

# Technical Information and Application-instructions for

# Brantho-Korrux "3 in 1"

## Description:

**Brantho-Korrux "3 in 1"** is a 1-component, semi-gloss coating showing very good adhesion properties and elasticity. Low solvent content, active rust-inhibitive pigments, excellent hiding power, both suitable as a primer or a finish. Excellent resistance properties, German approval for food contact, can be applied on practically all types of substrate, good filling properties, good edge covering and fast drying. Meets the requirements of DIN EN ISO 12944 and DIN 55928. Modern "High-Solid"-coating.

## Recommended areas of application:

Protection against corrosion of constructions, machines and transport vehicles made from iron, steel, stainless steel, aluminium, zinc (galvanised) and other non-ferric metals, hard plastics, etc. in rural, urban, industrial and maritime areas. As a protective coating for new construction or maintenance, both primer and topcoat, as a primer for 1-component finishes and most 2-component finishes. Ideal for constructions built from several types of material.

As a substitute for toxic red-lead (tested by the German Railroad authorities), as a substitute for environmental unfriendly PVC /Chl. Rubber coatings (IKS tested), partly as a substitute for epoxy coatings and complicated acrylics and as a high performance alternative for alkyd coatings.

## Practical examples:

For example winter road clearance equipment, sea containers, high-tension towers, lorry chassis's, building equipment, bridges, cranes, vessels, boats, cladding (both coated or bare), railway stations, platform structures, fences, gates, production halls, pipelines, storage tanks, gutters, cooling equipment, and many other objects.

## Manufactured by:

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## Technical Data

- o **Product description:**  
Combination of various Polyester resins combined with environmental friendly, very active, multiple-phase rust-inhibitive pigments, lead-, chromate and zinc-free. Solvent combination is free of aromatic hydrocarbons like xylene or toluene.
- o **Viscosity:** 150 sec. / DIN 4 mm
- o **Thinning:**
  - \* Branth's **Kombi Thinner** (short drying time)
  - \* Branth's **Spezial-Thinner** (retards initial drying)
  - \* Nitro-thinner and or 2-C thinners may be used (check compatibility)
  - \* White spirit, etc. are not suitable
- o **Density:** 1,2-1,5 depends on colour
- o **Solids:** 70% (by wt); 53% (by vol.)
- o **VOC-value** < 400 g/l.
- o **Coverage:** 8,8 m<sup>2</sup>/l. at 60 µm dry (theoretical)
  - practical: depends on application losses, surface roughness, porosity etc.
- o **Gloss:** 25-55% according NCS, (depends on colour)
- o **Colours:** See colour card. Colours can be mutually mixed unlimitedly.
- o **Resistance:** see page 7
- o **Storage stability:** 24 months in unopened, original cans, in a well ventilated dry environment
- o **Packaging sizes:**
  - 5 l. cans with "material-saver" lids
  - 750 ml cans (6 or 12 per carton)
  - 10 l. and 25 l. cans on special order
- o **Special function (>25 litre):**  
Brantho-Korrux "3 in 1" –ASMS is formulated antibacterial and mould resistant. No chemical were used to achieve this, but state of the art Silver-Nano-particles are incorporated. These are not hazardous for health and environment.

## Application instructions (brief)

- o **Suitable substrates:**  
Iron- and steel constructions properly degreased and free from rust crusts and mill scale. Manually prepared rusted surfaces (min. St 2), wet blasted substrates and flash-rust are acceptable. Equipment build from various types of metal like iron, steel, galvanised steel, aluminium and other non-ferric metals, G.R.P., hard-PVC, wood etc. Steel, stainless steel, zinc, well adhering coatings and many other substrates.
- o **Application:**
  - \* Brush and roller application without dilution;
  - \* Air atomised spray: 30-35 sec. (corresponds to ± 10% Kombi-Thinner) tip size 1,5 - 2,0 mm; a larger opening requires less dilution;
  - \* Airless spray: viscosity 90 - 120 sec./ DIN 4 mm at minimal 180 bar, (corresponds to ± 3% Kombi-Thinner) orifice size 0,013 - 0,021"; spray-angle 40 - 80°, only dilute if necessary.
- o **Drying:** (at 20°C and 65% relative humidity)
  - \* touch dry: after 20-30 minutes
  - \* to recoat: after 100 minutes
  - \* no need to abrade before over-coating
  - \* dry to handle: ± 100 minutes
  - \* fully dried: ± 8 - 10 hours
  - \* fully cured: after 3 days
  - \* baking, or forced curing( heat) is not possible
  - \* The actual drying times depend on film thickness, ventilation, temperature, relative humidity, etc.

- o **Temperatures:**  
ideal application temperature: +15°C to +25°C  
possible application temperature: -10°C to +30°C
- o **Material consumption:**  
Theoretical consumption: 8,8 m<sup>2</sup> per litre at 60 µm dry film thickness, this dry film thickness can be achieved in a one-coat application. Practical consumption is between 150 and 200 ml per square metre.  
Dependable on the substrate conditions and actual exposure we recommend to apply one to three coats (see expected lifetime table on page 8).
- o **Health & Safety:**  
Extensive information is available from the health and safety data sheets.

## Detailed application instructions

### General

- o Apply to general health and safety instructions, e.g. keep away from heat, sparks and open fire; do not eat, drink or smoke during application, use only in well ventilated areas (see safety information sheet)
- o Always: **Stir well before use! Check colour!**
- o Do not mix with other substances than indicated by manufacturer.
- o Do not dilute for brush and roller application.

### Iron and steel

- o Remove rust and rust scale, loose mill scale, oil, grease and all other impurities by appropriate means. Apply coating on a clean and dry substrate.
- o Dependable on exposure apply one or more coats by brush or roller (do not dilute). For spray application dilute according the list printed on page 4.
- o The service life increases at thicker total dry film thickness. In practice one up to 3 coats is recommended, dependable on exposure.
- o On vertical objects a wet film thickness up to 150 µm without sagging can be easily applied (depends on application method).

### Rusted steel

- o Remove loose rust (rust scale), a sound substrate is required for optimum and lasting result (minimum degree of surface preparation up to St 2; ISO 8501-1; 1988). Contamination (oil, grease, salts, and detergents) shall be removed by washing properly.
- o Brantho-Korrux "3 in 1" penetrates into the remaining rust. To prevent further corrosion of such a rough substrate, apply sufficient material (at least one extra coat).

### Aluminium (light metals)

- o Slightly abrade, adhesion promoter or primer is not required, degrease and clean the substrate properly.
- o **Do not** abrade with steel fibre, preferably use a plastic fibre embedded abrasive (e.g. Scotch Brite® or similar).
- o Apply normal thickness (not too thin!). Adhesion test: please note that optimal adhesion is achieved after 3 days or more.

## Plastics

- o Properly clean and degrease. Check compatibility by applying "3 in 1". Most plastics like PVC window frames, GRP (glass-fibre-reinforced polyester), previous coatings, etc., **Brantho-Korrux "3 in 1"** is excellently suitable. Not suitable substrates are "soft" plastics alike Polyethylene (=Poly-olefins); Plexiglas® (acrylics) and Polystyrene may dissolve, but can be coated.

## Weathered galvanised steel

- o Properly clean and degrease total substrate (e.g. use multiclean), carefully remove all loose matter and zinc salts (white rust). Remove loose matter, especially white zinc-salts. Rinse with plenty of fresh water.
- o Apply sufficient film thickness on already rusting and consequently rough substrates.

## New galvanised steel

- o Slightly abrade, adhesion promoter or primer is not required, degrease and clean the substrate using a water-based cleaner/degreaser (e.g. multiclean). Rinse with plenty of fresh water.
- o Carefully remove zinc salts (white rust). **Do not abrade with steel fibre**, preferably use a plastic fibre embedded abrasive (e.g. Scotch Brite® or similar).
- o Only apply on a well-prepared, clean and dry substrate, free of grease, oil and all other contaminants, Apply sufficient film thickness (min. 60µm dry) in order to obtain proper adhesion and long-term protection.
- o For advanced exposures use Brantho-Korrux "2-Kompo" or Adhesion Primer.

## Other substrates

- o There are many more possibilities. Due to its elasticity **"3 in 1"** can be used on wood if a permeable coating is not required. Even on glass **"3 in 1"** shows proper adhesion. On concrete floors a 1:1 mixture with Brantho-Korrux "nitrofest" is recommended, or in some cases add **"3 in 1" activator** to obtain an abrasion resistant floor which can be taken into service within a very shortly after application.  
Properly applied powder-coatings can be painted with Brantho-Korrux "3 in 1" without any problem. As there are various qualities powder-coatings a confirmed recommendation is not possible, in several cases Brantho-Korrux "2-Kompo" will be the better choice. Brantho-Korrux "3 in 1" adheres very well on anodised aluminium, in order to obtain a proper film thickness we recommend priming with "Adhesion Primer"; when a harder surface is required we advise to apply Brantho-Korrux "2-Kompo".

## Further Information

- o **Brantho-Korrux "3 in 1"** may be disposed of without extra cost for chemical waste (according German legislation).
- o Adding **"3 in 1 Glanz-Additiv"** (750 ml to a 5 litre can) will result in an approx. 20% higher gloss level.
- o To improve the gloss Brantho-Korrux "3 in 1" can be mixed 1:1 with Branth's Robust-Lack; the drying times of Branth's Robust-Lack should be used in this case.
- o To lower the gloss of Brantho-Korrux "3 in 1" a 1:1 mixture with Brantho-Korrux "nitrofest" is recommended.

## Temperatures

- o During application a temperature of object- and surroundings around 20°C is optimal. Temperature should be between + 2°C and + 30°C.
  - \* At higher temperatures the drying speed increases, not the curing (dry hard) time. Drying speed can be retarded (in the summer) by using Branth's Spezial-Thinner (the curing will not be retarded).
  - \* At very low temperatures apply "warm" material or add some thinner.
  - \* **"3 in 1"** can also be applied at very low temperatures, even down to -10°C, the drying time increases and also the flow properties will suffer; do not apply on ice or frost.
- o The cured coating shows excellent heat resistance. Practical experience learned that exposure to dry heat up to max. 300°C has no influence on the quality of the product. Dependable on colour discoloration should be expected from ca. 120°C and up. For temperatures over 200°C the colour oxide-red RAL 3009 is recommended, up to 250°C silver-aluminium RAL 9006 and black RAL 9005 are recommended.
  - \* Also temperature-shocks (e.g. a sudden temperature change from + 250°C down to + 5°C (cold water), from +70°C down to -20°C) and extremely low temperatures (down to -50°C) showed no negative influence on the coating.

## Drying times

- o **"3 in 1"** is an air-drying coating, which is normally applied without activator.
- o The precise drying times depend on film thickness, ventilation, relative humidity and air-temperature.
- o Thicker coat can easily be applied in one coat, however, this will cause a considerable increase of the drying time. **"3 in 1"** reacts thermoplastic during a few days after application and cannot be abraded.
- o Thicker coats or several coats applied in a short period of time will cause a general increase of the total drying time. It is recommended to apply a thin coat first, followed by a thicker coat.
- o The drying mechanism of **"3 in 1"** causes the adhesion to increase even after approx. 3 days (completely dry). During this drying period, objects cannot be stacked, as blocking will occur. If applied as a primer **"3 in 1"** may be mixed with **"nitrofest"**.
- o Long-term exposure to liquids (e.g. rain on horizontal surfaces) may cause "moisture stains" during the curing (up to 5 days after application).
- o Ventilation with fresh air accelerates the drying/curing speed; forced drying with warm air over 30°C slows down the curing speed.
- o **"3 in 1" activator** shortens the drying times (not dry to touch) and increases the mar resistance of the surface considerably (especially for dark colours). The addition should be between 5-10% for topcoats only (not recommended for primers!), the mixture should be used within one working day. Please do not use **"3 in 1" activator** in combination with metallic or m.i.o. coatings (610, RAL 9006 and 9007).

### Brush application

- o Apply material with standard round, oval or flat brushes (industrial quality), d.f.t. 40-80 µm can be achieved. After 1-2 hours the next layer can be applied (avoid excessive brushing to prevent bleeding when different colours are used!). Colours containing micaceous iron oxide can be applied up to 100 µm dry easily.

### Spray

- o The table below contains guidelines for spray application; please follow directions of equipment manufacturers. The use of Branth's Kombi-Thinner is strictly recommended. When spraying a dry film thickness from 50 µm (small objects, air atomised) up to 125 µm (large objects, airless) can easily be achieved.

### Roller application

- o A short nap synthetic roller is recommended (up to 12 mm nap), nylon, suitable for 2-component coatings; a d.f.t. of 40-60 µm can be achieved. Do not use foam rollers.

### Special effects

**Brantho-Korrux** can be used for special effects. Apply undiluted material shortly after drying of previous coat, the effect depends on opening, pressure and distance. For better "hardness" add Branth's special activator.

	"3 in 1" colours				"3 in 1" m.i.o.'s	
	small objects		large objects		large objects	
<b>Air pressure 4-5 bar</b> - opening 1,4-1,7 mm - opening 2,0-2,5 mm - opening 2,5-3,5 mm	<b>Viscosity in seconds DIN cup 4 mm and dilution percentage</b>					
	20-30 sec.	15% K-Th.	---	---	---	---
<b>Airless Min. 150 bar</b> - tip 17/40 to 19/40 - tip 21/40 to 23/40 - tip 25/40 to 27/40	30-60 sec.	10% K-Th.	30-60 sec. 80-120 sec.	8-10% K-Th. 3-5% K-Th.	60-80 sec. ± 120 sec.	10% K-Th. 3% K-Th.
	---	---	80-100 sec.	3-5% K-Th. 5% K-Th. no dilution	± 120 sec.	5-10% K-Th. 3-5% K-Th. no dilution
<b>Air-mix 90/3 bar</b> opening 0,2-0,5 ∠ 40°	60-90 sec. 5-8% K-Th.		60-90 sec. 5-8% K-Th.		90 sec. 10% K-Th.	
<b>HVLP 5/1 bar</b> opening 1,6-3,5	30 sec. ± 15% K-Th.		30 sec. ± 15% K-Th.		30-60 sec. ± 15% K-Th.	

### Electrostatic spray

- o **Brantho-Korrux** can be applied with electrostatic spray equipment (both airless and air atomised), the material shows an electrical conductivity of > 100 k-Ohm. Dilute according equipment manufacturer's specifications.
- o The electrical resistance at delivery of "3 in 1" is 1500-2500 kΩ. When diluting to airless viscosity (ca. 80-90 sec./DIN 4 mm) this value decreases to 1000-1800 kΩ., for air atomised spray (ca. 30-35 sec./ DIN 4 mm) this value decreases to 1000-1500 kΩ.
- o On request, at special price, the material can be delivered at customer specification (min. 25 l.).
- o Aluminium and micaceous iron oxide cannot be applied with electrostatic equipment Values: 9007 ca. 3000 kΩ., airless ca 2000 kΩ, air-at. 1500 kΩ; 9006 ca. 20.000 kΩ, airless ca. 18.000 kΩ, air-at. ca. 10.000 kΩ; adjustment by manufacturer not possible)

### Dipping

- o Due to its basic properties, drying time, recoatability, environmental acceptability, **Brantho-Korrux "3 in 1"** is suitable for dipping. Very little deposit formation in the dipping vessel.
- o The required viscosity depends on object and passing method, normally at 20-35 sec./ DIN 4 mm. Adjust viscosity with Branth's special "dipping" thinner.
- o We recommend to stir the contents of the dipping vessel continuously at very low speed, complete circulation of the vessel once or twice a day is considered sufficient (practical experience).
- o The yearly consumption should be minimal twice the content of the vessel.

### Support: Selection of the appropriate airless filters:

current filters are:

<b>red</b>	180 mesh/cm <sup>2</sup>	size: 0.084 mm
	for very low viscosity lacquers e.g. 0.007-0.013" tip-size	
<b>yellow</b>	100 mesh/cm <sup>2</sup>	size: 0.14 mm
	for normal to high-build coatings e.g. 0.011-0.019" tip-size	
<b>white</b>	50 mesh/cm <sup>2</sup>	size: 0.32 mm
	for zinc-rich and mio coatings e.g. 0.015-0.025" tip-size	
<b>green</b>	30 mesh/cm <sup>2</sup>	size: 0.5 mm
	for heavy materials alike bitumen e.g. tip-size 0.027" and up	

For Brantho-Korrux **yellow** and **white** are right.

### Recoating

- o **According TL of German Railways**  
Recoating according the German Railway standard: When recoating "3 in 1" with coatings according page 75 and 77 of TL 918 300 T2 (two-component epoxy and polyurethane coatings) a 24 hours interval is recommended due to the aggressive nature of the solvents, in order to prevent resolving or bleeding. Under normal circumstances an interval of two hours is sufficient, at varying weather conditions or at low temperatures recoat when the material is dry to handle, in any case the material can be recoated the next day without any problem

### Recoat intervals at 20°C / 65% relative humidity

primer	topcoat	minimum	ideal
"3 in 1"	"3 in 1"	15 min.	> 2 hours
"3 in 1"	Robust-Lack	15 min.	> 2 hours
"3 in 1"	S-Glasur	30 min.	> 2 hours
"3 in 1"	Alkyd paint	30 min.	> 1 hour
"3 in 1"	Water-based	2 hours	> 5 hours
"3 in 1"	nitro-cellulose	5 hours	> 8 hours
"3 in 1"	2-c-acrylic	12 hours	> 24 hours
"3 in 1"	2-c-epoxy	24 hours	> 24 hours
"3 in 1"	2-c-polyurethane	16 hours	> 24 hours
"3 in 1"	PVC (vinyl)	15 min.	> 2 hours

### Recoating

- o "3 in 1" dries to a dirt repellent, eggshell finish (semi-gloss), normally a two-coat system is sufficient, an extra topcoat is not necessary.
- o "3 in 1" can be recoated unlimitedly with itself (abrading/sanding **not** necessary).
- o If required, "3 in 1" can be recoated with all sorts of one-component coatings and with several (tested) two-component coatings. However, some type of coatings may require a longer drying time of "3 in 1" (fast drying two-component high-build epoxy coatings and adhesion primers with a solids of < 10% are not suitable as topcoat for "3 in 1").
- o The table above contains guidelines (minimum interval and recommended interval time), recoating is possible without abrading/sanding at any later moment.

### Fillers

- o "3 in 1" can be applied on all available 1-Comp. and 2-Comp. fillers if these are properly cured. No incompatibility is reported to us, Brantho-Korrux "3 in 1" showed excellent adhesion on all tested commercial fillers.
- o applying fillers on top of "3 in 1" is not recommended (too flexible for 1-Comp. fillers and too strong attack by styrene containing 2-Comp. "Polyester"-fillers). Better suitable are Brantho-Korrux "nitrofest", "2-Kompo", "ecobase", or "Adhesion Primer".

### Colours

- o **Brantho-Korrux "3 in 1"** is available in many colours (see colour card). All colours are intermixable in any mixing ratio.
- o All colours show optimal protection against corrosion and optimal hiding power, this is the reason for different pricing amongst the colours.
- o Special colours are available from 25 l. orders according a colour standard (RAL, NCS) or colour sample.
- o Due to the high pigment content in some colours and aluminium (9006/7) pigments can be grated from the paint surface. Although this is harmless to the coating, this may not be acceptable in some cases (public area's, etc.), in these cases we recommend a topcoat.

### Important: Aluminium /m.i.o. coatings

- o The technical information herein is based on normal colours. For aluminium and m.i.o. coatings not all data does apply (aluminium-effect, m.i.o. effect, e.g. RAL 9006, 9007, DB 601, 703, etc.). These colours should not be used for food contact applications or for toys. These coatings can be applied in a thicker film (+50%) and will dry somewhat slower accordingly. They also show better protection against corrosion. "3 in 1" Activator-Concentrate is not suitable for these products; Quick-Härter could be used instead.

### Gloss

- o Degree of gloss of "3 in 1" is "eggshell/dirt repellent, and is, and differs per colour in order to obtain an optimal pigmentation (hiding power).
- o Degree of gloss according NCS: 20 - 50% (depends on colour).
- o By mixing "3 in 1" with **Branth's Robust-Lack** (high gloss) a higher gloss can be obtained, by mixing with **Brantho-Korrux "nitrofest"** (flat) a lower gloss can be obtained.

### Colour resistance

Nowadays we use colour-pigments with extreme high light-fastness and weather resistance for every colour. Besides that, the percentage of pigments in Brantho-Korrux products is very high, which will result in excellent hiding power and long-term resistance. Nevertheless there will be differences regarding light-fastness and weather resistance. Detailed below you will find a resistance range from very high to high resistance:

- 9010/9006/9002/7035/9007/9001/DB703
- 3009/0610/DB601/6011/7023/7011/9005/IC444/7350/7032/7001
- 5007/1015/5012/5015/5010/8016/6005/IC105/3575
- 5002/6018/1006/1007/1021
- 2000/2011/2004/3020/3000/3002

Although we use extreme resistant pigments for red, orange, yellow, blue etc., colours like white and silver-aluminium show a much better UV-resistance. All critical colours are manufactured with high-quality UV-absorbers. The colour stability can be improved by over-coating with a clear varnish (e.g. Branth's Kristallglasur), critical colours show considerably lower (white-) fading after several years.

### Storage

#### Minimum tenability

The tenability indication on the cans implies the warranted tenability in unopened, original cans, in a cool, well-ventilated dry storage area. The indicated tenability is **no expiry date**, under normal conditions the coating may be used up to 5 years without loss of quality. The indicated minimum tenability should especially help to use the older cans first. As long as the coating material can be stirred homogeneously, she can be applied without problems.

#### Storage temperature:

The ideal temperature for paint cans lies between 10° up to 20° C. Frost will normally not harm the product. Temperatures over 25°C will shorten the storage stability.

**Information according EU Directive 2004/42/CE / Limitation of emissions of volatile organic compounds.**

VOC content as delivered, ready for brush and roller application: 360-410 g/l.  
 VOC content at so called "worst-case-contemplation" maximum: 500 g/l.

The major areas of application of Brantho-Korrux "3 in 1" are not subject to above mentioned regulation(s).  
 Within the regulation(s) the major areas of application are II1i: (respectively IIAi) \*1) and II2e (resp. IIBe) \*2).  
 The EU-limited values are from 01-01-2007 "600-840 g/l" and from 01-01-2010 "500-840 g/l".

Further areas of application are: one-component-special coating, primer for iron, steel, aluminium, one-or multi-coat coating, corrosion resistant coating, chassis and under body protection, two-component special coating, adhesion primer, intermediate coating, protective coating, base-coat, Top-coat, interior coating, primer- and intermediate coating, full hiding coating for interior and exterior (II1i, II2e, II1j, II2cbb, II1d, II1g, II2d, II2caa).

**Professional indication:** 2004/42/IIA(i) 600 (2007) 500 (2010) 500  
**and:** 2004/42/IIB(e) 840 (2007) 840 (2010) 500

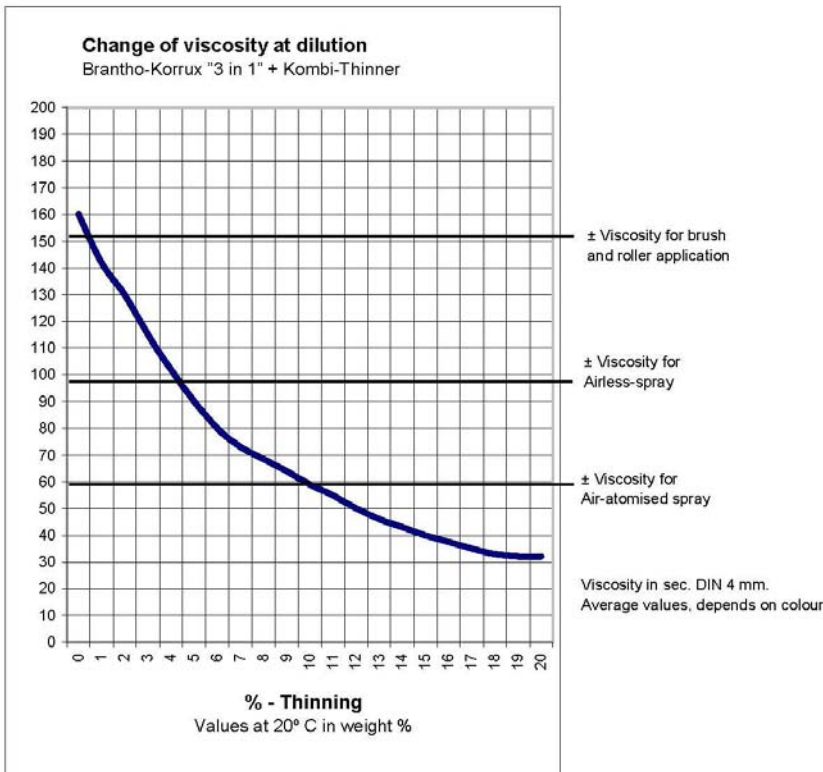
VOC-content for further calculations:

- VOC as delivered, for brush and roller application, ready-to-use at 20° C	± 390 g/l
- possibly after addition of 5% "3 in 1"-activator, ready for brushing and rolling	± 405 g/l
- possibly after addition of 10% "3 in 1"-activator, ready for airless-spray	± 415 g/l
- ready for airless spray, without activator, including 3% Kombi-Thinner	± 420 g/l
- ready for air-atomised spray, without activator, incl. 7% Kombi-Thinner	± 440 g/l
- dilution with 15% Kombi-Thinner, e.g. small tip-sizes or low temperatures	± 490 g/l

Furthermore following limits are valid from 2007: II2(d) resp. IIB(d) 420 g/l; II1(d) resp. IIA(d) 400 g/l; II2(d) resp. IIB(d) 540 g/l; II1(j) resp. IIA(j) 550 g/l; II1(g) resp. IIA(g) 450 g/l; and from 2010: II2(d) resp. IIB(d) 420 g/l; II1(d) resp. IIA(d) 300 g/l; II2(c) resp. IIB(c) 540 g/l; II1(j) resp. IIA(j) 500 g/l; II1(g) resp. IIA(g) 350 g/l;

- \*1) One-component Special coating, Metal-high-build coating (Building)
- \*2) One-component coating, Underbody protection coating (Vehicle repair)

Information regarding REACH-VO can be derived from our MSDS



The graph at the left helps you to define the proper amount of thinner for your application method.

The values above are average; the deviations possible depend on colour and temperature.

## Durability, resistance and test-results

**TÜV-tested:** **Brantho-Korrux "3 in 1"** successfully passed all corrosion resistance tests for lead- and chromate free coatings by TÜV, the quality control system of BRANTH CHEMIE assured by TÜV.

**DB-tested:** (Deutsch Bahn = German Railways) **Brantho-Korrux "3 in 1"** is extensively tested as substitute for red-lead primers and approved for protection of steel-constructions. (Material No.: 672.05 according TL 918 300 T2).

**PVC-substitute:** **Brantho-Korrux "3 in 1"** complies with and even surpasses the requirements of PVC-coatings according DB-TL 918300 BL 77, extensively tested by IKS (short- and long term).

**Epoxy- substitute:** **Brantho-Korrux "3 in 1"** can partly be used as substitute for 2-component epoxy coatings (e.g. for cooling equipment). Up to a resistance against sulphuric acid 40% and potassium hydroxide 25% (spot-test), completely cured **Brantho-Korrux "3 in 1"** complies with all requirements according DB-TL 918300 Page 87.

**Classification:** According the German hazardous substances decree **Brantho-Korrux "3 in 1"** does not contain any substance requiring classification with a warning symbol. Therefore **Brantho-Korrux "3 in 1"** does not require restrictions for applicators with regard to storage, transport, personal protection, environment waste removal, etc.

**Food contact:** **Brantho-Korrux "3 in 1"** can be used for application of the inside of storage tanks and processing equipment for food products, according the directions of the German Ministry of Health (XL), (tested by the approved laboratory of Dr. Kittel.)

**Toys:** **Brantho-Korrux "3 in 1"** may be used for playground equipment or toys, on which normally is chewed or sucked, and direct contact with the skin occurs (tested according DIN 53160, the test solutions showed pH values between 2,4 and 8,8).

**Anti-slip properties:** For stairways, floors, etc. we recommend the application of RAL 9007 or DB 0601 (or mixtures with these colours), the roughness of the dried coating provides a non-skid effect.

**Electrostatic conductivity:** The electric conductivity of **Brantho-Korrux "3 in 1"** is sufficient to make the product suitable for petrol storage tanks exteriorly. Values: RAL 7032 =  $0,04 \times 10^6$  k $\Omega$ ; RAL 9006/9007 =  $0,02 \times 10^6$  k $\Omega$ .

**Resistance:** Resistance against many substances was tested successfully according DIN 53168-B, e.g. against transformer-oil (up to 60°C), diesel/fuel oil, gear oil (up to 80°C), hydraulic oil (up to 80°C), lubricating grease, anti-freeze (f.e. VW-Audi glycol 100% and 50%, Glythermin NF 50%), cooling fluids (pH 8-11), salt water (5% = sea water), molasses, 1,5% acetic acid, 10% ethyl alcohol, bird droppings (sea-gull and pigeon), etc.

## Classification according DIN 4102-1

**Brantho-Korrux "3 in 1"** meets the requirements of "Baustoffklasse B2"

**DIN-Tests:** a brochure with test-results is available upon request, containing e.g.: Cross cut adhesion test according DIN 53151 respectively DIN-EN-ISO 2409. Salt spray tests according DIN 53167, 50021 SS, 53210, 53209. Condensation water tests according DIN 50018 KFW 2,0 S, 50018 SFW 0,2 S, DB-TL. Impact resistance according DIN 53154. Abrasion resistance according DIN 53233. Elongation according DIN-EN-ISO 1519. Elasticity according DIN-EN-ISO 1520 and many other tests.

**Colour:** Slight deviation with regard to colour standards (RAL) or samples may occur in individual cases, this is dictated by the choice of the raw materials. Quality control is carried out visually and with a computer system according CIE colour model. Tolerances/margins are determined at Branth Chemie internally according DIN 6175.

**Quality control:** Apart from our quality control according the Q.C. manual, the purchaser of material (from 50 l. and up) can be supplied, upon request, with a quality certificate according DIN 50049-2.3.

**Eco-Audit:** **Brantho-Korrux "3 in 1"** is manufactured according the EG-Ecological-Audit directive, respectively according DIN-ISO 14001.

## Waterway signalisation (WSV-approval)

**Brantho-Korrux "3 in 1"** is approved for "floating" waterway markings like buoys, etc

## Product code for coatings according GISBAU

Primer, pigmented, solvent based, free of aromatic hydrocarbons: M-GP02

Coating, solvent based, aromatic free: M-LL01

## Classification according VdL-RL 01

### "Coatings for the building industry"

Metal protection, corrosion resistant primer, semi-gloss topcoat, **free from aromatics.**

## **Directive 2000/53/EC (End-of life vehicles)**

## **Directive 2002/95/EC (Electrical and electronic equipment)**

**Brantho-Korrux "3 in 1"** complies with the requirements.

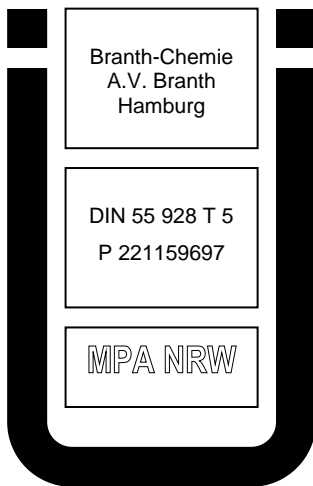
## VOB / DIN 18363

**Brantho-Korrux "3 in 1"** is approved for all sorts of steel substrates and suitable for application on most metal substrates. For applications acc. DIN 55928 Part 5 Table 5 (Duplex Systems) excellent practical results are available. The requirements acc. DIN 55928 Part 5 Table 6 (Water engineering with steel) **Brantho-Korrux "3 in 1"** are only met in some cases, e.g. as substitute for red lead. A freshly applied coating of **Brantho-Korrux "3 in 1"** can hardly be sanded or abraded due to the high flexibility. **Brantho-Korrux "3 in 1"** shows excellent adhesion on previous coatings, and all tested topcoats adhere excellently when applied on **Brantho-Korrux "3 in 1"**.

### Approvals for steel-constructions and -equipment

For the erection, modification and maintenance of building constructions **Brantho-Korrux "3 in 1"** is approved according following Ü-mark.

The approval concerns practically all Corrosion Classes and practically all Coating Systems according DIN 55928 T5 Table 4 (**Brantho-Korrux "3 in 1"** should not be used for extreme chemical exposures (alike immersion) -acc. Remark 2-. When using for O.E.M. or shop application please note **Brantho-Korrux "3 in 1"** is more elastic and flexible as e.g. 2-component coating systems).



### Primer

**Brantho-Korrux "3 in 1"** can be applied on all steel substrates as a primer, prepared as follows: Sa 2, Sa 2½, Sa 3, St 2, St 3 – thus on blasted or manually prepared, slightly rusty substrates. **Brantho-Korrux "3 in 1"** substitutes all primers according DIN 55928 T5 Table 4 and is an equivalent for red lead primers according Part 3.3.2.1. of DIN 55928 T5.

### Topcoats (Intermediate and finish)

**Brantho-Korrux "3 in 1"** is approved as intermediate and topcoat and can be used as substitute for the following systems acc. DIN 55928 T5 Table 4: Alkyd resin, Alkyd combinations, Epoxy ester, Vinyl-chloride-copolymer (PVC), Chlorinated Rubber, PVC-combinations, Chlorinated Rubber combinations, Acrylic-copolymer-combinations, Acrylic-copolymers, Epoxy and Polyurethane.

### Corrosive exposures (Applicability)

**Brantho-Korrux "3 in 1"** is suitable as a primer, intermediate and topcoat for following exposures: Interior, rural, urban, industrial and marine atmospheres, as well as for the following exposures in the open air: chemical (CH), sprinkler salt, - sand, - grit and exhaust fumes. It may be used in the open air as well as in confined areas on accessible and inaccessible surfaces. For chemical exposures in confined areas **Brantho-Korrux "3 in 1"** can be used as primer and can be covered with special, chemical resistant, 2-component coatings.

### Brantho-Korrux "3 in 1" fulfills DIN EN ISO 12944

**Brantho-Korrux "3 in 1"** is qualified according DIN-ISO 12944-6 for all 6 corrosion categories in atmospheric conditions on steel (Sa 2½) and hand prepared steel (St 2). According DIN-ISO 12944-6 the lifetime expectancy in corrosion categories C-5-J (extreme Industrial) and C-5-M (extreme Marine) is over 15 years for a 3-coat system. In the corrosion categories C-1 (minor), C-2 (light) C-3 (medium) and C-4 (strong) the highest possible lifetime expectancy is achieved for a 1-coat or a 2-coat system.

According DIN 12944-5 **Brantho-Korrux "3 in 1"** is approved for initial protection of steel substrates (prepared to Sa 2½ or St 2) (Part 5.1.2.1.) and also for maintenance of previously coated substrates acc. Part 5.1.2.2.. According the requirements of DIN 129044-1 Part 5 (also 12944-5 Part 5.3) **Brantho-Korrux "3 in 1"** does neither contain toxic nor carcinogen preparations and offers a low VOC-content.

The expected lifetime in the corrosion categories of DIN EN ISO 12944-6 are achieved by **Brantho-Korrux "3 in 1"** as follows:

corrosion category \ lifetime	corrosion category					
	C1	C2	C3	C4	C5J	C5M
S	1x	1x	1x	1x	(2x)	(2x)
M	1x	1x	1x	2x	(2x)	(2x)
L	1x	2x	2x	3x	3x	3x

1x stands for: one coat resp. 80 µm

2x stands for: two coats resp. 160 µm

3x stands for: three coats resp. 240 µm

Test results according DIN EN ISO 12944-6

(between brackets) derived from test results

### Practical examples for "Lifetime expectancy" according DIN EN ISO 12944

#### 1-coat system:

- More than 15 years: inside heated buildings, C1
- Up to 15 years: Atmospheres with low level of pollution and dry climate. Unheated buildings where condensation may occur, C2

#### 2-coat system:

- More than 15 years: Atmospheres with low level of pollution and dry climate. Unheated buildings where condensation may occur, C2
- Up to 15 years: Urban, industrial and coastal atmospheres, moderate sulphur dioxide pollution and moderate salinity. Production rooms with high humidity and air-pollution, C3 and C4.

#### 3-coat system:

- More than 15 years: In all previously mentioned cases and industrial and coastal areas with high humidity and aggressive atmosphere. Coastal and offshore areas with high salinity C5 I/M.

The information herein contained is based on our present knowledge. It is based on practical experience during many years and is composed carefully. The technical information is average, and values do not impose any liability. As the application of this material in any individual case is beyond our control we cannot be held liable. This information sheet is a translation of the German sheet 01/08; by Jos van Ochten for BrabCoat in Roosendaal, The Netherlands.