



Specifying Hot Dip Galvanizing

The galvanizer acts as a sub-contractor to a steel fabricator and as such, his contractual relationship is normally with the fabricator, not with the ultimate user or specifier. It is important, therefore, that the users' or specifiers' requirements for hot dip galvanizing are made clear to the fabricator and that all instructions are channelled via the fabricator to the galvanizer.

When specifying hot dip galvanizing it is essential to demand a coating applied in accordance with the requirements of SANS 121/ISO 1461 or SANS 32/EN 10240 where applicable. This will avoid confusion with zinc rich painting often referred to as cold galvanizing and zinc electroplating referred to as electro-galvanizing.

To ensure the best quality and technical support, a galvanizer who is a member of The Hot Dip Galvanizers Association Southern Africa is recommended.

When hot dip galvanizing is applied, the steel substrate is completely covered with a relatively uniform coating of zinc. The minimum coating thickness required is related to the thickness of the steel being hot dip galvanized, as shown in table 19 & 20.

10.1 HOT DIP GALVANIZING SPECIFICATIONS

SANS 121/ ISO 1461

Hot dip galvanized coatings on fabricated iron and steel articles - Specifications and test methods.

SANS 32/EN 10240

Internal and/or external protective coatings for steel tubes - Specification for hot dip galvanized coatings applied in automatic plants. (Table 23).

Note: The above specifications supersede SABS 763.

SABS 763:1997

Hot dip (galvanized) zinc coatings (other than on continuously zinc coated sheet and wire).

SANS 14713/ISO 14713

Protection against corrosion of iron and steel in structures - Zinc and aluminium coatings - Guidelines.

Note: The above specification supersedes SABS 0214

SANS 4998/ISO 4998

Continuous hot dip zinc coated carbon steel sheet of structural quality.

SANS 3575/ISO 3575

Continuous hot dip zinc coated carbon steel sheet of commercial, lock forming and drawing grades.

Note: The above two specifications supersede SABS 934.

SANS 675:1997

Zinc coated fencing wire.

SANS 935:1993

Hot dip (galvanized) zinc coatings on steel wire.

General hot dip galvanizing specifications state the local (minimum) and the (mean) coating thicknesses. The thickness actually achieved, varies with steel composition and this can range from the minimum up to at least 50% greater. As life expectancy predictions are normally based on the minimum coating thickness, they are usually conservative.

NOTE 1: The specification does not stipulate a maximum upper coating thickness limitation, however, excessively thick coatings on threaded articles are undesirable. In order to ensure effective tensioning, the coating thickness on fasteners should not exceed a maximum of 90µm, this applies particularly to high strength bolts and nuts.

In South Africa, the South African Bureau of Standards (SABS) has adapted ISO 1461:1999, EN 10240:1999 and ISO 14713. The specifications are therefore published by the SABS as SANS 121/ISO 1461, SANS 32/EN 10240 and SANS ISO 14713/ISO 14713.

10.2 LEAD TIMES

As a general guide, most articles can be hot dip galvanized and returned to the fabricator within 3 to 7 days after receipt.

In the case of large contracts, the galvanizer should be involved at the programming stage with the fabricator and the end user. Hot dip galvanizing is normally the final process after fabrication prior to delivery and erection. If insufficient time for hot dip galvanizing and inspection is provided in the overall programme, costly delays may occur at the erection stage.

MINIMUM COATING THICKNESS ON ARTICLES THAT ARE NOT CENTRIFUGED					
Category and thickness (t) mm	SANS 121/ISO 1461		SABS 763		
	Local coating thickness µm*	Mean coating thickness µm*	Article type	Thickness, µm General Application	
PROFILES	t ≥ 6	70	85	A1, B1, D1 E1, F1	85
	3 ≤ t < 6	55	70	A2, B2, F2	65
	1.5 ≤ t < 3	45	55		
	t < 1.5	35	45	A3 B3 F3	45 55 45
CASTINGS	t ≥ 6	70	80	D1	85
	t < 6	60	70		

■ Thickness legend - 3 ≤ t < 6 = thickness less than 6mm but greater and equal to 3mm.

Table 19.

MINIMUM COATING THICKNESS ON ARTICLES THAT ARE CENTRIFUGED					
Category and thickness/diameter (t) or (ø) mm	SANS 121/ISO 1461		SABS 763		
	Local coating thickness µm*	Mean coating thickness µm*	Article type	Thickness, µm General Application	
FASTENERS	ø ≥ 20	45	55	C1	55
	6 ≤ ø < 20	35	45	C2	45
	ø < 6	20	25		
OTHER ARTICLES (INCLUDING CASTINGS)	t ≥ 3	45	55	C1 Washers	55
				D2	45
	t < 3	35	45	C2 Washers	45

■ Thickness legend - 6 ≤ ø < 20 = diameter less than 20mm but greater and equal to 6mm.

Table 20.

NOTES

* Local coating thickness is defined as the mean of the measurements taken within a specified reference area. Mean coating thickness is the control sample number average of the local coating thickness values from each reference area.

■ Where only one reference area is required according to size of the article, the mean coating thickness within that reference area shall be equal to the mean coating thickness given in the above tables.

■ Deviation from standard coating thickness. A requirement for a thicker coating (25% greater than the standard in table 19) can be requested for components not centrifuged, without affecting specification conformity.

Where steel composition does not induce moderate to high reactivity, thicker coatings are not always easily achieved.