Compliant
High Capacity
Convenient
Transport
Solutions



Briardene Branch
64 Marseilles Crescent, Briardene

Phoenix Branch
274 Aberdare Drive, Phoenix Industrial Park

Marburg Depot
1463 Lind Road, Marburg, Port Shepstone

031 563 7032

DURBAN GALVANIZING



KWAZULU NATAL



Pinetown
GALVANIZING

PINETOWN GALVANIZING

General and spin galvanizing

SERVICES OFFERED

- Any fabrication / general steelwork
- Hot dip galvanizing of steel

BATH SIZES (l x w x d):

Bath 1: 9.0m x 1.2m x 3.0m

CONTACT DETAILS

Telephone:
+27 (0)31 700 5599

Email:
admin@pinetowngalvanizing.com

Physical Address:
38 Hillclimb Road, Mahogany
Ridge, Pinetown

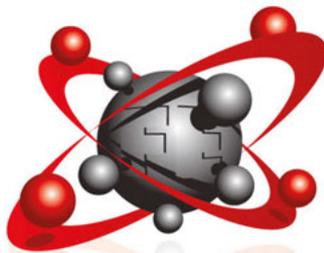




GENERAL GALVANIZING, SPIN & STRUCTURAL



SANS121
ISO1461



HOT DIP
GALVANIZERS
ASSOCIATION
SOUTHERN AFRICA



Pinetown
GALVANIZING

WESTERN CAPE



General Manager
Sim Swart
sim@advancedgalv.co.za



Operations Manager
Hendrik Gerber
hendrik@advancedgalv.co.za



Production Manager
Denzil Clifford
denzil@advancedgalv.co.za



Despatch & Transport
Gys Vermeulen
gys@advancedgalv.co.za



ADVANCED GALVANISING

Proven, honest, sustainable corrosion protection

ABOUT

ADVANCED GALVANISING was established in 1994 at the site of the "Old Dorbyl Building" in Sacks Circle, Bellville-South. Fanie Malherbe, Gavin Stigling and Johan de Beer invested in the enterprise, which was managed by Theo Brophy.

In 2007 the PRIMA GROUP acquired the business from the original owners, with Theo Brophy handing over the reins to Johan Louw as Managing Director. Johan Louw, Febbie Malherbe and Pieter Malherbe became the new owners and directors of the Prima Group.

Sim Swart, who initially joined the company in 1997 and left after a five-and-a-half-year tenure, returned in 2007 as a sales representative and was promoted to General Manager in 2014. Denzil Clifford, who started at ADVANCED GALVANISING in 2003, and Gys Vermeulen, worked their way up to the positions of Production Manager and Despatch & Transport Manager respectively. In 2016 Hendrik Gerber, the internationally renowned Springbok and Western Province rugby player, joined the team as Factory Manager.

ADVANCED GALVANISING is the current holder of the HOT DIP GALVANIZERS ASSOCIATION's Walter Barnett Trophy, having won the Overall Winner Award at the 2016 HDGASA Awards. Johan Louw is a member of the HDGASA Executive and serves as the Cape Regional Representative.

In 2022 we took a significant step forward by launching a paperless production management system, aimed at enhancing both our efficiency and customer experience. This innovation paved the way for further advancements.

In 2024 we introduced a customized web-based interactive client portal, a groundbreaking feature in the galvanizing industry. This portal is designed to streamline our operations even more and significantly improve client interactions, setting a new standard for service in our field.

CONTACT DETAILS

Telephone:
+27 (21) 951 6242

Website:
www.advancedgalv.co.za

Physical Address:
6 Dorbyl Street, Sacks Circle,
Bellville South, Cape Town

PROVEN, HONEST, SUSTAINABLE CORROSION PROTECTION

If it is coated – it is protected



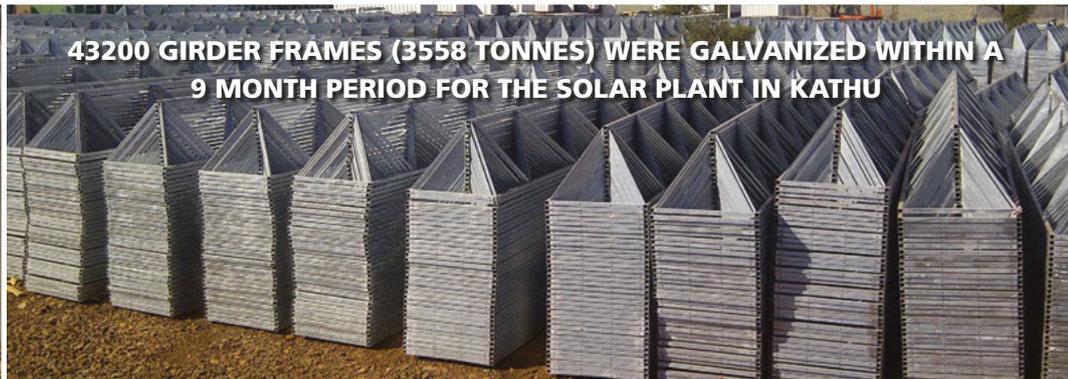
Advanced Galvanising holds the SATAS mark for hot dip galvanizing and all galvanizing done at our premises is in accordance to SANS 121 / ISO 1461 standard.

Established at the site of the "Old Dorbyl Building" in Sacks Circle, Bellville-South during 1994 with a kettle size of **14m long x 1.4m wide x 3m deep.**



Telephone: +27 (21) 951 6242
6 Dorbyl Street, Sacks Circle, Bellville South

www.advancedgalv.co.za



43200 GIRDER FRAMES (3558 TONNES) WERE GALVANIZED WITHIN A 9 MONTH PERIOD FOR THE SOLAR PLANT IN KATHU



Galvatech (Pty) Ltd.

Corrosion Protection Specialists



At Galvatech, our goal is to be your premier partner for corrosion protection. Since founded in 1994, we are committed to delivering high-quality coatings with expedited turnaround times by constantly evaluating and improving our internal processes.

Capable of applying duplex coating systems "under one roof," our services, including Hot-Dip Galvanising, Grit Blasting, Industrial Painting, Zinc Metal Spraying, and baked powder coatings such as Epoxy, PVC, and FBE, truly enable us to be a one-stop-shop for most of your corrosion protection needs.

With our core business being hot dip galvanising, 2024 welcomes our newly built state-of-the-art galvanising facility to Cape Town, South Africa. Centrally located in Bellville South Industrial, our facility has been designed with the latest best practices and 30 years of industry experience and includes a world-class scrubber and white fume extraction system to reduce waste and air emissions.

We have also made provisions for future solar power installations to minimise our environmental impact improve operating efficiencies.

Even though we are certified to provide coatings that comply with SANS 121 / ISO 1461 we have invested in research and technology to produce a high-quality and a visually distinct galvanised coating which set us apart from our competition.

With our new 14m zinc kettle and matching encapsulated pre-treatment process, we are expecting to be one of the most capable galvanisers in the Western Cape. The additional advantage with the newly acquired yard space also affords us the title of "the galvaniser with the largest lay-down area in Cape Town," which is ideal for customers with large projects such as solar power plants or power transmission pylons.

We welcome inquiries of any size and are ready to assist with projects ranging from small garden gates to large-scale industrial and commercial steelwork.

Contact us to learn more about how we can help with your corrosion protection requirements.

021 951 1211 / info@galvatech.co.za / galvatech.co.za

Galvatech (Pty) Ltd, 52 Sacks Circle, Bellville South, Cape Town, South Africa, 7530

**SOUTH AFRICA'S ONLY
LEAD-FREE GALVANISER**

NEW STATE OF THE ART GALVANISING PLANT NOW OPEN!

**Hot Dip Galvanising (SANS 121 / ISO 1461)
Shot Blasting / Sand Blasting
Industrial Spray Painting | Epoxy Powder Coating
Fusion Bonding Epoxy Coating | PVC Coating**

Pick-up & Delivery Service

**Galvanising Kettle size: 14m x 1.6m x 3.2m
Powder Coating Oven size: 7.4m x 1.6m x 2.6m
Grit Blasting Booth size: 15m x 5m x 5m**

Your partner of choice.



INTERNATIONAL



GALVANISING CO. LTD

Results you want

ABOUT

Galvanising Co. Ltd is the market leader in hot dip galvanizing in Mauritius with nearly 40 years of experience in the industry.

GUARANTEE AND CERTIFICATION:

- We are MS ISO 1461:2009 certified
- We issue certification of quality based on MS ISO 1461:2009 upon request

SERVICES OFFERED

- Hot dip galvanizing of bars, tubes and metal structures of different sizes and dimensions.
- Sales of galvanized tubes, bars and expanded metals (retail and wholesale)
- Expert advice and training on pre/post galvanizing care and precautions.

BATH SIZES:

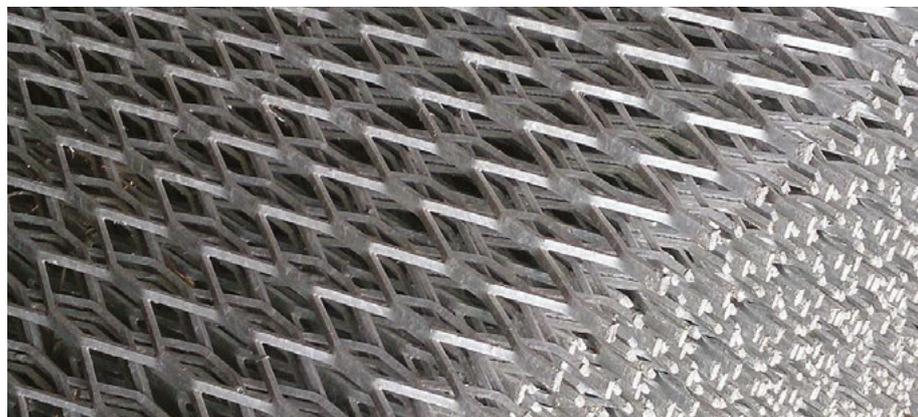
Bath 1: 7m long x 2m deep x 760mm wide

CONTACT DETAILS

Telephone:
+230 234 5118 / 234 5317

Email:
customer@galvanisingcoltd.com

Physical Address:
DBM Industrial Zone, La Tour
Koenig, Pointe aux Sables, Mauritius





GIMECO IMPIANTI S.R.L.

A galvanizer's single partner and reference for any galvanizing solution

ABOUT

Gimeco has been designing, building, installing and renovating hot dip galvanizing plants since 1976 and, having a past as galvanizers, we are well aware of the needs, specific features and criticality of galvanizing and, more generally, of the metallurgic processes.

Our technicians will be able to determine, together with the client, the most appropriate of all solutions. Whether the construction is configured from scratch starting from free land or inside an already designed warehouse (even in the case of revamping an existing industrial body).

We offer design and technical assistance dedicated to specific products, such as different types of pipes, pylons, lighting poles, motorway barriers and others that involve an entire galvanizing plant and, if necessary, also all the processing phases of the raw product

A Gimeco industrial galvanizing plant has a configuration without "bottlenecks", so that the entire production flow takes place with maximum efficiency, with the lowest possible costs and maximum economic return.

Solutions include the standard configurations with thermal (oven-dryer) and chemical (degreasing-pickling-flushing) sections, as well as more complex configurations including transport and lifting automation, for all kinds of production and products of different sizes.

CONTACT DETAILS

Telephone:
+ 39 02 909 60751

Email:
info@gimeco.it

Website:
<https://gimeco.com>

Physical Address:
Via Primo Maggio, 31, 20060,
Trezzano Rosa, Milan, Italy





SHREETECH INTERNATIONAL

Metal solutions with a “green heart”

ABOUT

Shreetech International is a leading manufacturer of high quality speciality chemicals used in various metal treatment industries, from galvanizing to phosphating, colour coating, wire drawing, water treatment, ship building, radiator manufacturing and other specialized industries.

All our products are manufactured with green chemistry at heart, not only ensuring they are environment-friendly, but also reducing the consumption of energy in plants and providing excellent zinc saving for the clients.

With over 40 years of experience, our products are exported to over 35 countries around the world. All our products are REACH compliant and are packed and labelled as per the CLP regulations. This has enabled us to export our products to various countries in the European Union.

Our products are broadly classified into 5 categories based on their use:

Pipe galvanizing chemicals: Products designed by us ensure galvanized articles meet the required amount of coating on both outer and inner surfaces and provide a smooth and uniform coating along the periphery thus protecting the pipe/tube over the entire surface.

Hot dip galvanizing: Shreetech International caters to the entire line of hot dip galvanizing through quality chemicals tailor-made for each stage of the pre- and post-galvanizing process. Our R&D department strives to provide the best products and ensure constant enhancement and innovation in a quest to achieve optimum results.

Wire drawing: Specially formulated products for the delicate process of wire galvanizing.

Continuous galvanizing line: The comprehensive field of continuous galvanizing is one that requires constant innovation and development. Keeping in mind the distinctive needs of both the flux and non-oxidation lines, we have carefully formulated a wide range of products.

Metal treatment: We have diversified our product offering into various metal treatment industries. With utility in mind, we offer some unique products for the following industry segments: pipe manufacturing / ship building; the radiator industry; and Galvalume lines.

CONTACT DETAILS

Telephone:

+91 22 42144545

Email:

pnmemon@bom5.vsnl.net.in

Website:

<https://shreetechinternational.com>

Physical Address:

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CONTACT DETAILS

Telephone:
+39 02 99 82 277

Email:
liuba@sirioimpianti.com

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Physical Address:
Sirio S.r.l, Via Piemonte, 39/41,
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leana@galferro.co.za

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Tel.: +27 (0)44 884 0882
johan@scgalv.co.za

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Site 4, Indwe Road, Fort Jackson, East London
Tel.: +27 (0)43 763 1143
morhotgalv@gmail.com

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Bay Galvanisers

110 Alumina Allee Street, Alton, Richards Bay
Tel.: +27 (0)35 751 1942
don@problast.co.za

KZN Galvanizing

174 Ohrtmann Road, Willowton, Pietermaritzburg
Tel.: +27 (0)69 335 5416
info@kzngalvanizing.co.za

INTERNATIONAL

Anglobal – Galvostahl

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custodia.gunga@anglobal.co.ao

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Arcelormittal South Africa

3 Delfos Boulevard, Vanderbijlpark
Tel.: +27 (0)16 889 9111
colin.thomas@mittalsteel.com

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Chemplus

2877 Albertina Sisulu Road, Technikon,
Roodepoort
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chemplus@mweb.co.za

Krome Metal Chemicals (Pty) Ltd

22 Mountjoy Street, Wilbart, Germiston
Tel.: +27 (0)11 450 2680
rorlik@krome.co.za

Metsep (Pty) Ltd

Lower Jupiter Road, Heriotdale, Denver
Tel.: +27 (0)11 626 2425
robert@metsep.co.za

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Three Sixty Commodity Solutions (Pty) Ltd

4th Floor, Sunclare Building, 21 Dreyer Street,
Claremont, Cape Town
Tel.: +27 (0)21 013 3530
craig@three-sixty.co.za

INTERNATIONAL

Namzinc Pty Ltd – India

C13 Road Rosh Pinah, Namibia
Tel.: +264 (0)63 271 2380
info@vedantaresources.co.na

AFFILIATE MEMBERS - COMPANY

GAUTENG

Abeco Tanks (Pty) Ltd

6A Bradford Road, Bedfordview
Tel.: +27 (0)11 616-7999
manniejn@abeco.co.za

CIS Engineering (Pty) Ltd

8 Firestone Street, NW 7, Vanderbijlpark
Tel.: +27 (0)16 986 1135
admin@cisengineering.co.za

Central Support Systems (Pty) Ltd

34 Mount Ida Rd, Robertsham,
Johannesburg South
Tel.: +27 (0)11 492 2314
colinh@css.za.com

Corrosion Institute Of Southern Africa

38 Allan Road, Glen Austin, Midrand
Tel.: +27 (0)10 224 0761
members@corrisa.org.za

Hi-Tech Elements (Pty) Ltd

37 Michelson Road, Beyerspark, Boksburg, 1459
Tel.: +27 (0)11 894 3937
shaun@hi-techelements.co.za

Macsteel Tube & Pipe

15 Esson Road, Lillianton, Boksburg
Tel.: +27 (0)11 897 2208
eugene.keys@mactube.co.za

O-Line (Pty) Ltd

14/16 Prop St, Selby Ext 11, Johannesburg
Tel.: +27 (0)11 378 3700
o-line@o-line.com

Southern African Institute of Steel Construction

The White House, Lower Germiston Road,
Heriotdale
Tel.: +27 (0)11 726 6111
tiana@saisc.co.za

Weartech (Pty) Ltd

187 Galjoen Street, Wadeville
Tel.: +27 (0)31 561 6010/4
adam@weartech.co.za

KWAZULU NATAL

Rand York Castings (Pty) Ltd

Suite 33, Umhlanga Plaza, 4 Lagoon Drive,
Umhlanga Rocks
Tel.: +27 (0)21 561 1023
sales@randyork.com

MPUMALANGA

Nhlanganiso Nobuhle Enterprise

4774 Sonny Ndala Avenue, Ackerville, Emalaheni
Tel.: +27 (0)79 234 2042
nhlangabuhle@gmail.com

WESTERN CAPE

BAMR (Pty) Ltd

4A Palm Street, Newlands, Cape Town
Tel.: +27 (0)21 683 2100
sales@bamr.co.za

INTERNATIONAL

W. Pilling

Gutenbergstraße 2, 26632 Ihlow-Riepe
Tel.: +49 (0)23 52 / 20 15 – 0
post@pilling.de

AFFILIATE MEMBERS – COATING INSPECTORS

Basie Smalberger

Tel.: +27 (0)82 499 1858
basie.smalberger@gmail.com

Sagren Naidoo

sagren.naidoo@worleyparsons.com

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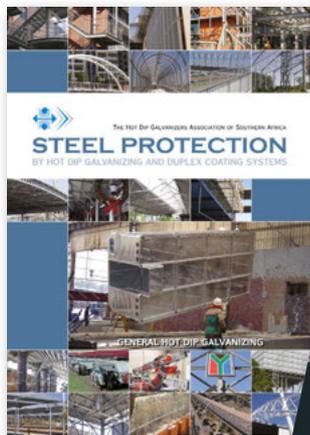
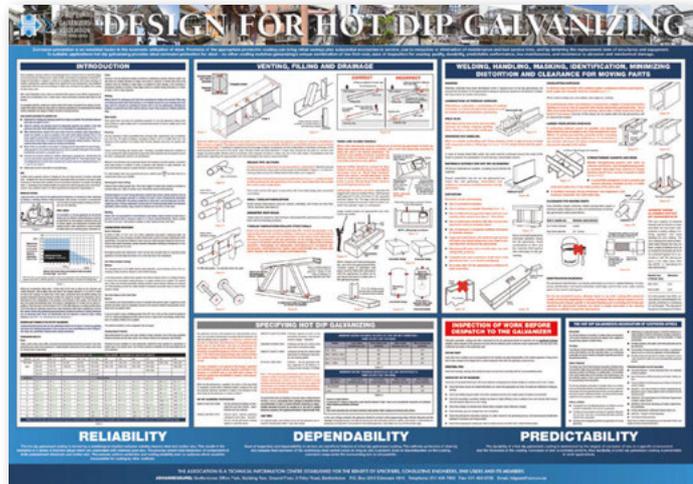
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DESIGN FOR HOT DIP GALVANIZING WALL CHART

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TECHNICAL GUIDES

The HDGASA **Steel Protection Guide** and **Facts about Hot Dip Galvanizing** are available in high-gloss printed material for reference and guidance.

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