



## BIIG® SETS THE STANDARD BITUMINOUS ROOFING SYSTEMS

Products:

- BIIG® REGULAR - 4mm/5mm/HP/Anti-Root
- BIIG® NO FLAME 3mm/HP
- BIIG® ZK Self Adhesive

IIGO S.r.l. hereby declares that the membranes based on APP / TPO modified bitumen meet the requirements as stated in BRL1511/01 **"bituminous sheet roofing systems"** in which the quality is significantly higher than the minimum requirements for roofing systems as stated in BRL 1511-1501

### Dimensional Stability:

In the past, substantial "shear" problems (i.e. shrinkage) have been found in roofing membranes. Extensive testing for shrinkage, even using the most advanced methods, is logical but not sufficient for BIIG® roofing systems. Shrinkage or shearing in almost all cases can be traced back to outdated production issues. The demands on the dimensional stability for the above products in the EN 1107-1 are set at maximum contraction of 0.6% in single ply systems, and 0.8% for use in multilayer systems. Having undertaken six official and independent inspections, BIIG® products achieved a dimensional stability averaging 0.071%. This is 800% better than the norm. All BIIG® products are manufactured on high-tech production lines, specifically designed for production of BIIG®, and include oversized rollers or cylinders. It is this advanced manufacturing technique that guarantees the absolute minimum, or rather negligible, shrinkage of BIIG® roofing systems.

### Durability:

Experience has shown that products with a dual reinforcement, where the second reinforcement is placed just below the surface, provides a significantly longer life expectancy than conventional membranes. The inorganic glass fibre has a 100% protective effect on the underlying APP/TPO compound. Based on practical experience, using all evidence and technology available, and independent assessment, the life expectancy of this type of membrane is in excess of 30 years. Apart from adhering to good roofing practice including brushing off and cleaning the surface of fallen leaves, debris and silt, the completed roofs require minimal maintenance. In addition, research has shown that life expectancy is dependent on the quality of application of the products. The international network of authorized BIIG® roofing contractors, characterized by "The Roofers" logo as published on the back of this data sheet, guarantees professional installation of BIIG® roofing systems.

### Fire Resistance:

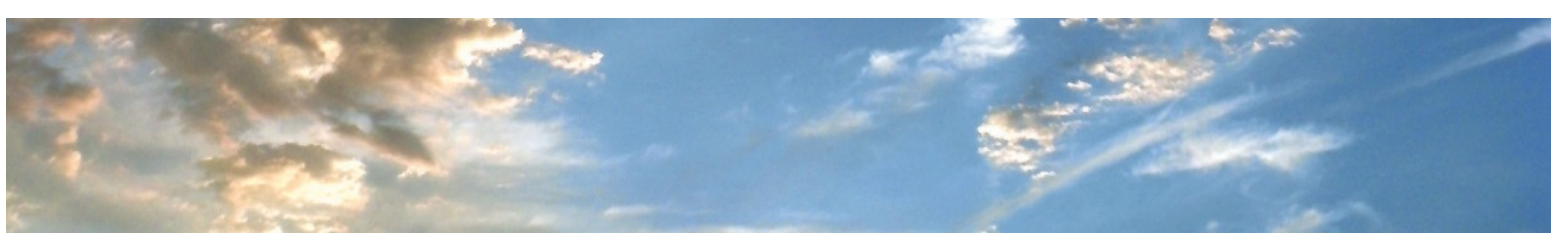
The BIIG® product range is continuously and successfully tested by various European standards (e.g. EN 1187-1/2/3/4 depending on requirements per country) on fire resistance and features many independent reports from European institutions, including in Belgium, Finland, Sweden, Denmark, Germany, Italy, and the United Kingdom. Systems were tested on various insulation types, including EPS, PUR/PIR, and mineral wool, and on various substrates including steel, wood and concrete.

Fire resistance on some insulants can be significantly less critical than heat accumulating, as opposed to melting insulation types, such as mineral wool or PUR/PIR. Where the insulant is susceptible to melting, for example EPS, the fire behaviour of this type of insulation is further influenced by the application of IIGO Tack cold adhesive instead of heat applied or mechanically fastened systems. BIIG® was successfully tested according to EN 1187 using cold adhesive systems. On the basis of these repetitive tests on various insulations, substrates and mounting methods - BIIG® is classified as the best possible for this type of membrane in resistance to fire.

### Overlap Strength:

Crucial to BIIG® No Flame single ply systems is the overlap strength. This determines whether the overlap seam will succumb over time or not. The value obtained here is greatly influenced by sustainable water resistance of a single-ply mechanically attached system. The minimum requirement as set by the UAETC (50 N/50 mm) is far too low for our BIIG® roofing systems. The BIIG® system, for both new and aged membranes goes well beyond these values. It performs an average value of 80 N/50 mm longitudinal (lengthwise) and 85 N/50 mm in the transversal (lateral) direction. BIIG® has had several successful trials in single ply system application in the so-called wind chest, a wind loading test, at both Dutch and Scandinavian institutes.





#### **Low Temperature Flexibility:**

An important measure of the quality of a compound is the so-called low temperature flexibility. However, even more crucial is the so-called  $\Delta$  (delta) temperature drop, i.e. the difference in measured cold flexibility on fresh material, and material that was thermally aged (12 weeks @ 70°C). According to NEN 2081, the fresh material must reach the minimum value of -15°C, whilst after aging cannot perform worse than -10°C, or in other words a  $\Delta$  (delta) of 5°C.

BIIG® products based on APP/TPO modified bitumen go far beyond these requirements. Tests carried out on BIIG® HP 5 - the powerhouse in our product range - is also the most demanding product in terms of thickness (5 mm) and weight of carrier (250 g/m<sup>2</sup> polyester), in laboratory conditions achieved values of -30°C/-22°C from new and measured practically unchanged values of -30°C/-18°C after aging (12 weeks @ 70°C).

#### **Positioning of Glass Fleece:**

BIIG® products are based on the original principle that the placement of the glass fibre reinforcement should be as close as possible to the surface, visible to the naked eye, and therefore without a meaningless "sacrificial layer". The inorganic fibre glass has aging resistant properties and therefore protects the organic compound from degradation normally caused by the sun's ultra-violet rays. The weight (55 g/m<sup>2</sup>) in relation to the dimension of the glass fibre strands in the glass fleece mat, theoretically ensures that every square metre can be covered up (or protected better) by a factor of 2.3. Due to the reinforcements placed asymmetrically in the upper part of the membrane BIIG offers an immediate and increased puncture resistance, which ensures the maximum resistance to foot and other traffic. Finally, the reinforcements of BIIG® 4 and 4 HP are on the upper surface thus facilitating approximately 3.8 mm of compound underneath to make the bond. In comparison to our competitors' standard 4mm torch-applied membranes, the reinforcement would be centrally placed leaving only around 1.9mm of compound to make the bond. Even in the 3 mm No Flame variant of BIIG®, due to the asymmetrical placement of the fiberglass/polyesterfleece, 2.9mm is still available under the inserts. This data is key to the life expectancy of in excess of 30 years being achieved.

#### **Xenon Aging:**

BIIG® is one of the few products to have undertaken Xenon aging tests in accordance with EN 4892-2. Few manufacturers undertake these tests as they are feared in the industry due to the extremely demanding testing period of 5000 hours. Following the EN 4892-2, cold-bending tests before and after aging were applied to BIIG® 5 HP as well as a tensile test to BIIG® 3 mm No Flame at low temperature (-10°C). The results of the tests have shown that the properties of BIIG® membranes before and after testing are substantially equal, in other words will not be altered, not even after prolonged extreme conditions.

#### **Homogeneity:**

In order to achieve an optimum homogeneity in the production of the BIIG® membranes, the two inserts are first impregnated before the thickness is reached at the second impregnation. This process of pre-impregnation ensures a 100% watering of the two inserts. The APP/TPO compound as used for pre-impregnation and impregnation in BIIG® membranes are of identical composition. This improves the quality from which the membranes strongly benefit.

#### **Building Materials and Environmental Decree:**

Since January 2002 IIGO Srl has held a BSB certificate number K 21834 for environmental certification. Requirements for this certificate are established in NBRL 9327. Based on this NBRL, all BIIG® membranes are tested for environmental aspects. All BIIG® products meet the emission requirements for inorganic components and the composition requirements of the organic components of the Building Decree. All BIIG® products are identifiable on the basis of the BSB logo and are clearly posted on each roll of membrane.

#### **BIIG® No Flame : Fully applicable without fire.**

The BIIG® No Flame system is applied using cold adhesives or mechanical fixings and therefore negate the risks associated with using naked flames in roofing applications. In the field area BIIG® No Flame is cold adhered or loose laid and mechanically fixed in the selvedge. In the perimeter and detail areas High Tech IIGO ZK (Synthetic) Primer and BIIG® ZK (Self Adhesive) is applied. The overlaps are then welded with hot air equipment to achieve a waterproof seal. BIIG® No Flame roofing systems are among the most avant-garde systems currently on the market.

#### **Root Resistance:**

BIIG® Anti-Root combines the advantages of the inherent properties of the dual reinforced membrane with root growth resistance. BIIG® 3 HP AR was successfully tested and achieves the European standard for root growth NEN-EN 13948: 2007 and provides the ultimate protection in green roof applications.

