

Appraisal of a Building Product



Tegola Asphalt Roof Shingles



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General Information

Description of Product

The range of Tegola Candese Roof Shingles consist of multi-layered, durable, dimensionally stable asphalt shingles designed to provide architecturally attractive finishes to gabled roofs. The range is made up of ten different shapes and finishes to provide a mix of traditional quality and modern textures to the roof element of a building.

Tegola Shingles have been used as a premium lightweight roofing material for many years in Europe and elsewhere, with outstanding performance and reliability. This appraisal demonstrates that when correctly installed the Tegola Shingles will meet the performance requirements of the NZ Building Code.



R713 Completed February 2009
Verification of Clauses B2, and E2
of the New Zealand Building Code

GBS GROUP LTD
PRODUCT DISTRIBUTION & WAREHOUSING

Trade Literature

The Tegola Candese System & Product manual for Tegola Shingles in NZ GBS 02 Revision A, GBS 02-01 Technical & Flashing Manual Rev A December 2008 and individual installation documents GBS 02-02 to 02-11, describe the correct method of installation.

Applicant

The applicant is GBS Group Ltd.

Scope & Limitations

The range of Tegola Shingles are to be installed over a plywood substrate complying with the ECOPLY Roofing and Decking Manual, meeting the requirements of AS/NZS 226, laid over timber framing complying with NZS 3604. Typically the plywood is treated, 15mm thick DD grade with tongue and groove edges.

The slope of the plywood substrate shall be a minimum of 10°. Slopes less than this shall be covered with a sheet membrane as described in the technical manual (S 4.1).

The range of Tegola Shingles has been appraised as providing an alternative solution to the requirements of E2/AS1.

Detailed Information

Technical Description

Within a Tegola asphalt shingle a layer of impregnated fibreglass is enclosed between two layers of asphalt producing a dimensionally stable sheet material, not affected by high temperature changes and impermeable to moisture. The top layer is then coated with ceramised granules, which protect the bitumen layers from UV rays as well as providing the colour finish.

The granules are coloured by means of a ceramisation process which is done at extremely high temperatures. The use of inorganic pigments ensures minimal colour and wear degradation. A layer of siliceous sand prevents the asphalt shingles from sticking together and allows them to be transported and handled safely. Refer to diagram on the right of this page. Thermo-adhesive strips on the

top of the shingle provide additional wind –uplift resistance and are concealed once the shingles have been laid.

The installed shingle surface with coloured granules requires virtually no maintenance.

Copper finished shingles are asphalt shingle tiles without granules, but coated with a 70-micron thick 99.7 per cent pure copper foil, which is also wrapped around the edges. With time, these tiles develop the typical green self-protective patina. All copper shingles feature thermo-adhesive points that provide added wind resistance and are not visible once the tiles have been laid. A self-adhesive top layer makes the tiles perfectly watertight.

Zinc Titanium shingles are manufactured in a similar manner to the copper shingles.

All shingles are to be installed over the Tegola underlayment, which is an asphalt based heavy weight grade of impervious sheeting. Where the pitch of the roof is less than 10° but less than the minimum recommended by the manufacturer for a particular style and colour, the use of a peel and stick or torch-on type membrane shall be used.

Components & Accessories

Tegola granule and metal covered shingles are typically supplied in approximately 1.00m long x 350 mm wide shingle sheets and in paper or plastic wrapped packets weighing approximately 30 kgs each to allow for convenient handling and storage.

Storage, Handling & Safety Issues

The packets of shingles can be stored indefinitely when kept dry and out of the weather .

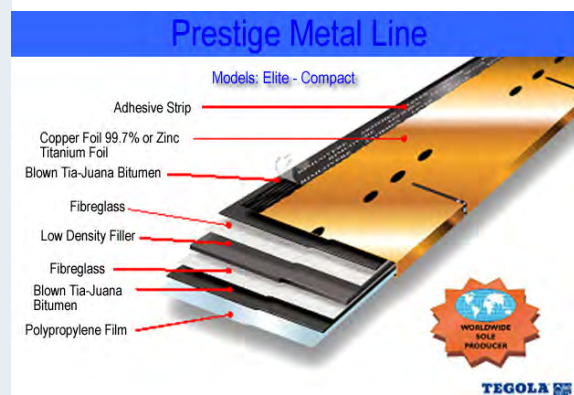
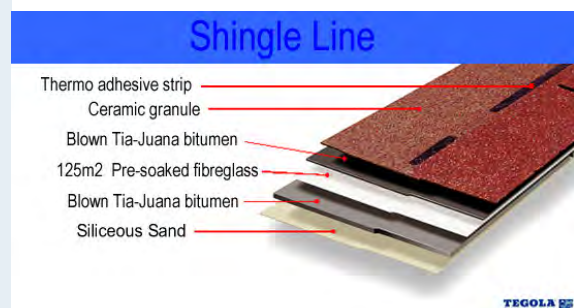
Tegola Shingles requires the tradesmen to wear appropriate safety clothing.

The correct health and safety procedures are described in the trade literature.

Specific Performance with the NZ Building Code

Clause B2 - Durability

The Tegola Shingles range when used in accordance with this Appraisal will meet Performance B2.3.1(b) of the New Zealand Building Code. In other words, the



product as appraised will be durable for at least 15 years.

Clause E2 - External Moisture

The Tegola Shingles range complies with clause E2.3.2 of the Building Code when installed in accordance with this Appraisal.

In other words, the product as appraised will “prevent the penetration of water that could cause undue dampness, or damage to building elements”.

Clause F2 – Hazardous Building Materials

The products contains no hazardous materials complying with clause F2.3.2 of the Building Code.

Basis of Appraisal

Clause B2 - Durability

European Standard ‘EN 544 - Bitumen Shingles with mineral and/or synthetic reinforcements - Product specification and test methods’ was used as the criteria for the assessment of conformance with the performance requirements of the New Zealand Building Code.

Durability was verified by assessing key performances including:

- Dimensional consistency
- Heat stability
- Tensile strength
- Nail shank tear Resistance
- Adhesion of mineral granules

E2 - External Moisture

The Tegola Shingles range was also assessed for ‘proper design’ and tested to ‘verify conformance’ with performance requirements of Clause E2. Tests included:

- Water absorption/resistance
- Weathertightness

The Tegola Shingles was also evaluated in practical building situations to assess the following:

- Ease of installing the product / system
- Potential risks of non performance when being installed
- Any external factors that could effect the quality of the installed product
- Ease of repair or maintenance (where applicable)
- The impact of other building products /systems when in contact
- Comparison with other similar

Products.

The completed assessments and test results demonstrated conformance with the requirements of Clause E2 (External Moisture) of the NZ Building Code.

F2 Hazardous Building Materials

For assessing the potential for the Tegola Shingles to become hazardous to health BEAL

considered the materials used in the manufacture of the membrane and equipment used for their installation.

Product QA Information

The Tegola Shingles range and accessories are manufactured to ISO 9001 and ISO 14001 standards. All products used in New Zealand are covered by a Quality Assurance programme to ensure continuous compliance with the New Zealand Building Code.

Design Considerations

The Tegola Shingles are typically applied to plywood substrates. For this reason reference must be made to the ‘Ecoply roofing and decking manual’ when plywood is specified as the substrate.

The Tegola Shingles can be used where a fire rating and or thermal performance is required, however these features are not part of this appraisal. Technical information about fire and thermal performance can be obtained on request from GBS Group Ltd.

The owner is expected to supply and install in addition to the constructed framing:

- A suitable roof substrate with a fall of at least 10° .
- Where the roof area is greater than 30 sq.m., ventilation points for every 20 sq.m. or and a continuous ridge vent.
- Suitable eave edge flashing (dripedge) to plywood
- Any kick-out flashings or scupper
- Blocking to allow for the installation of any penetrations, fixings or the like that are attached to the roof
- Anything else not specifically expected to be supplied by the roofing installer

The owner is also responsible for the protection of any substrate until the roofing installer can commence the installation of the membranes.

The installer is expected to supply the Underlayment, the Shingles and accessories described in the Tegola Candese System & Product manual for Tegola Shingles in NZ, GBS 02 - Revision A February 2009, and the ten individual installation manuals.

When specifying the 'Tegola Shingles' the product name should be accompanied by the BEAL Appraised number. E.g. "*Tegola Shingles: BEAL Appraised R713*".

Verification of Compliance

[Options suggested by the Department of Building and Housing]

Methods Used

- A technical opinion from a laboratory or testing facility - BEAL
- In service history - over 29 years in Europe, 10 years in New Zealand.

This appraisal uses the in service history provided by the manufacturer, together with test results from a recognised laboratory for verification of conformance with European Standard BS EN 544, together with testing for Weather-tightness of roofing shingles using BQI Test Method TM515 as the 'methods' for demonstrating compliance with the relevant clauses of the Building Code. [Methods suggested by the Department of Building and Housing]

The manufacture of the shingles has been assessed by SGS Italy SpA, and certified as meeting the requirements of UNI EN ISO 9001:200 for design and production of roofing tiles in bituminous materials.

NOTE

For information about BS EN Standards, refer to BSI.

For information about Test Methods developed by BEAL, refer to www.bqi.org.nz

Sources of Information

- BS EN 544 Bitumen shingles with mineral and/or synthetic reinforcements
- Roofing Technologies Technical Manual - Tegola Canadese
- Ecoply roofing & decking manual - Carter Holt Harvey
- CSTB Test Report No. 08-003 concerning Bardoline and Sopratuile bitumised shingles
- BEAL Test Report TR080116a Adhesion test of Bitumen sealants
- BEAL Test Report TR090212 Puncture / Self Sealability test
- BEAL Test Report TR090213a Resistance of installed shingles from driving rain
- Tegola Candese System & Product manual for Tegola Shingles in NZ, GBS 02 Revision A,
- GBS 02-01 Technical & Flashing Manual Rev A December 2008
- GBS Installation documents GBS 02-02 to 02-11
- Tegola Technical literature

Authorised Signatory -



A handwritten signature in blue ink, appearing to read 'G. N. House', is written over a light blue background.

20 February 2009

Conditions of this Appraisal

1. The Products continue to comply with the quality assurance measures of GBS Group Ltd. These quality assurance measures have been viewed and approved by BEAL.
2. The products comply with the conditions of this appraisal and with the Tegola Candese System & Product manual for Tegola Shingles in NZ GBS 02 Revision A, GBS 02-01 Technical & Flashing Manual Rev A December 2008 and individual installation documents GBS 02-02 to 02-11.
3. GBS Group Ltd continues to have the product range reviewed and quality assurance programme audited annually by BEAL.
4. The overall quality and performance of the products are maintained.
5. GBS Group Ltd. shall notify BEAL of any changes in specification or quality assurance measures prior to them coming into effect.
6. BEAL staff use New Zealand or appropriate international Standards or a BQI Interim Performance Standard (in the absence of a relevant New Zealand Standard) for carrying out testing and assessments. The evaluation of products is performed either at BEAL's facilities or at a nominated laboratory and carried out by experienced and qualified specialists.
7. The system has been tested against one or more of the following criteria which was applicable at the time of the appraisal:
 - a measurable criteria described in the Building Code, or
 - a relevant New Zealand or Australian Standard, or
 - an appropriate requirement set out in a New Zealand Department of Building & Housing document, or
 - a requirement set out in a Building Quality Institute "Interim Performance Standard"
8. BEAL's verification of the building product or system complying with one or more abovementioned criteria is given on the basis that the criteria used were those that were appropriate to demonstrate compliance with the Building Code at the date of this appraisal. In the event that the criteria are withdrawn or amended at a later date, this Appraisal may no longer remain valid.

BEAL's new approval logo is the assurance that a building product complies with the requirements of the New Zealand Building Code.



Using the latest in Australasian and overseas testing and assessment methods and criteria, BEAL's logo is a sign of confidence -

- ◆ Confidence for the architect or designer that the product literature and details will meet their specific needs;
- ◆ Confidence for the Building Certifying Authority that the product has been evaluated in a rigorous manner to demonstrate or otherwise, compliance with the relevant Clauses of the NZ Building Code;
- ◆ Confidence for the builder and installer that the Technical Manuals are clear and easy to understand.

BEAL's new 'Approval Logo' is being promoted throughout the building industry thus ensuring maximum exposure for all products that carry this logo. For further information contact Colin Prouse at BEAL on (+64) 4 233 6661 or e-mail at sales@beal.co.nz

Contact Details

GBS GROUP LTD

PRODUCT DISTRIBUTION & WAREHOUSING

The distributor of the range of Tegola Shingles is

GBS Group Ltd.

GBS Group Ltd. can be contacted at:

Head Office 09 268 7392

Fax 09 268 7391

Web Site www.tegola.co.nz



BEAL can be contacted at:

Head Office 04 233 6661

Fax 04 233 6662

E-mail sales@beal.co.nz

Web Site <http://www.beal.co.nz>

Further information about this Appraisal can be directed to Mr Colin Prouse