E P D

Environmental Product Declaration

Carbon-footprint

Be prepared!

Page

Dear Customer,
dear interested party,

an EPD is an official document. It describes and certifies the environmental impact of a building product according to internationally recognized criteria. You will find the document on pages 20-26 of this brochure.

„Consistent environmental protection does not diminish the earning power of a company, it helps to secure it in the long term“. This sentence was written by a family entrepreneur in our neighborhood (Kurt A. Körber) and is about 50 years old.

Brantho-Korrux metal protection paints are often described as „sustainable“. In the following, we will show you what this means with the help of a some keywords. For the sake of clarity, we have shortened the list and therefore mainly refer to Brantho-Korrux „3in1“, but most of the statements apply in a similar or similar way: Brantho-Korrux „nitrofest“, „normal“, „ecobase“, „ecopakt“, Robust-Lack, S-Glasur, RMb and HgS.

Not just one point, but the sum of all these points shows you that using Brantho-Korrux is good for the environment.

You benefit from the easy application, the high protective effect and the low pollution - and our environment, our future, automatically benefits too.

Yours, Axel Valentiner=Branth Yours, Tim Valentiner=Branth

Durability and protection

The key to a positive environmental balance durability. It would be a waste of resources to keep repainting with a cheap environmentally friendly paint or to let valuable buildings, structures, constructions, installations, machines, vehicles, etc perish.

That is why Brantho-Korrux offers the maximum protection duration in accordance with DIN-EN-ISO 12944-6, even for the highest corrosion category.
To ensure that no resources are wasted, the user can use the table below to determine which film thickness is correct for the application.

Brantho-Korrux has not only been extensively tested, but has also been tried and tested for many years on tens of millions of square meters. This branded product is constantly being improved and developed in the interests of the user.

Corrosion category	C1				C2				C3				C4				C5				CX
	very mild				mild				medium				severe				very severe				n/a
Lifetime expectancy (in years)	L	M	H	VH	L	M	H	VH	L	M	H	VH	L	M	H	VH	L	M	H	VH	n/a
	<5	<15	>15	>25	<5	<15	>15	>25	<5	<15	>15	>25	<5	<15	>15	>25	<5	<15	>15	>25	>25
Dry film thickness (in µm)	>60	>60	>80	>160	>60	>80	>160	>160	>80	80-160	160-240	>240	80-160	>160	>240	>320	160-240	160-240	240-320	>400	>400
Number of layers	1	1	1	2	1	1	2	2	1	1-2	2-3	3	1-2	2	3	4	2-3	2-3	3-4	5	5
	Inside				Inside Outside				Inside Outside				Inside Outside				Inside Outside				Inside Outside
																					
Atmosphere	Inside: heated buildings in neutral atmosphere: e.g. bureaus, stores, schools, hotels. Outside: n/a				Inside: unheated buildings Outside: rural areas				Inside: production rooms with high humidity (e.g. laundries, breweries, dairies) Outside: city and industrial atmosphere				Inside: Chemieanlagen, Schwimmbäder Outside: industrial and coastal atmosphere with moderate salt load				Inside: Buildings with constant, extremly high condensation Outside: industrial and coastal atmosphere with high salt load				Inside: Buildings with constant, extremly high condensation Outside: buildings in off-shore atmosphere

Water hazards

Many buildings and structures are located over or near water. The protection of groundwater from contamination, the protection of animals and plants in standing and flowing waters, and the minimization of wastewater pollution are all important objectives of environmental protection efforts, because water is a precious commodity.

In Germany, chemicals and chemical preparations are classified into three water hazard classes. WGK3 = highly hazardous to water, WGK2 = hazardous to water, WGK1 = slightly hazardous to water. According to the AwSV, 2 litres of a WGK3 paint are as dangerous to water, aquatic animals and plants as 1,000 litres of Brantho-Korrux. According to the AwSV, 2 litres of a commercially available WGK2 anti-corrosion paint are just as dangerous to waters as 200 litres of Brantho-Korrux (=WGK1).

Whether pontoons in a gravel pit, a bridge over a river, repair work on a railway bridge, a gate in a water protection area, the waterways, the dredger, a museum ship, etc. - the use of Brantho-Korrux reduces the environmental risk very significantly.

The advantage for the user: For the storage of the Brantho-Korrux cans, according to German regulation AwSV, no collection pan is necessary.





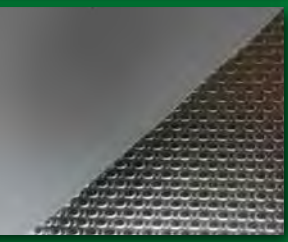

free of heavy metals

Traditionally, anti-corrosion paints contain toxic and/or environmentally harmful metals such as lead, chromate and zinc compounds. Brantho-Korrux has been lead-free since the mid-1950s, chromium-free since the mid-1990s and free of zinc, copper and cobalt since the 2000s.

Brantho-Korrux was one of the first lead-free anticorrosion paints. We were the first industrial paint manufacturer to use chromate-free pigments. Brantho-Korrux has been zinc-free for over 20 years. It is never a question of simply removing something good, it is always means to find new alternative ways for comparable or better durability.








Biocide free

Biocides can be useful in certain applications.
Algicides prevent the growth of algae, fungicides prevent the growth of fungi, insecticides kill insects, disinfectants kill bacteria or viruses, etc. - We do not use biocides in Brantho-Korrux, as their effect is based on their toxic effect.

If necessary or useful, Brantho-Korrux can be overpainted with biocide-containing paints or made extremely resistant to biocides and disinfectants with a top coat such as Branth‘s „2K Anti-Graffic Paint“.

renewable binders / resins

The binding agents, (the resins use) are an essential part and usually the determining factor in the properties of any paint.

There are paints made with purely synthetic binders and there are natural paints made with purely natural binders.

The five Brantho-Korrux binders combined with each other consist to ⅔ to ¾ of natural, renewable raw materials. Plants bind carbon from the atmosphere as they grow. The plant components are therefore a perfect carbon store. In a largely carbon-neutral process, the resins and oils from the biomass are made more durable and resistant with the help of catalysts and crude oil compounds. The carbon bound in the Brantho Korrux then protects valuable resources for years and decades.

Pigments from recycling

Brantho-Korrux contains anti-corrosion pigments, barrier pigments and colour pigments. These are ground to a fine powder and each particle is completely coated with binding agents. Anti-corrosive pigments are metal compounds, while barrier pigments are natural minerals (free from impurities).

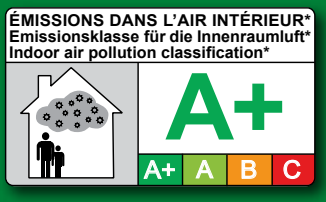
Approximately 50% of our colour pigments come from r ecycling processes. This is possible without compromising quality and reduces the CO2 footprint of these pigments by 50-80%.




VOC indoor pollution

The majority of people in Central Europe spend most of their time indoors. It is therefore essential that the indoor air is as free of pollutants as possible.
Brantho-Korrux gives you the assurance that it emits only very few dangerous or suspected dangerous substances within the first month after application, and none later.

The already strict „A+“ limits of the French regulation against indoor air emissions are undercut by Brantho-Korrux by 80-95%.



The limits of the Belgian VOC regulation are undercut by Brantho-Korrux by 70-99%.

The German AgBB test is particularly comprehensive with approximately 80 quantitative and qualitative measurements. All limit values are clearly undercut by Brantho-Korrux, e.g. formaldehyde by 97 %, TVOC by 46 - 66 %, TSVC by 95 %; the limit value for carcinogens (0.001 myg/m³) is not even reached.

By the way: During and after use indoors, always ensure good ventilation.

CO_2 footprint of Brantho-Korrux per litre, minus 90% in 30 years

Until the first oil crisis in 1973, energy costs and the cost of crude oil based raw materials were less of a burden. A year earlier, the Club of Rome had issued its warnings. Costs rising and warnings, both led to continuous CO_2 savings at Branth. In the choice of raw materials, in production, in heating, in mobility, etc.

The term “carbon footprint” did not exist 30 years ago. Nevertheless, we can estimate quite well how the carbon footprint per kilo of Brantho-Korrux has developed over the past 30 years, see the table below.

It is also true that our production volume has almost tripled during this period. And that is exactly why we are working to become even better, for example by offsetting the unavoidable or uncontrollable CO_2 emissions of some of our suppliers.

Average cradle-to-gate CO_2 emissions in kg per kg of Brantho-Korrux, estimated before 2020, calculated for 2020–25, target from 2026 onwards.

Until the 1980s	< 25
Until the 1990s	< 20
Until the 2000s	< 15
Until the 2010s	< 10
2020 to 2022	< 5
2023 to 2025	< 2
2026 to 2030	< 1
From 2030	< 0

organoleptically harmless

This means that you could coat the inside of a biscuit tin with Brantho-Korrux and it is certain that the biscuits stored in it will not taste of paint.

And the grain from a silo coated with Brantho-Korrux does not taste of paint, and the rain from a roof coated with Brantho-Korrux does not taste of Brantho-Korrux, nor does the grass under a pylon coated with Brantho-Korrux.
Dried Brantho-Korrux gives no taste.

There are other harmless paints and varnishes, but the special thing about Brantho-Korrux is that it is so harmless and offers a very high protective effect and is easy to apply.

Norsok Test M 501, Ed. 6, Sys 1; 4,200 hours of alternating test with scratching, UVA exposure, condensation, heat + 60°C, cold -20°C, salt spray test, intermediate adhesion when repainting without sanding.

Children‘s toys approved

Toys that are intended to be chewed and swallowed may only be coated with a paint that complies with EN 71-3. Independent tests involve placing a film of paint in 38°C warm stomach acid. This is followed by an examination to find out if any harmful substances have been dissolved in the gastric acid.

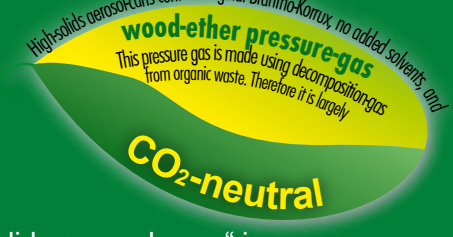
It is reassuring that Brantho-Korrux fully complies with EN 71-3, (even though it is not commonly used to coat dummys!). Brantho-Korrux coatings on children‘s playground equipment, bars on animal pens, partitions in cattle or horse stalls are harmless. But even if the paint is chewed or scraped off and unintentionally enters the food chain, no harmful substances are released.




Pressure gas from organic waste

Brantho-Korrux aerosol cans look „normal“, but they have three essential characteristics:

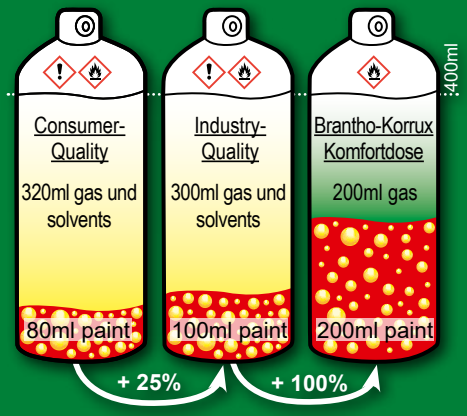
- » Bio-Pressure Gas
- » Non-diluted Brantho-Korrux
- » Doubled content



The pressurized gas in our „high-solids-aerosol-cans“ is made from a gas that is produced when organic waste decomposes. This gas is carbon-positive because the organic waste has absorbed CO2 from the atmosphere. The fermentation gas itself is not suitable as a pressure gas, neither from the smell nor from the chemical properties, therefore it is chemically converted.

The comfort cans contain undiluted original Brantho-Korrux. Therefore these aerosol cans do not cause additional VOC emissions compared to liquid paint application.

Compared to conventional spray cans, the high-solids-aerosol-cans contain about 2 - 2 ½ times as much paint. This saves on packaging, transport and disposal. And it provides real corrosion protection.



Preparation, application, drying

Brantho-Korrux is substrate tolerant. St2 preparation is sufficient as a primer. This can save considerable pre-treatment work, and all associated with it.

Brantho-Korrux „3in1“ can be applied and dries at temperatures between minus 10°C and plus 30°C. Humidity from 10% to 90% is possible. In our part of the world, it does not require air conditioning during application and drying.

Brantho-Korrux is one-component, no mixed residues must be disposed of. It can be used as a base, intermediate and top coat. Residues are universally applicable.

Brantho-Korrux can be used on all metal surfaces, no special products are necessary for certain application purposes. All colours can be mixed with each other. The types „3in1“, „nitrofest“, Robust-Lack, HgS and RMb can be mixed with each other indefinitely. Waste disposal is not normally required.

Application and drying temperatures

Packaging, transport, disposal

It is a challenge to dimension the packaging in such a way that it is suitable and appropriate, that too much packaging material is avoided, that there will be no storage or transport damage, that a long shelf-life is ensured, etc. Good resealability is important for resource-saving storage.
It is also important to use material easily recycled and to communicate the easy how-to. Practical can sizes enable optimized use of resources.

Transport is also optimized in many respects and any remaining CO_2 emissions are offset.

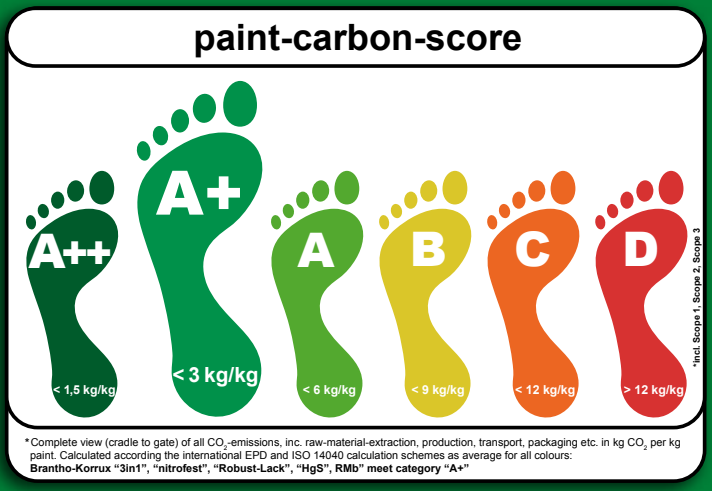
Cans are high-quality waste, and all products made from them have a particularly low carbon footprint. Paint is energy-rich and is welcomed in incinerators. The recycling of materials that have been coated with Brantho-Korrux is made easy as this coating contains no harmful ingredients.

Waste-free production, processing, durability

As early as the first half of the 1990s, we developed concepts for hazardous-waste-free production. This avoids the destruction of resources and the associated CO2 emissions. We have been producing
Brantho-Korrux without any hazardous waste since the mid-1990s. This includes, for example, the gas pendulum system for the delivery of binders from tanker trucks or the cold trap for the condensation of solvent vapors from the storage tanks.

Users can always apply Brantho-Korrux quickly and without hazardous waste. (See also page 15.)
We also provide a separate information brochure for this important point.

CO2 emissions during application are minimal, e.g. because no air conditioning is required. During the lifetime of the coating Brantho-Korrux produces no CO2 emissions. And if reworking is required in some years, the carbon footprint of Brantho-Korrux will be 0 kg/kg.



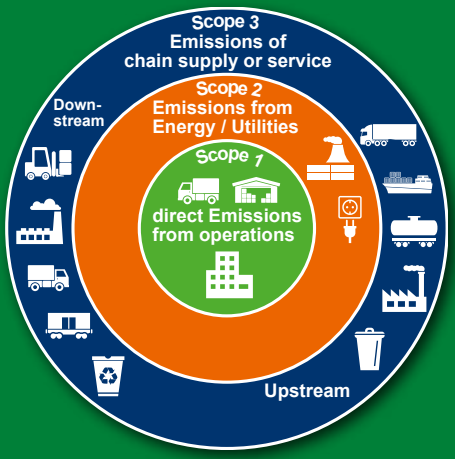
Scope1 & Scope2 & Scope3

„Scope 1 includes all CO_2 emissions that originate directly from the company. This includes emissions from real estate, vehicle fleets, etc. The Fa. Branth has been CO_2 neutral here for many years.

„Scope 2“ refers to indirect CO_2 emissions, mainly from purchased energy. Fa. Branth has been working with CO_2-neutral energy for many years.

„Scope 3 includes all indirect CO_2 emissions associated with the company‘s activities. These are emissions from the upstream and downstream sectors.
Upstream includes, for example, purchased raw materials and machinery, upstream transport, packaging and waste, CO_2 losses from energy purchases, business travel, and employee travel to and from work.
Downstream includes, for example, downstream transportation/delivery, processing of our products, packaging and product disposal.

Scope 3 also includes investments made by the company in other companies or projects. These can be CO_2-emitting or CO_2-reducing. Examples include investments in trees/ forests, wind or solar energy.



Awards 1996 - 2024

The approval of Brantho-Korrux „nitrofest“ by the German Federal Railways in the early 1980s was an award in itself. For the first time a paint was approved on the basis of its performance (and not on the basis of its composition) and this performance had been determined and confirmed by the DB in very extensive laboratory and practical tests. This was later followed by Brantho-Korrux „3in1“.

The first EMAS certificate in the mid-1990s was hard won. Everything was new, for us, for the authorities, for the experts.

One of the awards for environmentally conscious management was presented in 1997 by the then Environment Senator Fritz Vahrenholt.

Since then, many other awards have followed, some hard-earned, some given in honour.

These include validation and ongoing re-validation in accordance with DIN-EN-ISO 14001 and 9001, and most recently the „Top 100“ (one of the 100 most innovative medium-sized companies in Germany) and „Green Innovator“ in 2024.

ENVIRONMENTAL PRODUCT DECLARATION

as per *ISO 14025* and *EN 15804+A2*

Owner of the Declaration	Branth-Chemie A.V. Branth KG
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-BRC-20240259-CBC1-EN
Issue date	22.11.2024
Valid to	21.11.2029

Brantho-Korrux/Powercoat 3 in 1

Branth-Chemie A.V.Branth KG

Institut Bauen und Umwelt e.V.

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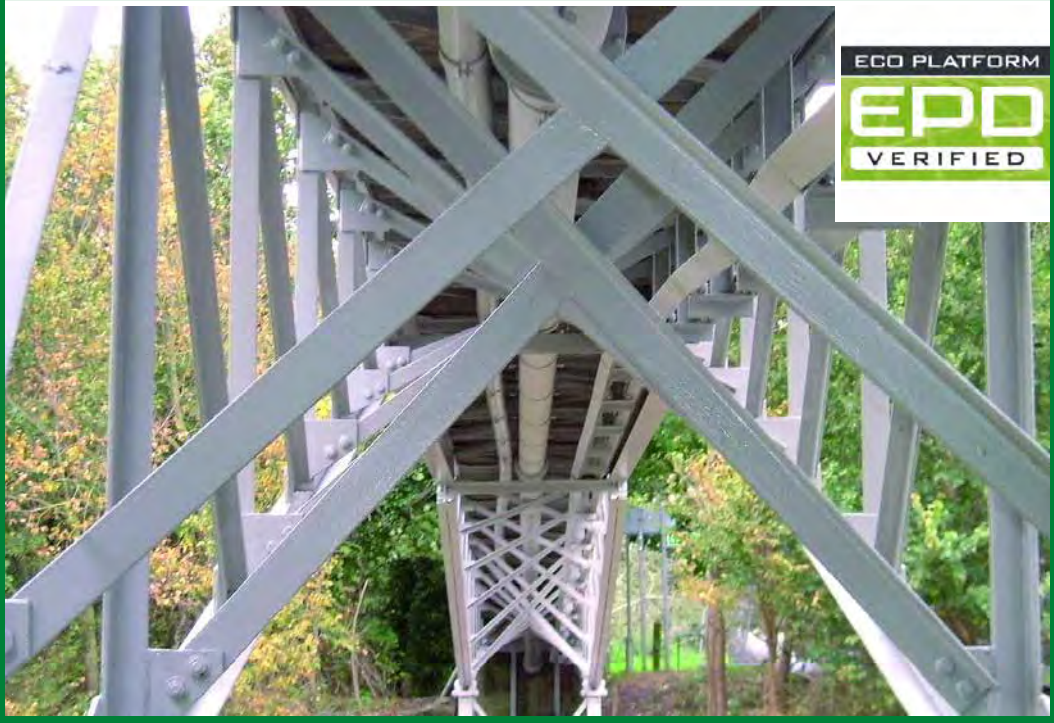

General Information

Branth-Chemie A.V.Branth KG

Programme holder

IBU – Institut Bauen und Umwelt e.V.
Hegelplatz 1
10117 Berlin
Germany

Declaration number

EPD-BRC-20240259-CBC1-EN

This declaration is based on the product category rules:

Coatings with organic binders, 01.08.2021
(PCR checked and approved by the SVR)

Issue date

22.11.2024

Valid to

21.11.2029

Dipl.-Ing. Hans Peters
(Chairman of Institut Bauen und Umwelt e.V.)

Florian Pronold
(Managing Director Institut Bauen und Umwelt e.V.)

Brantho-Korrux/Powercoat 3 in 1

Owner of the declaration

Branth-Chemie A.V. Branth KG
Biedenkamp 23
21509 Glinde
Germany

Declared product / declared unit

1 kg of Brantho-Korrux 3 in 1 / Powercoat 3 in 1

Scope:

The EPD is applicable for the Brantho-Korrux 3 in 1/ Power Coat 3 in 1 products.

The products are produced at the Branth production site in Glinde near Hamburg in Germany. The declaration is for the environmental impact of an average product composition (average EPD).

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.

The EPD was created according to the specifications of EN 15804+A2. In the following, the standard will be simplified as *EN 15804*.

Verification

The standard EN 15804 serves as the core PCR
Independent verification of the declaration and data according to ISO 14025:2011
☐ internally ☒ externally

Ms Jane Anderson,
(Independent verifier)

Product

Product description/Product definition

Brantho-Korrux 3 in 1 / Power Coat 3 in 1 is a one-component solvent based (aromatic-free) paint for corrosion protection of constructions, buildings, machines and transport vehicles in rural-, urban-, industrial- and maritime areas. Brantho-Korrux 3 in 1 / Power Coat 3 in 1 has a semi gloss finish (except effect colours).
For the use and application of the product the respective national provisions at the place of use apply.

Application

Brantho-Korrux 3 in 1 / Power Coat 3 in 1 can be applied using a roller, brush or by spray application techniques. Dipping is also possible.
Ist is suitable for all metal surfaces, concrete, most hard pastics, glas, screed, old coatings, rust, etc.
The product is suitable:

- as a protective coating for new construction or maintenance
- as both primer and topcoat
- as a primer for 1-component and most 2-component finishes
- for constructions built from several types of materials
- as a substitute for toxic red-lead primer (tested by the German Railway authorities)
- as a substitute for environmentally unfriendly PVC / Chl. Rubber coatings
- as a substitute for epoxy coatings (partly)
- as a substitute for simple and complicated alkyd coatings

This product is not recommended for application on soft plastics or exterior application on wood, as it is not vapour permeable.
Baking or forced curing (heat) is NOT POSSIBLE.
The substrate should be dry, solid and free of contaminants.
Stir well before application (by hand or machine).
Possible application and drying temperature from minus 10° C to plus 30° C.
Ideal application and drying temperature from plus 15° C to plus 25o C.

Product for which no legal provisions for harmonisation of the EU exist.
For the use and application of the product the respective national provisions at the place of use apply, in Germany for example the building codes of the federal states and the corresponding national specifications.

Technical Data

A CE-marking does not exists for coatings as they are semi-finished products whose final state is achieved by its proper processing.
Therefore properties in liquid state are listed in the following chapter "Constructional data".

Constructional data

Name	Value	Unit
Density	1100 - 1500	kg/m^3
Density	1.1-1.5	kg/ltr.
Solids content	69 - 73	%
Gloss (Lacke)	40 - 70	%
Viscosity	155 - 175	s; DIN 4mm
Corrosion level (DIN EN ISO 12944)	C1, C2, C3, C4, C5, CX	Corrosion Category
NORSOK standards	300	µm DFT
GISBAU	M-GP02	primer, pigmented, solvent based, free of aromatic hydrocarbons
GISBAU	M-LL01	coating, solvent based, aromatic free
DIN 4102-1 (on metals)	A1/A2	not-flammable
Indoor Air Pollution	A+	-
DIN 55928-5	Ü-mark	Approved for steel-constructions and equipment
Decopaint-directives	II1i	One-Component-special coating, Metal-high-build coating (bulding)
Decopaint-directives	II2e	One-component-coating, underbody protection coating (vehicle repair)

Base materials/Ancillary materials

Brantho-Korrux 3 in 1 / Power Coat 3 in 1 comprise the following substances:

Name	Value	Unit
Binders	20-40	%
Organic pigments	0.5-2	%
Inorganic fillers/pigments	25-50	%
additives	15-35	%

This product/article/at least one partial article contains substances listed in *the candidate list* of substances of very high concern (SVHC) for authorisation (date: 27.06.2018) exceeding 0.1 percentage by mass: **NO**

This product/article/at least one partial article contains other Carcinogenic, mutagenic, reprotoxic (CMR)substances in categories 1A or 1B which are not on *the candidate list*, exceeding 0.1 percentage by mass: **NO**

Biocide products were added to this construction product or it has been treated with biocide products: **NO**

Biocidal Products Regulation (BPR, Regulation (EU) 528/2012)

Reference service life

The RSL is dependent on the application scenario which has not been defined in this EPD. Paint in its original form is a semi-inished product. Therefore, no RSL is declared. Further information about resistances (after proper processing) can be found in the technical data sheet.

LCA: Calculation rules

Declared Unit
The declared unit for calculation is 1 kg of Brantho-Korrux 3 in 1 / Power Coat 3 paint ready to be applied excluding packaging. It is packaged in a tin can (0.097 kg).

Declared unit and mass reference

Name	Value	Unit
Declared unit	1	kg
Gross density (mean value)	1.4	kg/ltr.
Gross density (mean value)	1400	kg/m^3
Dry layer thickness	60	µm
Productiveness	6,4	m²/kg

This EPD declares an average composition for all products under study. As an estimate of the robustness of the LCA values, the weighted average composition of the declared Brantho-Korrux 3 in 1 / Powercoat 3 in 1 product is calculated relative to the production volume shares of a total of 19 variants in scope produced at the Branth production site located in Glinde, Germany. The production process remains the same for all variants in scope. The weighted average is representative of the environemntal impacts of the 19 variants covered in scope.

System boundary
The type of EPD according to *EN15804* is cradle to gate with options, modules C1–C4, and module D.
The following modules are declared: A1–A3, C, D and additional module A5.

Production stage - Modules A1-A3
The product stage includes:

- Raw material supply (A1)
- Transport to the manufacturer (A2)
- Manufacturing (A3), including provision of energy. Packaging is also considered in this module.

Construction stage - Module A5
The construction stage considers packaging treatment (recycling) of metal paint cans.

The treatment and potential benefits for avoided primary production (for the net scrap amount only) are declared in module D. The solvent emissions to air when the paint is applied are also declared in this module.

End-of-Life (EoL) stage - Modules C1-C4

- EoL module C1: Manual dismantling/ deconstruction (without environmental burdens).
- EoL module C2: Truck transport to waste treatment with a distance of 530 km (can be adapted on building level, if relevant)
- EoL module C4: considers disposal emissions only without benefits (100% scenario). The disposal scenario (EU region) assumes that the coating is on a e.g., metal surface during disposal and is thermally disposed off when the metal is recycled (melting). No benefits are considered. Only the resulting emissions are taken into account. Module C3 is declared as 0.

Reuse, recovery or recycling potential beyond system boundary - Module D
Loads and benefits beyond the system boundary would be declared in this module, if relevant.

Geographic Representativeness
Land or region, in which the declared product system is manufactured, used or handled at the end of the product´s lifespan: Germany

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. Background dataset : *Sphera LCA FE (GaBi ts) software, CUP 2023.1*

LCA: Scenarios and additional technical information

Characteristic product properties of biogenic carbon
The calculation of the biogenic carbon content in the declared product is based on the assumption of the biogenic carbon content in the materials composition (based on the mapped Sphera LCA FE dataset).
No biogenic carbon content exists in the packaging material.

Information on describing the biogenic carbon content at factory gate

Name	Value	Unit
Biogenic carbon content in product	0.0339	kg C
Biogenic carbon content in accompanying packaging	-	kg C

Note: 1 kg of biogenic carbon is equivalent to 44/12 kg of CO_2.

The following technical scenario information is used to calculate the declared modules.
The values refer to the declared unit of 1 kg of Brantho-Korrux 3 in 1 / Powercoat 3 in 1.

Installation into the building (A5)

Name	Value	Unit
Tin packaging sent to recycling	0.097	kg
Solvent emissions to air (during application)	0.266	kg

End of life (C1-C4)
Module C1: Manual dismantling (no environmental loads).
Module C2: An average transport distance of 530 km is assumed by truck.
Module C4: Considers disposal emissions only without benefits. The disposal scenario (EU region) assumes that the coating is on a e.g., metal surface during disposal and is thermally disposed off when the metal is recycled (melting/incineration). No benefits are awarded for incineration due to energy substitution, but only the resulting emissions are taken into account. A conservative approach of End of Life with cut off is considered, so no energy benefits are applied.

Name	Value	Unit
Thermal utilization without energy recovery	0.734	kg

Reuse, recovery and/or recycling potentials (D), relevantscenario information.
This module considers the benefits of packaging treatment (metal recycling) only

LCA: Results

The following tables display the environmentally relevant results according to *EN 15804* for 1 kg of Brantho-Korrux 3 in 1 / Powercoat 3 in 1.

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED; MNR = MODULE NOT RELEVANT)

Product stage			Construction process stage		Use stage							End of life stage				Benefits and loads beyond the system boundaries
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	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	X	MND	MND	MNR	MNR	MNR	MND	MND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 kg Brantho-Korrux/Powercoat 3 in 1

Parameter	Unit	A1-A3	A5	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq	1.95E+00	1.39E-01	0	2.89E-02	0	1.98E+00	-1.32E-01
GWP-fossil	kg CO_2 eq	2.33E+00	1.39E-01	0	2.85E-02	0	1.86E+00	-1.32E-01
GWP-biogenic	kg CO_2 eq	-3.81E-01	0	0	8.43E-05	0	1.25E-01	6.72E-05
GWP-luluc	kg CO_2 eq	8.63E-04	0	0	2.64E-04	0	3.97E-05	-2.72E-06
ODP	kg CFC11 eq	7.32E-12	0	0	3.71E-15	0	6.29E-13	-2.88E-16
AP	mol H^+ eq	7.02E-03	0	0	2.82E-05	0	3.13E-04	-2.83E-04
EP-freshwater	kg P eq	1.15E-05	0	0	1.04E-07	0	1.59E-07	-2.39E-08
EP-marine	kg N eq	1.48E-03	0	0	8.02E-06	0	6.99E-05	-4.97E-05
EP-terrestrial	mol N eq	1.6E-02	0	0	1.01E-04	0	1.46E-03	-4.37E-04
POCP	kg NMVOC eq	1.01E-02	1.29E-01	0	2.35E-05	0	1.93E-04	-2.02E-04
ADPE	kg Sb eq	9.96E-06	0	0	1.88E-09	0	4.93E-09	-3.28E-07
ADPF	MJ	4.78E+01	0	0	3.89E-01	0	9.42E-01	-1.21E+00
WDP	m^3 world eq deprived	4.88E-01	0	0	3.45E-04	0	1.73E-01	-2.45E-02

GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential)

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 kg Brantho-Korrux/Powercoat 3 in 1

Parameter	Unit	A1-A3	A5	C1	C2	C3	C4	D
PERE	MJ	2.98E+00	0	0	2.83E-02	0	2.29E+00	7.62E-02
PERM	MJ	1.98E+00	0	0	0	0	-1.98E+00	0
PERT	MJ	4.96E+00	0	0	2.83E-02	0	3.1E-01	7.62E-02
PENRE	MJ	1.98E+01	0	0	3.9E-01	0	2.9E+01	-1.21E+00
PENRM	MJ	2.8E+01	0	0	0	0	-2.8E+01	0
PENRT	MJ	4.79E+01	0	0	3.9E-01	0	9.43E-01	-1.21E+00
SM	kg	2.1E-02	0	0	0	0	0	7.6E-02
RSF	MJ	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0
FW	m^3	1.72E-02	0	0	3.1E-05	0	4.16E-03	-5.53E-04

PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 kg Brantho-Korrux/Powercoat 3 in 1

Parameter	Unit	A1-A3	A5	C1	C2	C3	C4	D
HWD	kg	3.83E-09	0	0	1.21E-12	0	3.25E-14	-9.34E-12
NHWD	kg	8.17E-01	0	0	5.95E-05	0	1.85E-01	1.83E-02
RWD	kg	8.55E-04	0	0	7.3E-07	0	3.17E-05	1.5E-07
CRU	kg	0	0	0	0	0	0	0
MFR	kg	0	9.7E-02	0	0	0	0	0
MER	kg	0	0	0	0	0	0	0
EEE	MJ	0	0	0	0	0	0	0
EET	MJ	0	0	0	0	0	0	0

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional:
1 kg Brantho-Korrux/Powercoat 3 in 1

Parameter	Unit	A1-A3	A5	C1	C2	C3	C4	D
PM	Disease incidence	6.62E-08	0	0	2.14E-10	0	3.58E-09	-4E-09
IR	kBq U235 eq	9.77E-02	0	0	1.09E-04	0	3.35E-03	2.96E-03
ETP-fw	CTUe	2.6E+01	3.21E-01	0	2.76E-01	0	3.04E-01	-7.45E-02
HTP-c	CTUh	1.08E-09	0	0	5.65E-12	0	2.89E-11	-5.38E-11
HTP-nc	CTUh	7.38E-08	1.97E-09	0	2.97E-10	0	2.54E-09	-1.78E-09
SQP	SQP	8.85E+00	0	0	1.62E-01	0	2.8E-01	1.46E-02

PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

Disclaimer 1 – for the indicator “Potential Human exposure efficiency relative to U235”. This impact category deals mainly with the eventual impact of low-dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure or radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, radon and from some construction materials is also not measured by this indicator.

Disclaimer 2 – for the indicators “abiotic depletion potential for non-fossil resources”, “abiotic depletion potential for fossil resources”, “water (user) deprivation potential, deprivation-weighted water consumption”, “potential comparative toxic unit for ecosystems”, “potential comparative toxic unit for humans – cancerogenic”, “Potential comparative toxic unit for humans - not cancerogenic”, “potential soil quality index”. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high as there is limited experience with the indicator.

References

Standards

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Paints and varnishes - Corrosion protection of steel structures by protective paint systems

DIN EN ISO 14001
Environmental management systems - Requirements with guidance for use (ISO 14001:2015); German and English version EN ISO 14001:2015

DIN EN ISO 14025
EN ISO 14025:2011, Environmental labels and declarations — Type III environmental declarations — Principles and procedures.

DIN EN 15804
EN 15804:2012+A2:2019+AC:2021, Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products.

DIN 4102-1
Fire behaviour of building materials and building components - Part 1: Building materials; concepts, requirements and tests 1998

DIN 55928-5 P221159697 MPA - NRW
Binders for paints and varnishes - Refined soya bean oil - Requirements and methods of test: Approval for steel-constructions and -equipment (Ü-mark)

DIN EN 71-3
Safety of toys - Part 3: Migration of certain elements; German version EN 71-3:2019+A1:2021

DIN EN ISO 9001
Quality management systems - Requirements (ISO 9001:2015); German and English version EN ISO 9001:2015

Biocidal Products Regulation (BPR, Regulation (EU) 528/2012)
Regulation (EU) No 528/2012 of the European Parliament and of the Council of 22 May 2012 concerning the making available on the market and use of biocidal products

Decopaint-directives
Limitation of emissions / /EU Directive 2004/2

EMAS
Eco-Management and Audit Scheme: www.emas.de

Emissions Dans L'Air Interieur / Indoor air pollution classification
VOC Regulation for construction products and furnishing and equipment materials: https://www.eco-institut.de/de/portfolio/emissions-dans-lair-interieur/

GISBAU
Gefahrstoff-Informationssystem der BG BAU (Hazardous substance information system of the BG BAU): www.bgbau.de/themen/sicherheit-und-gesundheit/gefahrstoffe/gisbau

NORSOK standards
www.standard.no/en/sectors/petroleum/norsok-standards/

REACH
Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18th December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

ROHS 2011/65/EU Regulation (EC) No 65/2011 and No 863/2015 of the European Parliament and of the Council of 8th june 2011 and 31st march 2015 concerning the restriction of the use of certain hazardous substances in electrical and electronic equipment

Further References

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Institut Bauen und Umwelt e.V.: General Instructions for the EPD programme of Institut Bauen und Umwelt e.V., Version 2.0, Berlin: Institut Bauen und Umwelt e.V., 2021
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Publisher

Institut Bauen und Umwelt e.V.
Hegelplatz 1
10117 Berlin
Germany

+49 (0)30 3087748- 0
info@ibu-epd.com
www.ibu-epd.com

Programme holder

Institut Bauen und Umwelt e.V.
Hegelplatz 1
10117 Berlin
Germany

+49 (0)30 3087748- 0
info@ibu-epd.com
www.ibu-epd.com

Author of the Life Cycle Assessment

Sphera Solutions GmbH
Hauptstraße 111- 113
70771 Leinfelden-Echterdingen
Germany

+49 711 341817-0
info@sphera.com
www.sphera.com

Owner of the Declaration

Branch-Chemie A.V. Branth KG
Biedenkamp 23
21509 Glinde
Germany

+494036974020
postmaster@branth-chemie.de
www.branth-chemie.de

Remarks

The Brantho-Korrux „3in1“ also has some disadvantages. Despite its many, many advantages, it cannot be used everywhere and under all conditions:

- Heat-driven drying is not possible with „3in1“.
- Drying takes a long time with thick layers.
- 3in1“ is not easy to sand for days after application.
- Brantho-Korrux „3in1“ will become soft if exposed to water for a long time.
- Brantho-Korrux „ecopakt“ and “2K-Durasolid” produce even lower emissions.

Many of the statements in this issue also apply to alternative products manufactured by us, which do not have these disadvantages, but may have others.

We practice sustainable sustainability. Sudden sustainability would not be sustainable.

- **If you are already a Brantho Korrux user:**
  Thank you for being part of it. We hope this brochure has shown you that it is not just about the paint in the can.
- **If you are not yet a Brantho-Korrux user:**
  There is also a lot of product-specific information available. We would be delighted if that information and the spirit of this brochure encourages you to get involved.

Be prepared!

EPD and CO2 footprint will soon be tender criteria.

They are hallmarks of sustainability and comparability.

Your customers will ask you about the carbon-footprint of your products or services.

With „Brantho-Korrux“ anti-corrosion paints you will be able to answer this question.

Summary:

The CO_2 footprint of „Brantho-Korrux“ anti-corrosion-coating has been reduced by more than 90% in 30 years from over 20 kg/kg in the 1990ies.

The CO_2 footprint of this product, from the extraction of raw materials to ex-works delivery, calculated as a weighted average of all colours, is less than 2 kg/kg.

The CO_2 footprint during application and drying (including solvent evaporation) on average is less than 0.15 kg/kg.

During the entire protection period there is no carbon-footprint (not counterbalanced is the carbon-footprint avoided by the protective effect).

At the end of the service life, e.g. after 20, 50 or 100 years, a carbon-footprint of less than 2 kg/kg can be expected for disposal/recycling (using today‘s worst-case technologies).

Link to this document as PDF

Website Branth-Chemie

www.Rostschutzfarbe.de

BRANTH-CHEMIE
A.V. Branth
gegr. 1887
Hamburg/Glinde

Branth-Chemie A.V.Branth KG
Biedenkamp 23 · D-21509 Glinde
Telefon: +49 40 - 369740 - 0
Telefax: +49 40 - 367148
Postmaster@Branth-Chemie.de