# ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804

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| Owner of the Declaration | **CARLISLE Construction Materials GmbH** |
| Programme holder | Institut Bauen und Umwelt e.V. (IBU) |
| Publisher | Institut Bauen und Umwelt e.V. (IBU) |
| Declaration number | EPD-CCM-20120288-IBD1-EN |
| Issue date | 04.02.2014 |
| Valid to | 03.02.2019 |

## RESITRIX® SK W Full Bond und RESITRIX® SK Partial Bond

## CARLISLE Construction Materials GmbH

Institut Bauen und Umwelt e.V.

**www.bau-umwelt.com / https://epd-online.com**

# 1. General Information

CARLISLE Construction Materials GmbH

**Programme holder**
IBU - Institut Bauen und Umwelt e.V.
Panoramastr. 1
10178 Berlin
Germany

**Declaration number**
EPD-CCM-20120288-IBD1-EN

**This Declaration is based on the Product Category Rules:**
Concrete additives, 07-2012
(PCR tested and approved by the independent expert committee)

**Issue date**
04.02.2014

**Valid to**
03.02.2019

Prof. Dr.-Ing. Horst J. Bossenmayer
(President of Institut Bauen und Umwelt e.V.)

Dr. Burkhart Lehmann
(Managing Director IBU)

RESITRIX® SK W Full Bond und RESITRIX® SK Partial Bond

**Owner of the Declaration**
CARLISLE Construction Materials GmbH
Schellerdamm 16
21079 Hamburg

**Declared product / Declared unit**
1 m² RESITRIX® SK W Full Bond and RESITRIX® SK Partial Bond

**Scope:**
This EPD refers to the life cycle of RESITRIX® SK W Full Bond and RESITRIX® Partial Bond roofing and waterproofing membrane systems manufactured by Carlisle Construction Materials GmbH based in Hamburg.

It involves hot-air welded waterproofing membranes based on synthetic EPDM rubber with a glass fibre backing. The underside features a polymer-modified, self-adhesive layer of bitumen.

The EPDM layer is manufactured in Hamburg. The product is coated with polymer-modified bitumen in Waltershausen (Thuringia).

The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

**Verification**

| |
|---|
| The CEN Norm EN 15804 serves as the core PCR |
| Independent verification of the declaration according to ISO 14025 |
| ☐ internally ☒ externally |

Matthias Schulz
(Independent tester appointed by SVA)

# 2. Product

## 2.1 Product description

RESITRIX® SK W Full Bond and RESITRIX® SK Partial Bond are hot-air weldable roofing and waterproofing membranes based on synthetic EPDM rubber with a glass reinforcement. The underside is coated with self-adhesive polymer modified bitumen, with a release film. The self-adhesive EPDM waterproofing membranes can be used for full and partial installation.

## 2.2 Application

RESITRIX® SK W *Full Bond* can be installed in a variety of applications, either fully exposed, for fully bonded systems or beneath roof gardens and living roof systems.
RESITRIX® SK *Partial Bond* is specially intended for use in refurbishment and for partial installation on suitable insulating material and wooden composites. The manufacturer's installation instructions must be observed.

## 2.3 Technical Data

**Bautechnische Daten**

| Name | Value | Unit |
|---|---|---|
| Foldability at low temperature /EN 495-5/ /EN 1109/ | No tears at -30 | °C |
| Tensile strenght to /EN 12311-2/ Set point:longitudinal ≥250 / transverse ≥200 | Actual value: 361 / 333 | N/50 mm |
| Elongation at break to //EN 12311-2/ Set point:longitudinal ≥300 / transvers ≥300 | Actual value: 600 / 600 | % |
| Dimensional stability to /EN 1107-2/ Set point:longitudinal / transverse ≤0,5 | Actual value: +0,1 / +0,2 | % |
| Ozone resistance /EN 1844/ Set point: Grade 0 | Actual value: Grade 0 | - |
| UV-radiation /EN 1297/ Set point: no tears | passed | - |

| | | |
|---|---|---|
| Shear resistance /EN 12317-2/ Set point: ≥200 | Actual value: 700 | N/50 mm |
| Peel resistance /EN 12316-2/ Set point:≥80 | Actual value: 170 | N/50 mm |
| Water vapour diffusion resistance value µ /EN 1931/ (Verf. B) | ≥ 58000 | - |
| RESITRIX SK W Full Bond to FLL and /EN 13948/ | Root resistant | - |
| Reaction to fire /EN 13501/, Part 1 Set point: Class E | Actual value:Class E | - |
| Reaction to fire to /DIN 4102-7/ /ENV 1187/ external fire exposure to roofs | Resistant to flying sparks and radiated heat B roof t1 and t2 | - |
| Hail resistance, rigid and flexible underlay /EN 13583/ | Actual value: 28 / 40 | m/s |
| Resistance to impact /EN 12691/ (versions A + B) | Actual value: 2000 | mm |
| Maximum tensile force /EN12311-2/ Set point: ≥500 | Actual value: 700 | N/50 mm |
| Watertightness /EN 1928/ | Actual value: 6 bar/72 h | fulfilled |
| Tear resistance /EN 12310-2/ | Actual value: 40 | N |
| Bitumen compatibility /EN 1548/ | passed | - |
| Artificial ageing | > 5000 h | fulfilled |

### 2.4 Placing on the market / Application rules

Directive (EU) No. 305/2011 dated 9 March 2011 applies for placing on the market in the EU/EFTA. The products require a Declaration of Performance in accordance with Article 66 of the Directive taking consideration of the European Technical Approval ETA-06/0174 (Composite waterproofing system based on EPDM for waterproofing roofs and buildings – RESITRIX® SK W Full Bond).

The respective national guidelines apply for use; in Germany: the sheeting designation as per DIN V 20000-201: DE/E1 EPDM-BV-V-GG-2,5-PBS and EN 13956: 2012-05 (Flexible sheets for waterproofing – Plastic and rubber sheets for roof waterproofing) and EN 13967:2012-07 (Flexible sheets for waterproofing – Plastic and rubber damp-proof sheets including plastic and rubber basement tanking sheet) with sheeting designation as per DIN V 20000-202: BA/MSB EPDM-BV-V-GG-2,5-PBS.

### 2.5 Delivery status

Total thickness: 2.5 mm
Weight per unit area: 2.75 kg/m²
Standard length: 10 m / roll
Width: 1.00 m (strips on request)

### 2.6 Base materials / Ancillary materials

RESITRIX® SK W *FULL BOND* and RESITRIX® SK *PARTIAL BOND* comprise a topside based on EPDM and an underside based on a high-quality, polymer-modified, self-adhesive bitumen coating.
EPDM stands for saturated ethylene-propylene diene rubber. In view of its chemical constitution, this elastomer material is practically "tailor-made" for outdoor applications and the complex load factors associated with such applications. Its resistance to UV, ozone, oxidation and heat in terms of chemical and biological factors guarantees material elasticity for decades to come.
The topside comprises 25-40% EPDM synthetic rubber, 20-30% filler, 15-20% carbon black, 5-10% mineral oil, 1.5-2.5% cross-linking system and 15-20% processing auxiliaries.
The underside comprises 60-75% bitumen, 10-20% synthetic rubber (SBS), 5-15% KW-resin + crude oil and 0.5-1% carbon black. It also features a PE parting film.
The underside contains a herbicide based on propionates (0.1-0.5%).

### 2.7 Manufacture

The mixture comprising the individual polymers and respective aggregates is produced in Hamburg in a discontinuous process in an inner mixer automatically receiving the polymers, filler, carbon black, mineral oil, processing auxiliaries and cross-linking via dosing and weighing systems. The ensuing mixture is processed as sheets with a glass fibre backing in a four-roller calender. This production stage is also carried out in Hamburg and is followed by cross-linking (vulcanisation) the elastomer sheeting in automatic vulcanisation machines. Stringent quality controls are followed by coating with polymer-modified bitumen in Waltershausen. The self-adhesive, polymer-modified bitumen mass is produced using an intensive mixer with downstream agitators.

This fully-automatic process includes another quality check, cutting to length, banding and packaging for transport on pallets.
Development and production are subject to the ISO 9001:2008 quality management system. External quality inspections and tests on in-plant production control are conducted at regular intervals by independent test institutes, e.g.
- National Material Testing Office NRW/Dortmund
- BBA (British Board of Agreement Cert. No. 06/4329), UK
- FM Approvals (Approval Ident. No. 3036376), USA
- KIWA (KOMO attest K75248), The Netherlands
- BUtgb (ATG 07/1790), Belgium

and others.

### 2.8 Environment and health during manufacturing

A sophisticated raw materials management system governs production of the mixture and roofing membranes. New raw materials, auxiliaries and consumables are subject to an approval process in which they are examined for hazardous features and REACH compatibility and the working conditions are specified.
Materials introduced are continuously compared with statutory requirements and substituted where possible. Accordingly, all SVHC substances and/or candidates as per REACH have been replaced in the mixture recipes or in production.
The national and plant-specific requirements on environmental protection and industrial safety are adhered to throughout the entire production process. The production equipment is approved in accordance with §4 of the Federal Immission Act by the BSU (State Ministry for Urban Development and the Environment). Emissions by the plants are very low with the result

that there are no official measurement requirements imposed for emission measurements.
All limit values are observed for measurements of hazardous substances in ambient air with the result that the prevailing protective measures are sufficient.
The ISO 14001:2004 (certificate reg. no. 502001QM08UM) environment management system has been in use for some years in the area of environment-oriented development and production.
Production of RESITRIX® roofing membranes has been participating in the Thuringia sustainability agreement for several years (certificate valid until 2015).
The requirements on systematic and effective industrial protection based on the "Systematic Safety" quality seal are fulfilled. The requirements of OHSAS 18001:2007 are fulfilled (BG RCI).
In order to protect the health of all employees, all workstations are assessed and monitored by a safety officer. Improved workplace design is permanently implemented with the aim of relieving physical strain and optimising work processes.

### 2.9 Product processing/Installation

RESITRIX® SK W Full Bond and RESITRIX® SK Partial Bond are rolled out on the primed roof surface, secured in place and permanently welded at the seam overlaps using hot air.
No particular measures are required to ensure protection of the fitter's health.
The instructions in the installation and planning guideline must be observed.

### 2.10 Packaging

The rolls are wound on a cardboard core and secured by a band. 20 rolls are stored on each pallet (= 200 m² / pallet). The pallets are shrink-wrapped for safe transport.
All packaging materials are recyclable.

### 2.11 Condition of use

The chemical constitution of the EPDM rubber lends the roofing membranes a life cycle of several decades. No toxic substances are used for the service life of the declared roofing and waterproofing sheets.
During this period of use, there is no change to their composition which is why the sheets retain sufficient elasticity enabling them to withstand the thermal and mechanical loads prevailing on the roof.

### 2.12 Environment and health during use

The declared roofing and waterproofing sheets have been on the market for more than 30 years. No negative impact on the environment or health are known during the use phase.

### 2.13 Reference service life

When used and installed as designated, RESITRIX® roofing and waterproofing sheets have an anticipated service life of more than 50 years (please refer to SKZ final report 37236/99-V and report no. 41544/00 incl. short version).

### 2.14 Extraordinary effects

**Fire**

**Fire protection**

| Name | Value |
|---|---|
| Reaction to fire /EN 11925-2/ /EN 13501-1/ | Class E passed |
| Performance in case of external fire exposure to roofs /ENV 1187/ /EN 13501-5/ | B roof t1 and t2 passed |
| Burning droplets | - |
| Smoke gas development | - |

**Water**

All raw materials used in RESITRIX® roofing membranes are insoluble in water which prevents the possibility of washing out substances hazardous to water.

**Mechanical destruction**

Mechanical destruction of RESITRIX® roofing membranes does not cause any environmental pollution.

### 2.15 Re-use phase

Some material recycling is not recommended as the energy required for extracting the raw material from the recyclate is higher than that required for extracting the conventional raw material.
Tests indicate that from an ecological aspect, energetic re-use is the most practical method (the calorific value of RESITRIX® roofing membranes is comparable with that of pit coal).

### 2.16 Disposal

The material is directed to thermal utilisation after use. Roofing and waterproofing residue can be disposed of as mixed construction and demolition waste (waste code number 17 03 02).

### 2.17 Further information

More extensive information on RESITRIX® roofing membranes can be found on the CCM Europe GmbH Web site (www.ccm-europe.com or www.RESITRIX.com).

## 3. LCA: Calculation rules

### 3.1 Declared Unit

The declared unit is 1m² roofing membrane in the RESITRIX® system.

**Declared unit**

| Name | Value | Unit |
|---|---|---|
| Declared unit | 1 | $m^2$ |
| Grammage | 2.75 | $kg/m^2$ |
| Type of sealing (thermal welding or bonding via seaming tape and primer) | - | - |
| Conversion factor to 1 kg | 0.3636 | - |

### 3.2 System boundary

Type of EPD: cradle to plant gate – with options. The LCA takes account of the provision of raw materials and energy, raw material transport and product manufacturing (Module A1-A3) as well as transport after de-construction (Module C2), waste treatment (thermal utilisation, Module C4) and benefits and loads

outside the system boundary for thermal utilisation (Module D).

### 3.3 Estimates and assumptions

Estimates were only made for a few (4) substances contained in irrelevant volumes (max. 0.2%). Specific GaBi 6 data was available for all other raw materials or production processes.

### 3.4 Cut-off criteria

All data from the data survey was taken into consideration in the analysis, i.e. all raw materials used according to the recipe, electricity and water consumption. For all inputs, the assumptions made for the transport distances have been considered. Accordingly, material and energy flows accounting for less than 1 per cent of the overall product mass were also taken into consideration in line with Part A of the PCR.

### 3.5 Background data

All background data for the LCA model was taken from the GaBi 6 data base. The representativity can be classified as very good.

### 3.6 Data quality

The data quality can be regarded as high. Production of the roofing membranes was modelled using primary data from CCM GmbH. The corresponding background data sets were available in the GaBi data base for all of the relevant preliminary products used. The data used was last revised maximum 4 years ago.

### 3.7 Period under review

Average annual values for 2012 from the Hamburg and Waltershausen locations were taken for the volumes of raw materials, energy, auxiliaries and consumables used.

### 3.8 Allocation

As only the semi-finished product is manufactured in Hamburg and it is the same for all variants, no allocations were necessary here. Energy consumption in the Waltershausen plant was allocated to the variants based on the produced area(m²). Recipe data was used for the raw material mounts.
In the case of thermal utilisation in a waste incineration plant, credits for electricity and thermal energy were given in module D (from C4 for the thermal utilisation of roofing membranes as well as from A3 in the case of packaging and production waste) were considered in an input-specific manner taking account of the respective elementary composition and calorific value. The credited processes relate to Germany on account of the production facilities located there.

### 3.9 Comparability

Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to /EN 15804/ and the building context, respectively the product-specific characteristics of performance, are taken into account.

## 4. LCA: Scenarios and additional technical information

The following technical information forms the basis for the declared modules or can be used for developing specific scenarios in the context of a building evaluation if modules are not declared (MND).

**Transport to site (A4)**

| Name | Value | Unit |
|---|---|---|
| Litres of fuel | 0.00159 | l/100km |
| Transport distance | 403 | km |
| Capacity utilisation (including empty runs) | 85 | % |
| Gross density of products transported | 1100 | kg/m$^3$ |
| Volume capacity factor | 100 | % |

**Construction installation process (A5)**

| Name | Value | Unit |
|---|---|---|
| Auxiliary | 0 | kg |
| Water consumption | 0 | m$^3$ |
| Other resources | 0 | kg |
| Electricity consumption | 0.416 | kWh |
| Other energy carriers | 0 | MJ |
| Output substances following waste treatment on site | 0 | kg |
| Dust in the air | 0 | kg |
| VOC in the air | 0 | kg |
| Material loss | 1 | % |

**Reference service life**

| Name | Value | Unit |
|---|---|---|
| Reference service life | 50 | a |

**End of Life (C1-C4)**

| Name | Value | Unit |
|---|---|---|
| Collected separately Abfalltyp | 2.75 | kg |
| Collected as mixed construction waste | 0 | kg |
| Reuse | 0 | kg |
| Recycling | - | kg |
| Energy recovery | 2,75 | kg |
| Landfilling | 0 | kg |
| Transport distance to thermal utilisation | 50 | km |

**Re-use, recovery and recycling potential (D), relevant scenario information**

| Name | Value | Unit |
|---|---|---|
| Collection rate | 100 | % |

Module D contains the credits for the incineration processes from C4 (incineration of the roofing membranes). A waste incineration plant with an R1 value of < 0.6 was assumed.

## 5. LCA: Results

The following tables depict the results of the impact assessment, the use of resources as well as data on waste and output flows relating to 1 m² roofing membrane.

**DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE NOT DECLARED)**

| PRODUCT STAGE | | | CONSTRUCTION PROCESS STAGE | | USE STAGE | | | | | | | END OF LIFE STAGE | | | | BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARYS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Raw material supply | Transport | Manufacturing | Transport from the gate to the site | Assembly | Use | Maintenance | Repair | Replacement[1)] | Refurbishment[1)] | Operational energy use | Operational water use | De-construction demolition | Transport | Waste processing | Disposal | Reuse-Recovery-Recycling-potential |
| A1 | A2 | A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
| X | X | X | MND | MND | MND | MND | MND | MND | MND | MND | MND | MND | X | MND | X | X |

**RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: 1 m² RESITRIX SK (W FB + PB)**

| Parameter | Unit | A1 - A3 | C2 | C4 | D |
|---|---|---|---|---|---|
| Global warming potential | [kg $CO_2$-Eq.] | 5.92E+0 | 6.39E-3 | 6.19E+0 | -3.22E+0 |
| Depletion potential of the stratospheric ozone layer | [kg CFC11-Eq.] | 1.11E-9 | 1.33E-13 | 3.17E-11 | -9.74E-10 |
| Acidification potential of land and water | [kg $SO_2$-Eq.] | 1.33E-2 | 2.89E-5 | 1.5E-3 | -4.47E-3 |
| Eutrophication potential | [kg $(PO_4)^{3-}$- Eq.] | 1.34E-3 | 7.0E-6 | 1.28E-4 | -5.02E-4 |
| Formation potential of tropospheric ozone photochemical oxidants | [kg Ethen Eq.] | 2.18E-3 | -9.94E-6 | 1.03E-4 | -4.1E-4 |
| Abiotic depletion potential for non fossil resources | [kg Sb Eq.] | 3.73E-5 | 2.95E-10 | 2.87E-7 | -3.33E-7 |
| Abiotic depletion potential for fossil resources | [MJ] | 1.76E+2 | 8.73E-2 | 1.43E+0 | -4.25E+1 |

**RESULTS OF THE LCA - RESOURCE USE: 1 m² RESITRIX SK (W FB + PB)**

| Parameter | Unit | A1 - A3 | C2 | C4 | D |
|---|---|---|---|---|---|
| Renewable primary energy as energy carrier | [MJ] | 7.58E+0 | - | - | - |
| Renewable primary energy resources as material utilization | [MJ] | 0.0E+0 | - | - | - |
| Total use of renewable primary energy resources | [MJ] | 7.58E+0 | 5.19E-3 | 1.56E-1 | -4.69E+0 |
| Non renewable primary energy as energy carrier | [MJ] | 1.07E+2 | - | - | - |
| Non renewable primary energy as material utilization | [MJ] | 7.54E+1 | - | - | - |
| Total use of non renewable primary energy resources | [MJ] | 1.82E+2 | 8.76E-2 | 1.65E+0 | -4.93E+1 |
| Use of secondary material | [kg] | 0.0E+0 | 0.0E+0 | 0.0E+0 | - |
| Use of renewable secondary fuels | [MJ] | 0.0E+0 | 0.0E+0 | 0.0E+0 | 0.0E+0 |
| Use of non renewable secondary fuels | [MJ] | 0.0E+0 | 0.0E+0 | 0.0E+0 | 0.0E+0 |
| Use of net fresh water | [m³] | 2.35E-2 | 5.0E-6 | 1.46E-2 | -7.29E-3 |

**RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: 1 m² RESITRIX SK (W FB + PB)**

| Parameter | Unit | A1 - A3 | C2 | C4 | D |
|---|---|---|---|---|---|
| Hazardous waste disposed | [kg] | 2.52E-2 | 0.0E+0 | 1.5E-4 | 0.0E+0 |
| Non hazardous waste disposed | [kg] | 5.39E-2 | 1.73E-5 | 1.82E-1 | -1.84E-2 |
| Radioactive waste disposed | [kg] | 2.47E-3 | 1.26E-7 | 8.9E-5 | -2.79E-3 |
| Components for re-use | [kg] | 0.0E+0 | 0.0E+0 | 0.0E+0 | - |
| Materials for recycling | [kg] | 0.0E+0 | 0.0E+0 | 0.0E+0 | - |
| Materials for energy recovery | [kg] | 0.0E+0 | 0.0E+0 | 0.0E+0 | - |
| Exported electrical energy | [MJ] | 0.0E+0 | 0.0E+0 | 9.82E+0 | - |
| Exported thermal energy | [MJ] | 0.0E+0 | 0.0E+0 | 2.37E+1 | - |

## 6. LCA: Interpretation

The results of the product stage, transport within the EoL and thermal utilisation are declared in this EPD, whereby the product stage (A1-A3) plays the greatest role in almost every category; only regarding the Global Warming Potential (GWP), the scenario of incineration of the roofing membranes (C4) also plays a major role. Module C2 (transport to thermal utilisation) is negligibly low.

**Production (Modules A1-A3):** The raw materials make the greatest contribution to the effects of the product stage in almost all impact categories (66% - 99%), whereby EPDM, SBS, bitumen and carbon black play a particular role. The contribution by raw materials is only less (39%) in the "Total use renewable primary energy" (PERT) parameter where packaging comprising wood and paper accounts for the greatest share (41%).
Transport within the product stage accounts for <4% (with the exception of EP which accounts for 9%). Electricity, gas and steam play a minor role in some categories (e.g. GWP: 14%).

**Module D:** The credits from the EoL scenario are declared in Module D. These credits are the result of energy substitution (assumption includes the German power mix and thermal energy from natural gas) during thermal utilisation of the roofing membranes.

## 7. Requisite evidence

No evidences required.

## 8. References


**Institut Bauen und Umwelt**
Institut Bauen und Umwelt e.V., Berlin (pub.): Generation of Environmental Product Declarations (EPDs);

**General principles**
for the EPD range of Institut Bauen und Umwelt e.V. (IBU), 2013-04
www.bau-umwelt.de

**PCR Part A**
Institut Bauen und Umwelt e.V., Königswinter (pub.): Product Category Rules for Construction Products from the range of Environmental Product Declarations of Institut Bauen und Umwelt (IBU), Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Background Report. April 2013
www.bau-umwelt.de

**ISO 14025**
DIN EN ISO 14025:2011-10: Environmental labels and declarations — Type III environmental declarations — Principles and procedures

**EN 15804**
EN 15804:2012-04: Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products

**PCR 2013, Teil B:** PCR Guidance-Texts for Building-Related Products and Services: Requirements on the EPD for Plastic and elastomer roofing and sealing sheet systems (2013).

**GaBi 6**: PE INTERNATIONAL AG; GaBi 6: Software-System and Database for Life Cycle Engineering. Copyright, TM. Stuttgart, Leinfelden-Echterdingen, 1992-2013.

**GaBi 6D**: GaBi 6 dataset documentation for the software-system and databases, LBP, University of Stuttgart and PE INTERNATIONAL AG, Leinfelden-Echterdingen, 1992-2013. http://documentation.gabi-software.com/

**DIN V 20000-201**: November 2006; Use of building products in construction works - Part 201: Adaption standard for flexible sheets for waterproofing according to European standards for the use as waterproofing of roofs

**DIN V 20000-202**: Dezember 2007;Use of building products in construction works - Part 202: Adaption standard for flexible sheets for waterproofing according to European standards for the use as waterproofing

**ETA-06/0174**: Composite waterproofing kit on the basis of EPDM for the waterproofing of roofs an construction works for RESITRIX® SK W Full Bond.

**EN 1109:** 2013; Flexible sheets for waterproofing - Bitumen sheets for roof waterproofing - Determination of flexibility at low temperature

**EN 1548:** 2007; Flexible sheets for waterproofing - Plastic and rubber sheets for roof waterproofing - Method for exposure to bitumen

**EN 1844:** 2013; Flexible sheets for waterproofing - Determination of resistance to ozone - Plastic and rubber sheets for roof waterproofing

**EN 1928**: 2000; Flexible sheets for waterproofing - Bitumen, plastic and rubber sheets for roof waterproofing - Determination of watertightness

**EN 1931:** 2001; Flexible sheets for waterproofing - Bitumen, plastic and rubber sheets for roof waterproofing - Determination of water vapour transmission properties

**DIN EN 12310-2:** Flexible sheets for waterproofing - Determination of resistance to tearing - Part 2: Plastic and rubber sheets for roof waterproofing; German version EN 12310-2:2000

**DIN EN 12311-2:** Flexible sheets for waterproofing - Determination of tensile properties - Part 2: Plastic and rubber sheets for roof waterproofing; German version EN 12311-2:2013

**DIN EN 12316-2:** Flexible sheets for waterproofing - Determination of peel resistance of joints - Part 2: Plastic and rubber sheets for roof waterproofing; German version EN 12316-2:2013

**DIN EN 12317-2:** Flexible sheets for waterproofing - Determination of shear resistance of joints - Part 2: Plastic and rubber sheets for roof waterproofing; German version EN 12317-2:2010

**DIN EN 12691:** Flexible sheets for waterproofing - Bitumen, plastic and rubber sheets for roof waterproofing - Determination of resistance to impact; German version EN 12691:2006

**EN 13501-1:** 2010; Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests

**EN 13501-5:** 2005; Fire classification of construction products and building elements - Part 5: Classification using data from external fire exposure to roofs tests

**EN 13583:** 2012; Flexible sheets for waterproofing - Bitumen, plastic and rubber sheets for roof waterproofing - Determination of hail resistance

**EN 13948**: 2008; Flexible sheets for waterproofing - Bitumen, plastic and rubber sheets for roof waterproofing - Determination of resistance to root penetration

**EN 13956**: April 2007; Flexible sheets for waterproofing - Plastic and rubber sheets for roof waterproofing - Definitions and characteristics

**EN 13967**: März 2007; Flexible sheets for waterproofing - Plastic and rubber damp proof sheets including plastic and rubber basement tanking sheet - Definitions and characteristics

**DIN 18531**: Mai 2010; Waterproofing of roofs - Sealings for non-utilized roofs - Part 1: Terms and definitions, requirements, design principles

**DIN 18195**: August 2000; Waterproofing of buildings

**DIN 4102-1**: Fire behaviour of building materials and building components - Part 1: Building materials; concepts, requirements and tests

**DIN 4102-7**: Fire behaviour of building materials and building components - Part 7: Roofing; definitions, requirements and testing

**ENV 1187:** Test methods for external fire exposure to roofs

**EN ISO 14001:** 2004; Requirements with guidance for use

**EN ISO 9001:** 2008; Quality management systems

**OHSAS 18001:** 2007; Occupational Safety and Health.

**European waste catalogue 170302:** bituminous mixtures other than those mentioned in 170301

**REACH:** Registration, Evaluation and Authorization of Chemicals

**BImSchG:** Federal Immission Protection Act

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