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Geoffrey Gleeson
Director
Operations 3
Trade Measures Branch
Australia Customs Service
Customs House
5 Constitution Avenue
Canberra ACT 2601

14 December 2011

Dear Geoffrey,

Please find attached a report and CV from our corrosion consultant, Mr. George Thomson surrounding the issue of Hot Dip. Galvanised Pipe being a 'like' product to pre-gal product.

Graham Group is an established Australian manufacturer of steel products and batch galvaniser with facilities in WA; VIC; NSW and QLD. The company employs 400 staff and has been established for 52 years.

The Weldlok Division of Graham Group is a leading supplier of forge welded grating and pipe hand rail systems to the mining, infrastructure, commercial and residential sectors. Weldlok is an extensive user of Hot Dip Galvanised Pipe.

As a user of Hot Dip. Galvanised Pipe we fully support and endorse Mr. Thompson's argument.

Yours Faithfully

John Morris
General Manager



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Hot Dip Galvanized Pipe Versus In Line galvanized Pipe

The position in Australasia compares :-

AS/ NZS :4680—“Hot dip galvanized(zinc) coatings on fabricated ferrous articles”

AS/NZS 4792—“Hot dip galvanized coatings on ferrous hollow sections applied by a continuous or specialized process”

The first major difference is contained in these descriptions which generate radically different products.

AS/NZS 4680 provides the naturally occurring maximum protective zinc /iron alloy coating of 600g/m² with attendant hardness greater than mild steel.

(In context about 600g/m² = 85 microns or as thick as a heavy duty paint)

AS/NZS 4792 provides a carefully controlled coating thickness with variously less alloy levels, where commonly available coating products of one 6th to a half of the batch (AS NZS 4680) are produced. This, of course, must be considered where protective life is proportional to thickness.

What this means is that is that the two products are not interchangeable with AS 4680 being reserved for the distinct higher coating protection applications that require post hot dipped galvanising.

There are two broad types of inline or semi-automatic coatings.

Type 1— A coating of 100g/m² on the exterior steel side only

A coating of 100gm² on both sides

(In context this 100g/m² =14 microns is about half the thickness of a weld through primer.)

Type 2—A coating of 300 g/m² on both steel sides

This semi automatic process we are advise is about to be discontinued.

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Coating thickness has significant influence on product use in several respects.

In the case of AS/NZS 4680, reliable long term steel protection is the only aim, in which context it has abundant case study evidence of from 50 to 100 years service life.

Continuously galvanized products**Type 1**

The In line process on steel pipes, *” continuously galvanized in a specially developed process, allow accurate control of coating thickness, ductility and other characteristics of the zinc coating, producing a wide range of products to suit the varying requirements of subsequent manufacturing”.

Because of the differing processes and variety of coatings offered these products should not be confused with after fabrication post hot dipped galvanizing.

In line products with thinner coatings often require supplementary coatings for out door exposure .

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Type 2

This product has some specialised hybrid properties depending on its coating thickness and has some track record within pipe specifications, for example signage, or other utilities such as fencing but has however limited usage compared with Batch galvanizing or In line Galvanizing, and should not be confused with either

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Comparison—Atmospheric Exposure

Probably the attempt to compare post hot dipped galvanizing and inline galvanizing top coated with paint (so called Duplex systems) has always been the main problem since there is manifestly no comparison between the products or their intended use.

In line galvanizing (in most cases) gives up much of its protective properties(zinc thickness) to facilitate further manufacturing.

The one seldom mentioned benefit it has, is to start its life with excellent steel surface preparation and a zinc primer suitable for further organic paint top coats to compensate for its thin galvanized coating.

This does not quite convert it into post hot dipped galvanizing but is, in theory at least, a compromise for milder exposure.

Unfortunately this is often done on site, where time pressures rule and the benefit of off-site completion is lost. This again is hardly a comparable prospect of success.

Assesments of Corrosion Zones is also very important in such a specification.

5 Zones are now widely recognised in most steel containing standards.

However since, the responsibility for topcoating is often made on site, adding one more variable to making up equivalency with paint coatings is fraught with difficulty and is the commonest source of coating failure.

Comparison—Post Hot Dipped Galvanised vs In line Coating Systems

Not uncommonly we are asked to advise on leaking service lines, which at first inspection, seem to be post hot dipped galvanised.

The other factor which comes into play is usually that for example fire service lines may have low corrosion while containing static water but high corrosion resistant requirements when significant regular water flow is introduced.

Post Hot Dipped Galvanizing has the tolerance to withstand the unintended use for a reasonable time but inline coatings can be damaged in short order with leaking systems and product failure a potential outcome.

It is not suggested that this is a deliberate short cut but a ware-house or other error hard to avoid among the proliferation of visually similar galvanized products in the manufacturing to delivery chain. This is only one example of process pipe line use where Hot dip has considerable tolerances but In Line galvanizing very little, where thickness equates to service life.

This illustrates the real risk of combining products intended for major engineering purposes with those intended only for light industry or domestic purposes and is not confined to pipe sections.

Since the case in point is very much a comparison of Post Hot Dip, or Batch galvanizing, some other familiar arguments apply

In the last decade steel allowances in design have diminished in response to Limits State considerations, lighter weight steel, and accompanied by thinner protective coatings at manufacture

Whilst these are valid efficiencies in some respect it also follows that steel protection efficiency becomes even more important, but seems instead to be declining.

This is stretched further by the justification that In line galvanizing is often "good enough protection in many areas" which it may be in some instances but not as a basis for all locations.

The judgement of where and where not however is often left to those least qualified to make a decisions to the ultimate detriment of the public.

Post Hot dip galvanizing has an enviable reputation for general reliability and wide scope of use. This was not earned by 150 years of smart selling, but on very long term well documented and irrefutable case histories.

Adding the term "Hot dip galvanizing" to "In Line" is not universal practice in all countries and can be misleading, when the products are so different.

For this reason AS 4312 "The corrosion zones in Australia" has been developed to assist the building and construction industry through the variety of product offerings as well as the scrupulous application required.

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Recent involvement in imported galvanised products has brought to my notice the impressive quality of post hot dipped galvanizing available from such source but where the suitability of In line products are as yet not apparent.

George Thomson 23/11/2011

C V for Mr George Thomson

George Thomson was educated at Rutherford College Newcastle Tyne, where he gained a Full Final City and Guilds in Decorative and Industrial Painting and a Fellowship of the Institute of British Design.

He entered major industry with British Paints Limited at their International head office as a technical services officer. He was posted to British Paint Caribbean Limited in 1961, where he served for seven years, becoming a director of British Paints Caribbean Limited and of its subsidiary Decor Limited, a major painting contract group with branches in all principle Caribbean Islands and the Guyana's, in South America.

During this period he was involved in the specification and application of steel coatings for the offshore oil and gas, sugar and chemical industries on the Venezuela mainland, and the refining industry, located in the region.

When the group became a part of American Celanese, he carried out technical co-ordination with Devco and Reynolds in the United States and Canada and become active in a manufacturing and painting contracting outlet, for the Ameron Corporation in the Caribbean.

On his return to the United Kingdom, he took up the position of Group Technical marketing manager for British Paints Marine, with responsibility for their interests in new ship construction worldwide.

In 1970, he migrated to Australia to join Dimet Corrosion as their Marine Manager, becoming Group General Manager, of the company, in 1980.

This company held the patented Inorganic Zinc Silicate with which he had a long collaboration through the Ameron Corporation of America.

The Dimet group then included building products, industrial adhesives, styrene and urethane insulation and roof sheeting activities.

In 1988 he joined Australia Pacific Resources as Managing Director of their coating development group, APR Industrial, where he was involved in the global technical development of their specialist fire retardant products.

George joined the Galvanizers Association of Australia in 1989, becoming Executive Director in 1994, a position he held for 10 years. He is currently a consultant to industry and advises on standards practice in corrosion control and composite construction.

During a 40 year period of standards development activity, he has been appointed a member of the Council of Standards Australia, many technical committees and of Standards industry committees MT9 and MT14. In continuing this activity he has recently been appointed to Standards Australia Accreditation Board (now ABSDO).

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He has lectured through out the region and worked as a specification consultant in South East Asia and Japan.

He has been awarded certificates of meritorious service from Standard Australia the Australian steel industry, and Master Builders Malaysia.

Item Name	Created	Role
6890 Accreditation Board For Standards Development Organizations <input type="checkbox"/>	14/07/20 11:09:15 AM	Participating Member
6897 Heavy Construction - Small Business <input type="checkbox"/>	02/10/20 10:12:54 PM	Observing Member
6899-01 Science <input type="checkbox"/>	02/10/20 10:03:39 PM	Participating Member
6899-04 Precision Metal Casting <input type="checkbox"/>	02/10/20 10:03:49 PM	Information Only Committee Member
6899-05 Surface Examination <input type="checkbox"/>	02/10/20 10:03:49 PM	Information Only Committee Member
6899-06 Precision Metal Production <input type="checkbox"/>	02/10/20 10:03:49 PM	Participating Member
6899-07 Mechanical Electronics <input type="checkbox"/>	02/10/20 10:03:49 PM	Information Only Comm-User Member
6899-08 Tire And Coaster Casting <input type="checkbox"/>	02/10/20 10:03:50 PM	Participating Member
6899-10 Anodic Coatings <input type="checkbox"/>	02/10/20 10:03:50 PM	Information Only Committee Member
6899-11 Powder Coatings <input type="checkbox"/>	02/10/20 10:03:50 PM	Information Only Committee Member
6899 Metal Finishing <input type="checkbox"/>	02/10/20 10:03:50 PM	Participating Member
6899 Corrosion Protection Of Steelwork <input type="checkbox"/>	02/10/20 10:03:50 PM	Participating Member
6899-03 Cathodic Protection Of Metals <input type="checkbox"/>	02/10/20 10:03:50 PM	Information Only Committee Member
6899-04 Examination Of Pipes <input type="checkbox"/>	02/10/20 10:03:50 PM	Information Only Committee Member
6899-05 Corrosion Corrosion For Metals <input type="checkbox"/>	02/10/20 10:03:51 PM	Participating Member
6899-06 Corrosion Management Of Marine Craft <input type="checkbox"/>	02/10/20 10:03:51 PM	Information Only Committee Member
6899-07 Durability Of Zinc-Related Zinc-Related Products <input type="checkbox"/>	02/10/20 10:03:51 PM	Participating Member
6899-08 Cathodic Protection Of Steel In Concrete <input type="checkbox"/>	02/10/20 10:03:51 PM	Information Only Committee Member
6899 Corrosion Of Metals <input type="checkbox"/>	02/10/20 10:03:51 PM	Participating Member

5 All