

**AN ROINN TALMHAÍOCHTA, BIA AGUS MARA
DEPARTMENT OF AGRICULTURE, FOOD AND THE MARINE**

**APPROVAL PROCEDURES AND PERFORMANCE SPECIFICATION FOR
METAL ROOF CLADDING AND SIDE CLADDING**

**Engineering Unit,
Nitrates, Bio-diversity and Engineering Division,
Department of Agriculture, Food and the Marine,
Pavilion A,
Grattan Business Centre,
Dublin Road,
Portlaoise,
Co. Laois,
Ireland.**

October 2015.

1 GENERAL

1. This specification covers prepainted hot dip zinc coated steel sheets for use in the construction of farm buildings. The term "prepainted" refers to sheets which have been pre-treated and painted on factory production lines using recognised industrial processes, rather than those which have been painted on site prior to or following erection.
2. Procedures for inclusion in relation to ventilated cladding, fibre cement sheeting, clear lights and cladding materials produced from other materials are detailed in other documents.
3. Manufacturers/suppliers of these materials are required to provide proof, in the form of written reports from approved independent laboratories, that their products meet the requirements of this specification in order to qualify for Department of Agriculture, Food and the Marine approval.
4. Two sets of reports are required to complete the approval process. These are a series of weathering tests and fragility tests. In addition to the tests Form A shall be completed as described in section 3, and supplied as specified.
5. Both the manufacturer of the coil and the roll former are required to carry ISO 9001 or approved equivalent registration in order to fully comply with the requirements of this specification. A declaration to this effect must be given in Form A, sections 1 and 2.
6. The roll former is required to provide evidence of certifying the cladding to EN 14782:2006 and to provide a copy of their CE mark and a Declaration of Performance for each set of profiles produced.
7. The Department of Agriculture, Food and the Marine will only accept **original** test reports for approval purposes. Photocopies of original reports are not acceptable.
8. The weathering tests shall be performed on coil of each colour supplied by each coil manufacturer. Therefore if a coil manufacturer produces coil with 4 different colours, then four weathering test reports (one per colour) are required to cover that coil manufacturer's coils. The weathering test shall be conducted as described in section 3.
9. Fragility tests shall be performed on each profile and thickness of coil. Where a roll former uses coil from more than one manufacturer, fragility tests shall be carried out on each profile for each coil unless the tensile strength and thickness of the base material are the same. The fragility tests shall be conducted as described in section 4.
10. All reports and documentation shall be sent to: Engineering Unit, Nitrates, Bio-diversity and Engineering Division, Department of Agriculture, Food and the Marine, Pavilion A, Grattan Business Centre, Dublin Road, Portlaoise, Co. Laois, Ireland.

11. The Approval shall remain in force for five years from its date of issue except in cases where the conditions described in 12 below apply. New test reports must be submitted to the Department for each material in sufficient time to ensure that re-approval is in force by the renewal date. All companies must maintain current certification to ISO 9001. Failure to do so will lead to removal of relevant company products until ISO 9001 certification is restored.
12. The Department of Agriculture, Food and the Marine approval issued following submission of the test reports applies only to the materials described in the independent reports and in FORM A attached to those reports. Any modification of the materials or processes used to manufacture the cladding, or any change of source of materials used to manufacture the cladding, any change in profile of the cladding material or failure to maintain ISO9001 certification following approval, automatically invalidates the approval until the required updated test(s) have been supplied.
13. The following information will be listed on S.102 when all the data is supplied: Company name, Stamp on cladding, Purlin spacing, Purlin Types, End overlap, No. of fixings required per purlin, Side stitching required, Type of fixings and Fragility rating.

1.1 Summary of what is required:

1.1.1 In cases where a roll former is purchasing coils of grant approved material directly from steel mills:

1. Form A Section 1, once per coil manufacturer.
2. Form A Section 2, once per roll former.
3. Form A Section 3, once for every colour supplied by each coil manufacturer.
4. Form A Section 4, once for each coil & colour tested for roll former.
5. Weathering test reports, one for every colour supplied by each coil manufacturer.
6. Fragility test – once for each profile produced for each coil thickness for each coil manufacturer (unless tensile strength and base material identical).
7. Details of company stamp applied to each cladding sheet (different stamp required for coils from each different source).

1.1.2 In cases where a roll former is purchasing coils of grant approved material other than directly from steel mills, the following information is required from that roll former:

1. Completion of Section 2 of Form A.
2. Completion of Section 3 of Form A, once for every colour supplied by each coil manufacturer.
3. Completion of Section 4 of Form A.
4. Statement as to source of coils.
5. Letter from coil supplying company that they are supplying grant-accepted coil to roll former (letter to be sent directly from supplying company to Department of Agriculture and to include details of colour(s) supplied, coil manufacturer and weathering test report details).

6. Fragility test – once for each profile produced for each coil thickness for each coil manufacturer (unless tensile strength and base material identical).
7. Details of company stamp applied to each cladding sheet (different stamp required for coils from each different source).

2 SHEETING REQUIREMENTS

- 1) Sheeting dimensions shall meet the requirements of the relevant Department of Agriculture, Food and the Marine Specifications.
- 2) The zinc coating weight shall be, at least, 275 g/m² including both sides to meet the requirements of BS 2989, and the sheet shall be painted on both sides. Both sides shall meet the requirements of this specification.
- 3) The paint coating thickness must be within the range shown to have met the requirements of this specification, and must conform to the declaration made in **Form A**.
- 4) **STAMPS:** The internal surfaces or undersides of sheets shall be marked with an identifiable indelible stamp, to be agreed with the Department of Agriculture, Food and the Marine, and shall contain the following information:
 - 4.1) Brand name of Product, in letters at least 15 mm high.
 - 4.2) Name, or identification title, of roll forming company.
 - 4.3) Thickness of sheet in mm.
 - 4.4) Identification of coil manufacturer (e.g. B.S. for British Steel)

3 Weathering tests required on metal cladding materials

3.1 General Requirements

All cladding materials shall be tested by:

*Centre for Research in Engineering Surface Technology (CREST),
FOCAS Institute,
Dublin Institute of Technology – Kevin St.,
Dublin 8,
Ireland.*

Website: http://crestdit.com/client_enqduffy.html

Email: bduffy@dit.ie

Procedure

The roll former shall submit specimens of the proposed coil, for manufacturer into cladding material, to CREST for weathering tests to be undertaken on the material. Specimens submitted to the independent test laboratory should be in the form of 40 150mm x 100mm panels or as otherwise agreed, and must be accompanied by a completed original of Form A for each colour and material type intended for Department approval.

CREST will undertake the weathering tests set out in section 3.2 below, on the submitted specimens, and the roll former shall send original copies of the completed test reports to the Department of Agriculture, Food and the Marine for each colour tested.

The roll former shall take the samples from a random coil and forward the samples to CREST along with a copy of the specification sheet for the coil. A copy of the specification sheet submitted by the roll former shall be included with the test report.

(Section 4 of Form A should be completed by the applicant following receipt of the independent test report and prior to submitting the report to the Department.)

3.2 TEST SCHEDULE

3.2.1 METALLIC COATING WEIGHT.

The mass of the metallic coating shall be determined using the strip and weigh procedure specified in Appendix A of I.S. 145: 1985, following removal of the paint coating/s.

Commercially available paint strippers, which are known not to attack the metallic coating, shall be used to remove the paint coatings. The mass of metallic coating shall conform to the requirements shown in 3.2.

3.2.2 PAINT COATING THICKNESS.

The paint coating thickness shall be determined according to ISO 2808, Method N^o4, A or B.

The thickness of each layer of paint shall fall within the range given in **Form A**.

3.2.3 SPECULAR GLOSS.

The test method shall be as specified in ISO 2813 using a 60^o head.

The gloss level shall not deviate from the value given in Form A by more than $\pm 10\%$.

3.2.4 ADHESION.

Adhesion testing shall be carried out in accordance with ISO 2409.

A classification of I or better is required for approval

3.2.5 FILM ADHESION AFTER INDENTATION.

After cupping in accordance with ECCA Test Method T6, there shall be no removal of paint coating from the substrate on a dome with a depth corresponding to 80% of the height at which rupture of the substrate occurs but with a maximum of 8 mm.

3.2.6 FILM ADHESION & CRACKING AFTER BENDING.

After bending in accordance with ECCA Test Method T7, there shall be no loss of adhesion or cracking after a 3 T bend when assessed using tape with an adhesion force to steel of 40 ± 10 N/mm.

3.2.7 RESISTANCE TO SALT SPRAY

This test shall be carried out in accordance with ISO 9227 for 500 hours. Prior to testing, the specimens shall be scribed with two diagonal lines across the length of the panels. On completion of the test the coatings shall meet the following requirements when assessed according to ASTM 1654.

Blistering:	None on the unscribed surfaces.
Discolouration	None.
Loss of adhesion	Where isolated spots showing loss of adhesion develop along the scribed lines, no individual spot shall be greater than 3mm from the scribed lines. Where loss of adhesion is general along the scribed lines, it shall not be greater than 2 mm from the lines.

Panels will also be subjected to conical mandrel testing according to the requirements of ISO 6860. This produces a graduated bend on the panel of approximately 32mm diameter at the wide end and 5mm at the narrow end. These panels shall be placed in

the Salt Spray cabinet, with the narrow end facing downwards for 500 hours. Following completion of this test no deterioration of the coating will be apparent along the bend more than 10mm from the edge of the panel at the narrow end of the bend.

3.2.8 RESISTANCE TO HUMIDITY.

This test shall be carried out in accordance with ASTM 2247 for 1,000 hours. On completion of the test, the paint coating shall meet the following requirements in areas more than 1 mm from cut edges:

Blistering.	None
Loss of adhesion	None
Loss of gloss	None
Discolouration	None

3.2.9 RESISTANCE TO WATER IMMERSION.

When immersed in distilled water for 1,000 hours according to ISO 1521 the paint finishes shall meet the following requirements in areas more than 1 mm from cut edges.

Blistering.	None
Loss of adhesion	None
Loss of gloss	None
Discolouration	None

3.2.10 ACCELERATED WEATHERING.

When tested according to ASTM G 53: 1995 for 1,000 hours, the paint coating shall meet the following requirements:

Cracking or detachment	None
Blistering.	None
Loss of gloss or discolouration	Not more than slight
Chalking	Not more than slight

3.2.11 RESISTANCE To SO₂

This test shall be carried out in accordance with ISO 3231: 1998 using 0.21litres of SO₂ in a 300 ±10 litre chamber at 40 ±5°C for 8 hours followed by 16 hours exposure at ambient conditions to complete a cycle.

3.2.11.1 For the weatherside coatings

Following 10 cycles of this test, weatherside coatings shall show no evidence of breakdown

3.2.11.2 For the internal coating.

Following 30 cycles of this test, the internal coating which may be exposed to the animal housing environment shall show no sign of breakdown, and there shall be no evidence of substrate corrosion product on the surface.

4 Fragility Test Requirements

Cladding sheets shall meet at least non fragility rating of “class C” as set out in ACR(M)001-2014 [fifth edition] “Test for non fragility of Profile Sheeted Roofing Assemblies”. Copies of the test procedure are available at:

http://www.roofworkadvice.info/html/the_red_book_-test_for_non_fra.html

To be tested by independent laboratory to be decided by roll former. Laboratory to send results directly to Engineering Unit, Nitrates, Bio-diversity and Engineering Division, Department of Agriculture, Food and the Marine, Pavilion A, Grattan Business Centre, Dublin Road, Portlaoise, Co. Laois.

The report is to include full details on the fixing arrangement of the cladding sheets, including the actual size and make of the fixings used.

Where it is intended that cladding sheets may be placed on timber purlins, then the tests must be conducted on timber purlins as well as steel purlins. Timber purlins used in the tests shall be at least 175mm x 75mm nominal section and strength class C16.

A FORM A

NOTE:

Two completed originals of **FORM A, Pages A-2, A-3 and A-4** must accompany each set of specimens sent to an approved laboratory for compliance testing to the requirements of this specification. The laboratory is to be instructed to prepare two original reports for each material tested, and to include the completed **FORMS A** in each report.

Page A-5 of FORM A is to be completed by the applicant and accompany each test report submitted to The Department of Agriculture for approval purposes.

The Department of Agriculture will accept originals only of laboratory reports as evidence of compliance with the requirements of this specification for approval purposes, and the reports must contain the fully completed **Form A** for each material or colour for which approval is being sought.

SECTION 1. COIL MANUFACTURER'S DETAILS

Company Name

Address

.....

.....

Telephone N°

Fax N°

Does the Company operate a Quality Management System which is registered to ISO 9000, or an equivalent (Mark "X" as appropriate) Yes No

If "yes", provide the following information:

The name of the registration Authority.....

The Registration No.....

The date of Registration/...../.....

Signed..... **Position**.....

Date:/...../.....

SECTION 2.

ROLL FORMERS DETAILS

Company Name

Address

.....

.....

Telephone N°

Fax N°

Does the Company operate a Quality Management System which is registered to ISO 9000, or an approved equivalent (Mark "X" as appropriate) Yes No

If "yes", provide the following information:

The name of the registration Authority.....

The Registration No.....

The date of Registration/...../.....

Signed.....

Position.....

Date:/...../.....

FORM A

3.2.11.1 Section 3

PRODUCT DETAILS

Product Name
(The name or designation by which the cladding will be known for farm building purposes should be inserted here)

Metallic Coating Weightg/m²

Conversion Coating type
(e.g. Phosphate, Chromate etc)

Primer Type Weather Side Internal Side
(e.g. Epoxy, Vinyl etc.)

Primer Thickness Weather Side.....µm Internal Sideµm
(Quote maximum and minimum)

Finish Coat Type Weather Side..... Internal Side.....
(e.g. Polyester, Acrylic etc)

Finish Thickness Weather Side.....µm Internal Side.....µm
(Quote maximum and minimum)

Finish Colour Weather Side..... Internal Side.....
(e.g. Light grey, Dark blue etc)

Finish Gloss @ 60° Weather Side..... Internal Side.....

Sheet Thickness mm, ±.....mm

SECTION 4

APPLICANT'S DECLARATION

This section to be completed by the applicant prior to submission of the Test Report and this Form to the Department of Agriculture for approval.

This declaration covers materials described in Report reference No.....
(Insert the Reference No of the attached report)

issued by....., dated...../...../.....
(insert the name of the test house) (insert the report issue date)

They are representative of the materials which will be supplied by this company for the purposes of constructing farm buildings. The Department of Agriculture Approval Scheme.

Name of applicant Company.....

Address.....
.....
.....

Signature:
(On behalf of applicant company)

Position.....

Date/...../.....

Company Stamp: