

Bituminous Corrugated Roofing Sheet

Test Data and Certification

Onduline has always paid particular attention to specific country regulations and harmonized standards, that is why our products are subjected to the most rigorous performance tests in laboratories and research institutes all over the world.

The following tables show the nature of just some of the tests taken in several countries in the world and their abbreviated results.

General Tests & Technical agreements :

- CSTB (France): AT 5/04/1779 AT 5/03/1690
AT 5/99 1424
- CSTC/UBatc (Belgium): ATG 01/1938
- BBA (UK): A.C. 87/1823 C
- ITB (Poland): 500/02 AT 1 21145/2002
- BRANZ (Australia): AC 02/2004
- BRANZ (New Zealand): AC 432 (2002)
- Conformity to EN 534 general performance and attitude tests
- ISO 9001: 2000
- ISO 14001



Ecological

Onduline is manufactured from 48% recycled material using environmentally efficient manufacturing plant. It contains no asbestos and presents no known health risk in handling, fixing or in service. It can be disposed of in landfill and will decompose naturally to constituent parts.



Insulation and Condensation

Onduline has excellent thermal insulation properties; however any single thickness roofing material is at risk of condensation formation during the winter months. Generally high and low ventilation provision will avoid this problem. If high levels of humidity are present in a building Ondutiss underlay or roof deck should be first laid below the sheets.



Maintenance

Onduline Roofing Sheets are extremely durable for long service. The following maintenance procedures should be undertaken: Leaf debris should be removed as any build up will form a leaf mould which can soften the Onduline sheets and reduce its effective life. Tree and shrub branches in contact with the sheets can through wind generated movement cause damage and should be trimmed accordingly.



Strength and Impact Loading

Warrington Research Laboratory Test (UK) BS1 811

United States Testing Co. ASTM D 1502-60
CEBTP (France): Report No 2342.7.098

Bureau Veritas (France): BTE JPD/NC 1016/1995
CSTB: No GM/92-20

Tests showed adequate bearing strength, impact resistance and resistance to wind lift.



Water And Weather Proofing

Tests (UK) BS1811 and ASTM D1499(USA)

UIDIEM (Chile): Certification No 150 385

Results showed excellent weather-proofing characteristics.



Water Absorption

Warrington Research Laboratory Test (UK) BS1 811

Showed minimal absorption.

ASTM E96 (USA). Performed excellently in

moisture vapour transmission and showed only minimal absorption.

DIN 52103 (Germany) Showed no effect after 16 days when emerged.



Heat Deformation

Warrington Research Laboratory Test (UK).

Tropical investigations tests showed no visible effects.

Yarsley Research Centre (UK).

Middle East suitability tests up to 70oC proved complete suitability in severe humidity and under all foreseeable conditions.



Toxicity and resistance to chemicals tests

Yarsley Research Centre Test (UK). Tests carried out on water collected after catchments with

Onduline sheets gives water suitable for drinking complying with World Health Organisation and EEC regulations.

CSTB (France): No SM/98-0062 - stable under exposure to acids, alkalis and salts.

Note: Although safe to use Onduline do not recommend rainwater collection from roofs for human or animal consumption. This is due to the high incidence of airborne pollutants and possible algae formation in water storage systems. If the rainwater is used for this purpose the roof, gutters and collection system must be cleaned and purified regularly. It is recommended that only proprietary water collection storage systems are used which incorporate water filters at the point of delivery.



Mechanical Strength

Warrington Research Laboratory Test (UK) BS4 154.

Provided resistance to 33kg [73lbs] sheered force on fixing bolt.



Wind Lift

Yarsley Research Centre (UK). Proved Onduline suitable in hurricane and earthquake conditions.

Tested up to 120mph (192kph).

Building Research Establishment (UK): no

BRE/83/11/1 – good behaviour in wind lift conditions

Wood Technology Division (New Zealand):

No WTC 1468/2 – good resistance in cyclonic conditions.

Minister of Economy (Argentina):

No 83-1 INPRES 95 & PV No 030 DPDU-95.



Hail/Frost Resistance

ASTM E196 (USA) and DIN 52103 and 52104 (Germany). Meets snow and frost resistance for all regions.

No mechanical damage in frost.

For roofs on exposed sites or at high altitude with high annual snow fall, Onduline Roofing Sheets should be laid on fully supporting decking. In areas prone to significant hail proprietary protective netting should be laid over the Onduline corrugations



Thermal Resistance

ASTM C177-76 (USA) and BS874 (UK).

Provided excellent thermal resistance.

K value 0.46 to 0.51 British Thermal Units.

LNE (France): Certification No 7070916D MAT/1

Thermal conductivity: 0.099 W/mK



Fire Resistance

Warrington Research Laboratory Tests (UK).

Show resistance to fire of up to Extl. S.AA

classification BS476.3 for Onduline AA Sheets,

Note: This grade of sheet is temporarily

unavailable in the UK in order to facilitate changes at our production facilities.

Onduline PP sheets are not classified to External S.AA fire rating as required in UK Building Regulations for some classes of building, In these cases they must be fixed on a suitable fully supporting roof deck and the sheets coated with a proprietary AA surface paint treatment, [as used for bituminous felted flat roofing], applied in accordance with the paint manufacturers instructions.

Contact the Technical Department for further details.



Acoustical Insulation

CEBTP No 2312.6.244/1 Reverberation coefficient (max): 0.4 to 315 Hz

CSTB C/95/CL/1896/1. Sound attenuation coefficient: $R_w = 28\text{db}$

Wolfson unit Southampton University (UK).

No 2089 1592/BI: antinoise wall with Onduline reduces the airborne noises of 7db

Health and Safety Data

The covering of new and existing roofs is a specialised occupation and should be carried out with due regard to Health and Safety regulations, Site access and working provision must be in strict accordance with the regulations for site safety and roof work detailed in HSE33.

Toxicity and Odour

Onduline sheets in the construction of a catchment system for rainwater collection give water suitable for drinking in compliance with the World Health Organisation and EEC regulations (Report Yarsley Technical Centre).

During storage or when first fixed an odour may emit from the sheet as a result of the production process within the sheet at the time of production process. It is not harmful and will dissipate with normal ventilation provision.

Condensation can form on newly fixed sheets as a result of the drying out of building materials, This moisture can absorb dust from the atmosphere and mix with bitumen production residue on the sheet surface. The resulting discoloured water droplets can fall on underlying surfaces, It can be easily removed using proprietary cleaning agents.

Handling Materials

Onduline sheets contain no asbestos and present no known health hazard in handling or in use. It is not fragile and is without sharp edges requiring specialist protective clothing. Finally its light weight and modular size make it safe and easy to handle using established methods.

Maintenance

Onduline sheets should be cleared of leaves and any other organic matter at regular intervals. Maintenance work should be conducted using roof ladders and/or crawling boards. These should be positioned with reasonable care to avoid damaging the sheets surface. If access to the roof is required for some purpose other than routine maintenance of sheets, a catwalk should be provided.

Bitumen

The bitumens used in the production of Onduline are of low order toxicity and there is no evidence from tests or through use that bitumens are associated with long term in humans, as a result of regular exposure over an extended period.

The International Agency for research on cancer has concluded that there is no evidence that Class 2 bitumens are carcinogenic to man.

Storage of Onduline Products

Onduline sheets should be protected from the elements internally or if stored externally under a tarpaulin. It is advisable to store the sheets on the delivery pallets to avoid any possibility of sheet deformation due to the corrugations being compressed. Particular care should be exercised with Onduline PVC sheets which must be protected from UV radiation to avoid heat building up within the pallet.

Consideration of Fire Risk

Onduline sheets do not emit significant amounts of combustible gases during storage or use, and therefore require no special storage provision, although we recommend the material is stored in a normally ventilated area to ensure any moisture present can dissipate.

The composition of the sheet will burn only if ignited by an intense independent heat source. A fire can be tackled using normal fire fighting procedures with due precautions taken in respect of radiated heat and fumes. Normal water based fire extinguishers are suitable for this use.

Table of Constituent Materials
The following materials are present in Onduline and related products

	Bitumen	Organic Fibre	Pre Pigmented Colour	Emulsion paint finish	Polypropylene	Polyethylene/foam	ABS Copolymer	PVC
Onduline PP corrugated roofing sheets	●	●	●					
Onduline PF corrugated roofing sheets	●	●		●				
Ridge and Verge units	●	●	●	●				
PE & Safe-top Nails caps (steel shanks)						●		●
Batten Cloaking Piece					●			
Corrugated Fillers						●		
Multi-purpose Eaves Tray								●
Multi-purpose Ventilator Strips					●			
Roof Ventilators							●	
Roof Light Window						●		
Roof Light Sheets								●
Apron Flashings					●			

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Product Guarantee

Onduline roofing sheets are guaranteed weatherproof for the first fifteen years' service under normal usage, and when fixed in accordance with the fixing instructions to buildings erected in the UK.

The sheets must also be maintained in line with the recommendations set out in the guarantee agreement.

The insurance backed guarantee is non transferable, and does not cover the aesthetic quality of the material. The guarantee is against the value of the Onduline materials only, and does not provide compensation for labour or associated costs.



For further details of our products and services; contact the Sales Office who will be pleased to assist. Alternatively visit www.onduline.net for latest product information.

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