

**GALVANIZERS ASSOCIATION**  
**INSPECTION REPORT TR02a/17**

**Date :** 19<sup>th</sup> January 2017

**Item inspected :** Galvanized bins size 1100

**Galvanizer :** Arkinstall Galvanizing

**Customer :** Egbert Taylor

**Present :** Dr D. Makepeace – GA, Technical Executive  
Mr J. Roberts – Egbert Taylor

## **1.0 Background**

Galvanizers Association was requested to conduct an inspection a series of galvanized bins of size 1100 and 1280 which were typical of those that would be despatched as part of a contract to Greece (photographs 1-2). At time of inspection only size 1100 bins were available. Concern related to the galvanized coating thickness.

## **2.0 Introduction**

The requirements for work to meet BS EN ISO 1461 : 2009 relate to surface finish and coating thickness and a summary of these is given below.

### **2.1 Surface Finish Requirements**

1. The coating should be continuous at the time of delivery
2. The coating should be relatively smooth (free from spikes and sharp edges likely to cause injury).
3. The coating should be free from flux staining.

### **2.2 Coating Thickness Requirements**

| <b>Steel Section Thickness /mm</b> | <b>Local Coating Weight /gm<sup>-2</sup></b> | <b>Local Coating Thickness /(μm)</b> | <b>Average Coating Weight /gm<sup>-2</sup></b> | <b>Average Coating Thickness /μm</b> |
|------------------------------------|--|--------------------------------------|--|--------------------------------------|
| < 1.5                              | 250  | 35                                   | 325  | 45                                   |
| ≥ 1.5 & ≤ 3                        | 325  | 45                                   | 395  | 55                                   |
| > 3 & ≤ 6                          | 395  | 55                                   | 505  | 70                                   |
| > 6                                | 505  | 70                                   | 610  | 85                                   |

It should be noted that while coating thickness measurements are a good indication of the average coating weight, the referee test in cases of dispute is the "strip and weigh test" which is a destructive test and can give slightly higher results.

## **3.0 Work Conducted**

A visual examination was carried out on a batch of galvanized bins of size 1100 Photographs were taken and are included in Appendix A. All originals are retained at Galvanizers Association offices for future reference.

Batch coating thickness measurements were taken from 10 bins selected at random. The results of all batches are listed in Appendix B.

For the purposes of this inspection it is assumed that the steelwork fell into the following section thickness categories:

- Front of bins                    ≥ 1.5 & ≤ 3 mm
- Side of bins                     ≥ 1.5 & ≤ 3 mm
- Comb bar                        ≥ 1.5 & ≤ 3 mm

## **4.0 Summary of Findings**

### **4.1 Surface Finish**

The galvanized bins had a continuous, relatively smooth coating that was free from flux staining (photographs 3-5).

### **4.2 Coating Thickness**

Batch coating thickness measurements taken from the front of bins indicated average coating thicknesses of 72-81  $\mu\text{m}$ .

Batch coating thickness measurements taken from the side of bins indicated average coating thicknesses of 55-84  $\mu\text{m}$ .

Batch coating thickness measurements taken from comb bars indicated average coating thicknesses of 56-103  $\mu\text{m}$ .

The bins had overall average coating thicknesses in the range 63-79  $\mu\text{m}$ .

## **5.0 Discussion**

### **5.1 Surface Finish**

All of the bins had a continuous, relatively smooth coating that was free from flux staining. The bins therefore met all the surface finish requirements of BS EN ISO 1461 : 2009.

### **5.2 Coating Thickness**

The front and sides of the bins all had an average coating thickness of 55  $\mu\text{m}$  or more. The comb bars all had an average coating thickness in excess of 55  $\mu\text{m}$ .

The galvanized bins therefore met both the 45  $\mu\text{m}$  local average local coating thickness and 55  $\mu\text{m}$  average coating thickness requirements laid down in BS EN ISO 1461 :2009. The bins therefore met all the coating thickness requirements of BS EN ISO 1461 : 2009.

## **6.0 Conclusions**

### **6.1 Surface Finish**

All of the bins had a continuous, relatively smooth coating that was free from flux staining. The bins therefore met all the surface finish requirements of BS EN ISO 1461 : 2009.

### **6.2 Coating Thickness**

The front of bins, sides of bins and cone bars all had an average coating thickness of 55  $\mu\text{m}$  or more and the bins inspected met all the coating thickness requirements of BS EN ISO 1461 : 2009

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**19<sup>th</sup> January 2017**

## APPENDIX A

Photograph 1 – General view of the bins.



Photograph 2 – General view of the bins.



Photograph 3 – Typical surface finish on the front of the bins.



Photograph 4 – Typical surface finish on the side of the bins.



Photograph 5 – Typical surface finish on a comb bar.



## APPENDIX B

Table 1 - A summary of batch coating thickness measurements.

| Location        | Minimum<br>/μm | Maximum<br>/μm | Average<br>/μm |
|-----------------|----------------|----------------|----------------|
| Bin 1 front     | 64             | 82             | 74             |
| Bin 1 side      | 52             | 66             | 58             |
| Bin 1 comb bar  | 71             | 99             | 89             |
|                 |                |                | <b>74</b>      |
| Bin 2 front     | 60             | 92             | 74             |
| Bin 2 side      | 54             | 64             | 59             |
| Bin 2 comb bar  | 91             | 116            | 103            |
|                 |                |                | <b>79</b>      |
| Bin 3 front     | 63             | 89             | 77             |
| Bin 3 side      | 55             | 61             | 58             |
| Bin 3 comb bar  | 54             | 67             | 60             |
|                 |                |                | <b>65</b>      |
| Bin 4 front     | 67             | 86             | 77             |
| Bin 4 side      | 55             | 62             | 59             |
| Bin 4 comb bar  | 52             | 64             | 57             |
|                 |                |                | <b>64</b>      |
| Bin 5 front     | 65             | 80             | 72             |
| Bin 5 side      | 68             | 99             | 84             |
| Bin 5 comb bar  | 54             | 97             | 70             |
|                 |                |                | <b>75</b>      |
| Bin 6 front     | 66             | 88             | 74             |
| Bin 6 side      | 67             | 87             | 74             |
| Bin 6 comb bar  | 65             | 80             | 74             |
|                 |                |                | <b>74</b>      |
| Bin 7 front     | 63             | 99             | 80             |
| Bin 7 side      | 53             | 58             | 55             |
| Bin 7 comb bar  | 55             | 107            | 78             |
|                 |                |                | <b>71</b>      |
| Bin 8 front     | 67             | 95             | 81             |
| Bin 8 side      | 59             | 87             | 73             |
| Bin 8 comb bar  | 73             | 94             | 82             |
|                 |                |                | <b>79</b>      |
| Bin 9 front     | 66             | 96             | 76             |
| Bin 9 side      | 53             | 59             | 56             |
| Bin 9 comb bar  | 49             | 63             | 56             |
|                 |                |                | <b>63</b>      |
| Bin 10 front    | 72             | 86             | 81             |
| Bin 10 side     | 54             | 71             | 61             |
| Bin 10 comb bar | 55             | 72             | 63             |
|                 |                |                | <b>68</b>      |