Brantho-Korrux 3 in 1

One-component coating (Rust Prevention – Metal Protection – Maintenance Paint)
Semi-gloss

Product Features



One-component coating:
- excellent **adhesion** properties
- excellent **elasticity**
- excellent **edge covering**
- excellent **filling power**
- excellent **hiding power**
- excellent **coverage**
- excellent **stability**
- excellent **resistance** properties (see Appendix und brochure)
- **wide processing window** to apply
- low solvent content (modern **„High-Solid“** coating)
- **universally suitable** (both as a primer or as a finish)
- can be applied on practically **all types of substrates**
- **fast** becoming **dry** to **touch**

Area of Application

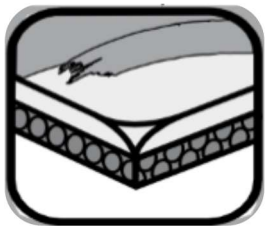


Protection against corrosion of constructions, machines and transport vehicles in rural-, urban-, industrial- and maritime areas.
- as a protective coating for new construction or maintenance
- as both primer and topcoat
- as a primer for 1-component and most 2-component finishes
- for constructions built from several types of materials

As a substitute
- for toxic red-lead (tested by the German Railway authorities)
- for environmental unfriendly PVC / Chl. Rubber coatings
- for epoxy coatings (partly)
- for simple and complicated alkyd coatings
- for acid-curing primers (partly), good adhesion, slower curing

Examples:
transport vehicles (+components), machines, transport-racks, fences, platform structures, pipelines, cladding, gates, winter road clearance equipment, sea containers, high-tension towers, lorry chassis, building equipment, bridges, railway stations, shelters, cranes, boats, vessels, production halls, lighting columns, dumpers, cooling equipment, etc.

Substrates



iron, steel, stainless steel, aluminium, copper, zinc, old coatings, rust, many hard plastics, glas, concrete, screed , etc.

The information herein contained is based on our present knowledge. It is based on practical experience during many years and is composed carefully. The technincal information is average, and values do not impose any liability. As the application of this mateial in any individual case is beyond our control we cannot be held liable.

A.V. Branth KG · Postfach 1107 · 21503 Glinde bei Hamburg · T.: +49 (0)40 – 36 97 40-0 · F.: +49 (0)40 – 36 71 48
Legal form: Kommanditgesellschaft (KG) · Office: Biedenkamp 23, 21509 Glinde · Register Court: Lübeck HRA 2305 RE · founded in 1887 · Tax-no.: 30-280-47-006
VAT-no: DE 1189 16181 · Bank details: Hamburger Sparkasse; IBAN: DE14 2005 0550 1352 1581 49 · Sparkasse Holstein; IBAN: DE85 2135 2240 0179 1325 01

Technical Data Sheet

high corrosion resistance – high environmental compatibility – easy to apply – by tradition

Technical Data

Base	- polyester resins with environmental friendly, active, multi-phase rust-inhibititive pigments - lead-, chromate- und zinc-free - solvent free of aromatic hydrocarbons (e.g. free of xylene or toluene)
Colours	- **70** from stock (see brochure: BranthoKorrux-3in1-Brochure.pdf (branth-chemie.de) - other colours available from 25L (effect-colours from 30L) orders - colours can be mutually mixed unlimitedly
Gloss	**Semi-gloss** (25-55% depends on colour) Different degrees of gloss from 25L/30L orders per colour or can be achieved by mixing with:

„nitrofest“	lower gloss
„Haftgrund Spezial (HgS)“	lower gloss
„Robustlack“	higher gloss
„3 in 1“ Glanz-Additiv (adding max. of 15%)	higher gloss (up to +20%)

Solid content	appr. **70%** (by wt.), appr. 53% (by vol.)
VOC-value	< 400 g/l.
Coverage	**8,8 m²/l.** at 60µm (theoretical)
Density	1,2-1,5 depends on colour
Storage stability	**24 months** starting from date of production (original-, unopened cans, cool, dry)
Packaging size	From stock: 5L (1 or 2 per carton), 750ml (8 or 16 p. cart.; different colours possible) 0,4L Komfortdosen (6 or 12 per carton in one colour) Special order: 10L, 19L, 180L
Thinning	Short drying time: Branth’s Kombi Thinner Retarded initial drying: Branth’s Spezial Thinner

Application instructions

Pre-treatment



1. Remove rust and rust scale, loose millscale and all other impurities
2. Cleaning (degreasing)

Only apply on a well-prepared, clean and dry substrate.
Manually prepared derusted surfaces (St 2), wet blasted substrates and flash-rust are acceptable.

Preparation



- stir well before application (by hand or machine)
- Shake „Komfortdosen (high-build aerosol-can)“ well before application
- ideal application temperature: 15 - 25 °C
- possible application temperature: -10 - +30 °C

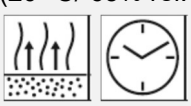
Application



Type	Nozzle	Pressure	Thinner	Viscosity
brush	--	--	--	ca. 150 Sek. (standard)
roller	--	--	--	ca. 150 Sek. (standard)
Airless-spray	0,5-0,7 mm	min. 160 bar	ca. 3%	ca. 90 Sek.
Air pressure-spray	2-2,5 mm	4-5 bar	10%	30-60 Sek.

The viscosity data refer to a measurement in a DIN 4mm cup!

Drying
(20 °C/ 65% rel. hum.)



touch dry	20-30 min.
fully dried	appr. 8-10 h.
fully cured	appr. 3-4 days
fully durable	appr. 7-10 days

Baking or *forced curing* (heat) is *NOT POSSIBLE!*
The actual drying times depend on **film thickness**, ventilation, temperature, relative humidity, etc.!
Extensive information regarding disposal, health and safety is available from the safety data sheet.

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Appendix: Detailed technical information

S. 1-2 Detailed technical data
S. 2-6 Detailed application instructions
S. 7-10 Approvals/resistances

Detailed technical data

Base

- polyester resins with environmental friendly, active, multi-phase rust-inhibititive pigments
- lead-, chromate- und zinc-free
- solvent free of aromatic hydrocarbons (e.g. free of xylene or toluene)

Colours

- **70** from stock (see brochure: BranthoKorrux-3in1-Brochure.pdf (branth-chemie.de)
- other colours available from 25L (effect-colours from 30L) orders
  - *without colour* is a special production; it has all the functional pigments (no colour pigments). This can be applied as a clear-milk metal protection or can be coloured with suitable colorant pastes
- colours can be mutually mixed unlimitedly
- Colours which have not been produced originally ex works, but have been coloured later on with tinting pastes, do not necessarily comply with all original specifications

Effect-Colours:

- e.g. RAL 9006, 9007, DB 601, DB 701, DB 702 DB 703, BK096
- statements in our technical data sheet mainly refer on normal colours. For aluminium and m.i.o. coatings not all data does apply. These coatings can be applied in a thicker film (+50%) and will dry somewhat slower accordingly. They show better protection against corrosion
- the optical impression strongly depends on the application method used („soaking wet“=lighter; „dryer“=darker) and further factors (dry film thickness, temperature, spray distance, amount of paint on the roller, etc.). These colours appear more „alive“, if they are not applied under exactly the same conditions. Use some of *Branth's Spezial-Thinner* to keep the surface a bit longer „opened“ (the effect pigments have to be able to float regularly on the colour film)
- *„Sticker-off-effect“*: special mixture, that reduces the adhesive strength of self adhesive stickers extremely (except soaked paper stickers). It does not harm the adhesion when it is overcoated.

Colour resistance:

We use *colour-pigments* with extreme high light-fastness and weather resistance that are also used in the *automotive industry*.
Never the less, there are *differences in colour resistance* between colour shades:

Exceptionally resistant	Effect- (A1 acc. to BfS 26*), white colours (A2)
High resistance	Grey-colours (also greywhite; A2)
Resistant	Blue-, green colours (A2)
Adequately resistant	Yellow-, orange- and red colours (A2)

**German Federal Committee for Colour and Property Protection, Leaflet 26*

Especially colours in the lower part of the table, the *UV-resistance* can be *improved by* over-coating with a *clear coat* (e.g. „2K-Anti-Graffic-Lack“, „2K-Flexi-Klarlack“, „2K-M-Schutzlack“, „Kristall Glasur“ a.o.).
Due to the *high pigment content* in some colours and *effect-colours* pigments *can be grated* under special conditions from the paint surface.
This is physiologically safe, however it may not be acceptable, in some places (e.g. public areas's). In this case we *recommend a topcoat*.

Gloss

Semi-gloss (25-55% depends on colour)

Different degrees of gloss from 25L/30L orders per colour or can be achieved by mixing with:

„nitrofest“	lower gloss
„Haftgrund Spezial (HgS)“	lower gloss
„Robustlack“	higher gloss
„3 in 1“ Glanz (Gloss)-Additiv (add up to 15%)	higher gloss (up to +20%)

Solid content

appr. **70%** (by wt.), appr. 53% (by vol.)

VOC-value

< 400 g/ltr. ready for application

	addition of 5% „3 in 1“ Härter-Konzentrat (activator conc.)	brush- and roller ready	ca. 405 g/ltr.
	addition of 10% „3 in1“ Härter-Konzentrat (activator conc.)	airless-ready	ca. 415 g/ltr.
	addition of 3% Kombi Thinner	airless-ready	ca. 420 g/ltr.
	addition of 7% Kombi Thinner	air-atomised spray ready	ca. 440 g/ltr.
	addition of 15% Kombi Thinner	small tip-sizes, low. temp.	ca. 490 g/ltr.
	with „3 in 1“ Komfortdose (high-build spray can) (incl. gas)	Spray can-ready	ca. 510 g/ltr.

Viscosity
appr. 150 sec. (DIN 4mm)

Coverage
8,8 m²/l. at 60µm (theoretical)

Density
1,2-1,5 depends on colour

Storage stability
24 months starting from date of production (original-, unopened cans, cool, dry)

The *ideal temperature* for paint cans is *between 10°C and 20°C* (temperatures above 25°C will shorten the storage stability).
Frost will normally not harm the product.

The tenability indication on the cans implies the *warrented 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, it can be applied without problems.

Packaging size
From stock: 5L (1 or 2 per carton), 750ml (8 or 16 p. cart.; different colours possible)
0,4L Komfortdosen, high-build spray cans (6 or 12 per carton in one colour)
Special order: 10L, 19L, 180L

Thinning

Short drying time:	Branth’s Kombi Thinner
Retarded initial drying:	Branth’s Spezial Thinner
also suitable:	nitro-, combi-, 2C-thinner or similar
less suitable:	alkyd thinner, white spirit
NOT suitable:	water

Detailed application instructions

Pre-treatment



Substrates

A stable substrate is a prerequisite for a durable coating (St 2).
For advanced exposures use Brantho-Korrux „2-Kompo“ as primer.

Iron and steel:
1. Remove rust scale, loose millscale or similar
2. Clean from oil, grease and other impurities

Rusted steel
1. Remove loose rust (rust scale)
2. Possible contamination (oil, grease, salts, detergents) must be removed by washing properly

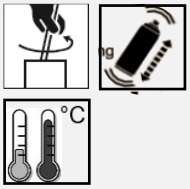
Stainless steel, aluminium, light- and nonferrous metals:
1. Slightly abrade (e.g. Scotch Brite® or similar; NEVER use steel fibre)
2. Degrease and clean (adhesion promoter or primer is not required)

Plastics:
3 in 1 is suitable for most hard plastics (and unsuitable for soft plastics).
Degrease at least carefully, sand and clean if necessary.

Weathered galvanized steel:
1. Degrease and clean with water
2. Remove loose matter (especially zinc salts (white rust) and rinse with plenty of fresh water)

New galvanized steel:
1. Slightly abrade (with plastic fibre embedded abrasive (e.g. Scotch-Brite, Glitzi, Fibral or similar). NEVER use steel fibre!
2. Degrease and clean by using a water-based cleaner/degreaser (e.g. multiclean)
3. Rinse with plenty of water
4. Steel grades with a low silicon content ensure that outgassing of the zinc under the paint and thus blistering does not occur later when exposed to heat

Preparation



1. stir well before application (by hand or machine).
   Try to avoid air penetration while stiring.
2. *Shake* „Komfortdosen (high-build aerosol-can) well before application.
3. *Check colour*
4. *Do not mix with other substances than indicated by manufacturer*
5. Fresh air can be responsible for a thin *skin on the surface inside the can*. Never stir this skin, but *cut and remove it* (then dry and dispose it).
6. *Cans,* if possible, should always be *kept closed.*
7. If you intend not to use the paint for a longer time, *pour some thinner on the surface*.

- ideal *application temperature*: 15 - 25 °C
- possible application temperature: -10 - +30 °C

At very low temperatures *apply "warm" paint (20 °C)* or add some thinner.
Drying times at minus temperatures increases and also the flow properties will suffer.
Do not apply on ice or frost!

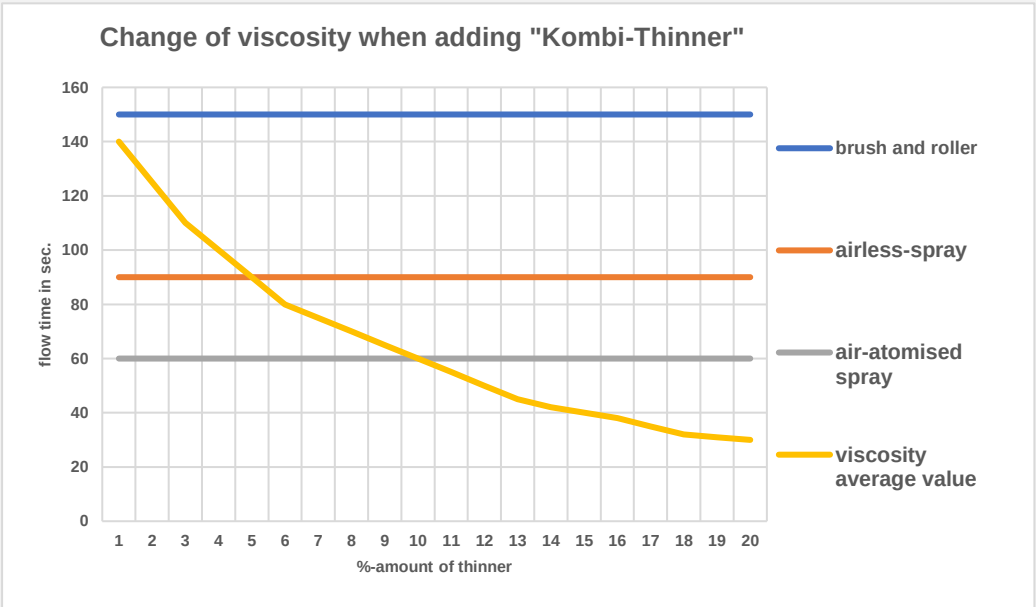
Application/ Processing



If the requirements are high, ensure a sufficiently thick layer (see also last page). If necessary, apply different colour shades alternately.

Type	Nozzle	Pressure	Standard colours				m.i.o.'s	
			Small objects		Large objects		Large objects	
			Thinner	Visco.	Thinner	Visco.	Thinner	Visco.
brush	--	--	without	ready to use	without	ready to use	without	ready to use
roller	--	--	without	ready to use	without	ready to use	without	ready to use
Airless-spray	0,4-0,6 mm	min. 160 bar	--	--	+3,5%	80-100 sec..	+appr. 3%	ca. 120 Sek.
	0,5-0,7 mm		--	--	+ca. 3%	80-100 sec.	+appr. 3%	ca. 120 Sek.
	0,6-0,8 mm		--	--	without	ready to use	without	ready to use
Air pressure-spray	1,4-1,7 mm	4-5 bar	+10-15%	30 sec.	--	--	--	--
	2,0-2,5 mm		+appr. 10%	30-60 sec.	+appr. 10%	30-60 sec.	+8-10%	60-80 sec.
	2,5-3,5 mm		--	--	+appr. 3%	80-120 sec.	+appr. 3%	ca. 120 sec.
Airmix	0,2-0,5 mm appr. 40°	90/3 bar	+5-8%	60-90 sec.	+5-8%	60-90 sec.	+appr. 5%	ca. 90 sec.
HVLP	1,6-3,5 mm	5/1 bar	+appr. 15%	appr. 30 sec.	+appr. 15%	ca. 30 sec.	+appr. 10%	30-60 sec.
dipping	--	--	+15-25%	20-35 sec.	+15-25%	20-35 sec.	--	--
Komfortdose (hs spray can)	diverse	--	without	ready to use	without	ready to use	without	ready to use

The viscosity data refer to a measurement in a DIN 4mm cup with Kombi-Thinner!
For dipping measurement is carried out with butyl acetate. Please DO NOT USE Kombi-Thinner here!
„Ready to use" viscosity is at appr. 150 sec. (DIN 4mm)!
The Komfortdose (high-build spray can) is used for touch-ups on small and large objects and is not intended for full-surface painting.
The table above represents empirical values for material adjustment. The instructions of the appliance suppliers must be observed!





Brush:

- apply material with standard round, oval or flat brushes; a dry film thickness of *40-80µm per layer* can be achieved
- *after 1-2 hours* the *next layer* can be applied
- colours containing micaceous iron oxide (m.i.o.) achieve a dry film thickness of 60-120µm per layer (e.g. RAL 9006, RAL 9007, DB 601, DB 701, DB 702, DB 703, BK096)



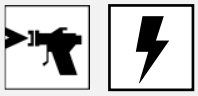
Roller:
A *short nap synthetic roller* is recommended (up to 12mm nap; suitable for 2-component coatings)
- a dry film thickness of *40-60µm per layer* can be achieved
- do ***NOT*** use *foam rollers*



Spray:
When spraying a dry film thickness from 50-150µm (large objects, airless) can easily be achieved.

Support: selection ot the appropriate airless filters:

filter colour	type of lacquers	mesh/cm²	size	opening
red	very low viscosity lacquers	180 mesh/cm²	0,084 mm	0,15-0,35 mm
yellow	**normal to high-build coatings**	**100 mesh/cm²**	**0,14 mm**	**0,3-0,5 mm**
white	**zinc-rich and m.i.o. coatings**	**50 mesh/cm²**	**0,32 mm**	**0,4-0,65 mm**
green	heavy materials alike bitumen	30 mesh/cm²	0,5 mm	from 0,7 mm

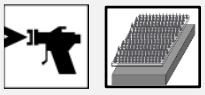


Electrostatic spray:
„3 in 1“ can be applied with airatomised-, airmix- and airless- electrostatic spray equipment. The material shows an eletrical conductivity of > 100 k-Ω.

Elektrische Widerstände in der Übersicht:

type	viscosity	electrical resistance
Ready to use	appr. 150 sec.	1500-2500 k-Ω
airless-viscosity	80-90 sec.	1000-1800 k-Ω
Airmix-viscosity	80-90 sec.	1000-1800 k-Ω
Air-atomised-viscosity	30-35 sec.	1000-1500 k-Ω

On request (min. 25L at special price) the material can be delivered a customer specification (please give us the viscosity and eletrical conductivity you wish).
Dilute according equipment manufacturer's specifications.
Aluminium and micaceous iron oxide cannot be applied with standard electrostatic equipment values
(Values: RAL 9007= appr. 3000 k-Ω in ready to use viscosity, airless appr. 2000 k-Ω, air-atomised appr. 1500 k-Ω
RAL 9006= appr. 20000 k-Ω in ready to use viscosity, airless appr. 18000 k-Ω, air atomised appr. 10000 k-Ω;
adjustment by manufacturer not possible).



Structure:
Because of its technological properties „3 in 1“ *paint finish is regularly not completely smooth*.
According to the application-methods and -conditions one may achieve a more or less structured surface.
Due to a stronger structure, more uneven substrates can be covered particularly well.
„3 in 1“ surfaces do not have the same hardness as with 2K-structure coatings. Moreover, *drying time* is *clearly extended*, when spraying structure (higher dry film thickness).

1. applicate *undiluted*.
2. type and intensity of structure relies on *nozzle size, pressure* and *spraying distance* to the object



Komfortdose (high-build spray can):
The name „Komfortdose“ (high-build spray can) relies on the fact, that it is filled in spray cans *WITHOUT solvent addition* and therefore the possibility to applicate thick layers.

- *CO2 neutral pressurized gas*
- up to *120µm for one layer*
- all *characteristics of „3 in 1“* remain
- low stress to *human and environment*

Application:
1. *Shaking!*
2. *Distance to object 20-30cm*.
3. *Apply at right angles* (do not wag)
4. Hold *can vertically*.
5. DO *NOT* apply in *windy conditions* (hide adjacent areas).
6. Ensure *sufficient layer thickness* at *corner, edges, angles, holes*, etc.
   If necessary, prepare with another contrasting colour (e.g. RAL 7038).
7. When applicating *several layers*, allow *flash off* in between.
8. For *good adhesion* (especially on difficult substrates), a *thick layer* is important.
9. For high-quality *corrosion protection*, applicate paint of one can to an area of *max. 1 x 0,25 mtr.*
   For lower demands, apply to *max. 1x2 mtr*.
10. Possibility to *overcoat universally* on request (please test on a small area to rule out sensitivities of the topcoat with regard to temperature and film thickness).

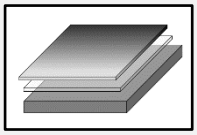
11. *Spray upside down* for a short time *after use* (avoids sticking of the spray nozzle before next use).
12. Empty cans are *recyclable* (see local directions). Non-empty cans are contaminated waste.

Further information can be found in the Komfortdosen brochure.



Dipping:
Due to its basic properties, drying time, recoatability, environmental acceptability, Brantho-Korrux "3 in 1" is suitable for dipping.

- low sedimentation tendency and *long service life in the basin*
- *stir* the contents of the dipping vessel continously *at very low speed (once or twice a day)*
- the *yearly consumption* should be *minimal twice* the content of the *vessel*

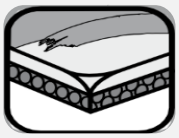


Recoating:
"3 in 1" can be recoated unlimitedly with itself (abrading/sanding not necessary).
If required, "3 in 1" can be recoated *with all* (tested) sorts of *one-component* coatings and with several (tested) *two-component coatings*.

Overview of recoat intervals (20 °C/ 65% rel. hum.):

primer	topcoat	minimum	ideal
„3 in 1“	„3 in 1“	15 min.	> 1 d.
	„Robust-Lack“	15 min.	> 1 d.
	„S-Glasur“	30 min.	> 8 h.
	Alkyd-paint	30 min.	> 6 h.
	Water-based	2 h.	> 12 h.
	Nitro-cellulose	5 h.	> 3 d.
	2-C-acrylic	12 h.	> 3 d.
	2-C-epoxy	24 h.	> 3 d.
	2-C-epoxy-high build (fast drying)	--	--
	Adhesion primer with solid content < 10%	--	--
	2-C-PUR	16 h.	> 3 d.
	PVC (vinyl)	15 min.	> 1 d.
	Topcoat acc. to TL 918300 T2 letter 75, 77	2 h.*	> 1 d.
	putty	see curing of respective putty	see curing of respective putty
putty	„3 in 1“	--**	--**
sealing compound	„3 in 1“	--***	--***

*due to the aggressive nature of the solvents of TL-topcoats a 24 hours interval is recommended, in order to prevent resolving or bleeding.
**applying putty on top of „3 in 1“ is not recommended (too flexible for 1-C putties and too strong attack by styrene containing 2C „polyester“ putties. Better suitable are „Nitrofest“, „2-Kompo“, „ecobase“ or „Haftgrund (adhesion primer)“.
***special sealing compounds of car-bodies or sealings containing silicon cannot be coated with 1-C coatings (read their remarks). You should use 2-C coatings instead (e.g. „2-Kompo“ or „2K-Flexi-Lack“).



Substrates:
„3 in 1“ can be applicated on iron, steel, stainless steel, aluminium, copper, zinc, old coatings, rust, many hard plastics, glas, concrete, screed , etc.

Iron und steel:

1. apply on a *clean and dry* substrate
2. depending on exposure apply *one or more layers* by brush or roller
3. for *spray application dilute* according to the list on page 3
4. the service life increases at thicker total dry film thickness. In practice one up to 3 coats are recommended, depending on exposure.
   On vertical objects a dry film thickness between *40 to 150µm* without sagging can be easily applied (depending on application method)

Rusted steel:
Brantho-Korrux "3 in 1" penetrates into the remaining rust. Brantho-Korrux penetriert Restrost. To prevent further corrosion of such a rough substrate, *apply sufficient material*.

Stainless steel, aluminium, light metals:
Apply normal thickness (*not too thin!*). Adhesion test: please note that *optimal adhesion* is achieved *after 3 days* or more.

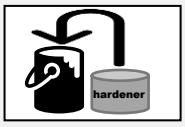
Plastics:
Check compatibility by applying „3 in 1“!
On most plastics „3 in 1“ is excellently *suitable* (e.g. *ABS, GRP, PS, PC, hard-PVC, hard-PUR*).
Not suitable substrates are *„soft“ plastics*, e.g. *PE, PP, soft-PUR and soft-PVC*. Plexiglas® (acrylics) and Polystyrene may dissolve, but can be coated.
3 in 1 offers excellent adhesion on all tried and tested *insulating foams* (on the foam, as well as an adhesion promoter to the substrate).

Weathered galvanized steel:
Apply *sufficient film thickness* on already rusting and consequently rough substrates.

New galvanized steel:
1. Only apply on a well-prepared, clean and dry substrate (see Chapter „pre-treatment“ page 2)
2. Apply *sufficient film thickness* (mind. 60µm dry)
3. For *advanced exposures* use *„2-Kompo“* or *„Haftgrund-Spezial“* as primer

Further substrates:

wood:	possible, due to its *elasticity*, *if* a *permeable coating* is *not required.*
glass:	very high *adhesion.*
concrete:	1:1 *mixture with „nitrofest“* is recommended. Applicate diluted (15-20%) in advance.
Powder-c.:	properly applied powder-coatings *can be painted* with „3 in 1“ (due to various qualities, a confirmed recommendation is not possible).
anodised:	very high *adhesion.* In order to obtain a proper film thickness we recommend priming with *"Haftgrund Spezial"*.



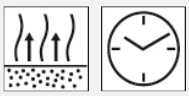
If required: Use of hardener:

Standard colours:	„3 in 1“ Härter-Konzentrat	5-10%
m.i.o. colours:	Branth’s Quick-Härter-Konzentrat	5-10%

Minimum temperature should be above *15 °C*.
Only recommended for *topcoats* (not recommended for primers).
Pot life (time to applicate mixture) is around *16 hours.*

When a harder surface is required we advise to apply „2-Kompo“ or „2K-Anti-Graffic-Lack“.
3 in 1“ is air-drying and is usually applicated without hardener.

Drying
(20 °C/ 65% r. h.)



touch dry	20-30 min.
fully dried	appr. 8-10 h.
fully cured	appr. 3-4 days
fully durable	appr. 7-10 days

- baking or *forced curing* (heat) is *NOT POSSIBLE!*
- the actual drying times depend on **film thickness**, ventilation, temperature, relative humidity, etc.!
- At *higher temperatures* the *drying speed increases*, *NOT* the *curing* (dry hard) *time*
- *Thicker coats* 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
- 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* (not the other way around)
- The drying mechanism of "3 in 1" causes the *adhesion to increase* *even after approx. 3 days* (completely dry). During this drying period, objects can*not* be *stacked or packed*, as blocking will occur. applied as a primer "3 in 1" may be *mixed with "nitrofest"*; this *reduces the effect* (semi-matt finish)
- Long-term exposure to *liquids* (e.g. rain on horizontal surfaces) may cause *"moisture stains"* during the curing (up to 5 days after application).
- *"3 in 1-Härter-Konzentrat" shortens* the *drying* times (see chapter „Application/Processing). This also *increases* the *mar resistance* of the surface
- extensive information regarding disposal, health and safety is available from the safety data sheet

Approvals/ Resistances

The following lines provide an overview of the tests carried out and approvals obtained with „3 in 1“. If required, a test catalogue with all tests and details can be provided.

TÜV-approved:
"3 in 1" successfully passed all *corrosion resistance* tests *for lead- and chromate free coatings* by TÜV.

DB-approved (Deutsche Bahn = German Railways):
Approved for *protection of steel-constructions*.
Extensively tested as *substitute* for

- *red-lead primers* (approved) acc. to TL 918300 T2 (mat.-no. 672.05)
- *PVC*-coatings (tested) acc. to TL 918300 letter 77
- *2K-Epoxi*-coatings (partially tested) acc. to TL 918300 letter 87

BASt/ZTV-KOR-directives:
The regulations for release have been checked and fulfilled:

- Conformitation tests according to DIN-EN-ISO 12944 respect. DIN 55928 have been achieved by MPA-NRW
- *Own manufactural inspection* (for each charge of production)
- *Check tests* (at purchaser's expense) can be requested at any time
- All our cans with the *Ü-mark* are approved as *construction products* (corresponding resp. ÜZVO)
- *taking averages* for an inspection certification (resp. 8.2.3.3.) can be requested *by* every *purchaser* (at his own expense)

Food contact:

- „3 in 1“ can be used for *application* of the *inside* of *storage tanks* and processing equipment *for food products*, according the directions of German Ministry of Health (XL), (tested by the approved laboratory of Dr. Kittel 01/1989)
- „3 in 1“ meets the requirements under normal or predictable conditions of use, *no components change the composition of food* or bring out a deterioration in the organoleptic characterictics therof (DEKRA-test April acc. Art.3 paragraph 1c VO 1935/2004 EWG from April 2015)

Toys (saliva and prespiration proof):

- „3 in 1“ may be used for playground equipment of *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 und 8,8; Institut für Korrosionsschutz, Dresden 10/1993 + 10/2010)
- A new stricter test according DIN EN 71-3 (security of toys), meets the requirements again (Institut für Lacke und Farben, Magdeburg 2013/14)

Anti-slip properties:
For stairways, floors, etc. we recommend the application of *RAL 9007, DB 703 or DB 601* (or mixtures with these colours), *roughness* of the dried coatings *provides* a *non-skid effect* (Material Prüfinstitut Hellberg, Adendorf 01/2011).
Measuring results "3 in 1" RAL 9007 according to:

- DIN 51130/BGR181 (production rooms and areas): *R12*
- DIN 51097/GUV-I8527 (high humidity rooms barefooted): *C*

For increased anti-slip properties with *other colour shades* (R11), Branth's *Slide-Stop Additiv* can be used. Please be sure to follow the processing instructions in the corresponding data sheet.

Electrostatic conductivity:
The electric conductivity is *sufficient* to make the product suitable for e.g. *petrol storage tanks exteriorly*:

- RAL 7032 = 0.04 x 10^6 k-Ω
- RAL 9006/9007 = 0.02 x 10^6 k-Ω

Eco-Audit:
„3 in 1“ is manufactured according the *EMAS-directives* and respect. according *DIN-ISO 14001*.

Reaction to fire on building materials and components (acc. to DIN 4102-1):

→ *on metals*= *A1/A2 (not-flammable)*

Metals are classified in building „Baustoffklasse A1/A2“ without and with organic coating. On other substrates, „Baustoffklasse B2“ applies. The main factor influencing flammability is the substrate.

Heat resistance:

- *-50°C to max. 300°C*= no significant loss of quality
- from appr. 120°C= colour discolouration with no further loss of quality
- temperature-shocks= no negative influence

Colour shade recommendation (if higher shade stability is required):

under 120°C	all available shades
120-200°C	dark shades
200-250°C	RAL 3009, RAL 9006, RAL 9005, RAL 9011
250-300°C	RAL 3009

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

The major areas of application of Brantho-Korrux "3 in 1" are not subject to above mentioned regulations.

Within the regulations the major areas of application are:

II1i (bzw. IIAi)= One-Component-special-coating, Metal-high-build coating (building)
Professional indication: 2004/42/IIA(i) 500 (2010) 500

II2e (bzw. IIBe)= One-Component-coating, underbody protection coating (vehicle repair)
Professional indication: 2004/42/IIB(e) 840 (2010) 840

Further areas of application that fit with „3 in 1“:

II1d (bzw. IIAd); 300g/l= full hiding coating for interior and exterior limits, interior coating

II1g (bzw. IIAg); 350g/l= primer for iron, steel and aluminium, corrosion resistant coating, chassis and under body protection

II1j (bzw. IIAj); 500g/l= two-component special coating

II2c (bzw. IIBc); 540g/l= primer and intermediate coating, base coat, intermediate coating, adhesion primer

II2d (bzw. IIBd); 420g/l= top coat, protective coating, one- or multi-coat coating

VOC proportions for further calculation can be found above in the section „Detailed Technical Data“ under the item „VOC value“.

Chemical resistance (acc. to DIN 53168-B):

Resistance against many substances was testes successfully. Below you will find a small overview. A more detailed overview is available on request.

transformer oil (up to +60°C)	diesel oil/heating oil	gear oil (up to + 80°C	hydraulic oil (up to +80°C)	chain oil	grease
sodium chloride solution (5%)	circular water resources (ph 8-11)	acetic acid (1,5%)	ethyl alcohol (10%)	molasses	various antifreeze agents (e.g. VW-Audi Glykol 100%, Glythermin NF 50%)
pigeon excrements	universal-lubricating greaset	household chemicals	sea water	wooden brew	mineral oil test mixture A20/NPII

DIN
Small tests

Further DIN-tests:

A detailed overview with further test results may be provided on request, it contains e.g.:

- *Cross-Cut* test (acc. to DIN 53167, 50021 SS, 53210, 53209)
- *Continuous Condensation Water test* (acc. to DIN 50018 KFW 2,0 S, 50018 SFW 0,2S, DB-TL)
- *Stone-chip* resistance (acc. to DIN 53154)
- *Abrasion* resistance (acc. to DIN 53233)
- *Elongation* (acc. to DIN EN ISO 1519)
- *Elasticity* (acc. to DIN EN ISO 1520)

WSV.de

Waterway signalisation (WSV-approval):

„3 in 1“ is approved for *"floating" waterway markings* (special department of the WSV for transport technologies, Koblenz 09/2001; conformity declaration)

Daimler-Chrysler-Release:
„3 in 1“ has been accepted by the areas of business for vehicles of the Daimler Chrysler AG for the inside layer of *mineral and hydraulic tancs* (DaimlerChrysler, Stuttgart 09/1999).

Productcode for coatings according GISBAU:

Primer, pigmented, solvent based, free of aromatic hydrocarbons:	M-GP02
Coating, solvent based, aromatic free:	M-LL01
Coating material, solvent-based, aromatic-free, labelled:	BSL20
Anti-corrosion coating material, dearomatised solvents:	BS40_ALT

Classification according VdL-RL 01 „Coatings fort he building industry“:
Metal protection, corrosion resistant primer, semi-gloss top-coat, free of aromatic solvents.

EU-Directives:
„3 in 1“ meets the requirements of the EU-Directives:

- electronical equipment	(2011/65 und 2015/863/EU RoHS)
- tinn organic compounds	(76/769/EWG)
- dangerous substances…	(2003/11/EG)
- PAK	(2005/69/EG)
- PFOS	(2006/122/EG)
- End-of lifes vehicles	(2000/53/EG)
- REACH	(1907/2006/EG)
- also: car industry	(ILRS-Liste)

Emission class for indoor air (French classification):
- „3 in 1“ was classified with an A+ (values are even appr. 85% below the strict A+ limits)
- Scale from „C“ (=high emissions) to *„A+“ (=very low emissions)*
- degree of emissions of volatile substances into the room air which may represent a toxic hazard is measured
- nevertheless, always ventilate well during and after application in enclosed rooms

NORSOK-corrosion protection test:
„3 in 1“ (3x100µm) meets the requirements of the most demanding corrosion protection test (NORSOK-Test M 501, Edition 6, System 1, Corrosion protection, October 2013 by COT) during *4.200 hours severe exchange test with scratch* (UVA, +60°C, -20°C, condensation, salt spray test, etc.).

Mining approval:
§ 4 Abs. 1 No. 2 GesBergV, substance main group 4, Stoffuntergruppe 1, Lfd.-No. 42
AZ: Hygiene Institute „A 108 395-03-To“

Approvance for steel substrates (VOB/DIN 18363):
„3 in 1“ is approved for all sorts of steel substrates and suitable for application on most metal substrates. or application acc.DIN 55938 Part 5 Tab. 5 (Duplex-Systems) excellent practical results are available. The requirements acc. DIN 55928 Part 5 Table 6 (Water engineering with steel) meet "2K-Durasolid".

Approvals for steel-constructions and -equipment (Ü-mark):
„3 in 1“ is approved for the *erection, modification and maintenance of building constructions* following Ü-mark:
- concerns *all Corrosion Classes* and practically all Coating Systems acc. Din 55928 T5 Tab. 4
- concerns *NOT extreme special chemical exposures* (acc. Remark 2)
- when using for O.E.M. or shop application please note high elasticity of „3 in 1“ (compared to 2-C systems)

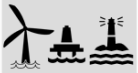
1. approval as als *primer*:
   - applied on all blasted or manually prepared, slightly rusty steel substrates (approved pre-treatment: SA 2, SA 2,5, SA 3, St 2, St 3)
   - substitutes all primers acc. DIN 55928 T5 Tab. 4
   - equivalent for red lead primers (acc. Part 3.3.2.1 of DIN 55928 T5)
2. approval as *topcoat* (intermediate and finish):
   - substitute for alkyd resin, Alkydresin-combinations, Epoxy-ester, Vinyl-chlorid-copolymer (PVC), Chlorinated Rubber acc. DIN 55928 T5 Tab. 4

DIN EN ISO 12944

Corrosion protection acc. DIN EN ISO 12944:

„3 in 1“ is qualified acc. to DIN EN ISO 12944-6 for *all 6 corrosion categories*:

- on steel (SA 2,5) and hand prepared steel (St 2)
- in atmospheric conditions
- approved for initial protection of steel substrates (Part 5.1.2.1)
- for maintenance of previously coated substrates (Part 5.1.2.2)
- approved that it does not contain *toxic or carcinogenic substances*
- approvance of 1 Component properties and low VOC-content at the same time
- suitable as *primer, intermediate and topcoat*
- suitable for interior *(R), urban- (L), industrial- (I) and marine- (M) atmosphere*
- suitable for following exposures in the open air: *chemical (Ch), sprinkler-salt/sand, grit and exhaust fumes*
- suitable to be applicated in the open air as well as in confined areas on accessible and inaccessible surfaces (for special chemical exposures in confined areas „3 in 1“ can be applicated as a primer and can be covered with special, chemical resistant, 2-Component coatings; e.g. Branth’s „2K-Anti-Grafic-Lack“)

Corrosion category	C 1				C 2				C 3				C 4				C 5				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
Atmosphere	Inside				Inside Outside				Inside Outside				Inside Outside				Inside Outside				Inside Outside
																					
	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: chemical plants, swimming pools Outside: industrial and coastal atmosphere with moderate salt load				Inside: buildings with constant condensation Outside: industrial and coastal atmosphere with high salt load				Inside: Buildings with constant, extremely high condensation Outside: buildings in offshore atmosphere

One coat resp. a.d.f.t. of 80µm!

In order to achieve the expected lifetime in the corrosion catagories we recommend listed d.f.t. on iron and steel.
Rough, uneven substrates need if necessay a thicker layer.
With high layers, curing of the „3 in 1“ can take a very long time (the faster the layers follow each other, the massively longer the curing). To achieve faster curing you could use „2-Kompo“, „Rostschutz-Mennige (RMb)“ or „Haftgrund Spezial (HgS)“ as primer and/or intermediate coat instead.
For galvanized steel surfaces we recommend priming with Brantho-Korrux "2 Kompo" (the total layer thickness can then be reduced by one layer).
For special surface needs, other top coats can be used.
For longer-term exposures under water (fresh water, sea water, brackish water, ground soil) we recommend to use only "2K-Durasolid".

The information herein contained is based on our present knowledge. It is based on practical experience during many years and is composed carefully. The technincal information is average, and values do not impose any liability. As the application of this mateial in any individual case is beyond our control we cannot be held liable. This informaion sheet is a translation of the Germann sheet 10/21.