

# Technical Datasheet

Issue: May 2016

## Product Name

SICURA Nutriflex 20

## 1. Description / Application

Flexo printing inks, curing by free radical mechanism with UV-light, for a wide range of plastic materials and other substrates (lacquered aluminium), **suitable for processing with all in-line types of UV-Flexo label or packaging printing machines.**

These products can be used straight out of the container.

## 2. Product Safety

### Intended Use

Food packaging, pharma, or hygiene: **YES**

### Only for food packaging inks

These inks are only suitable for use on the non-food-contact side of food packaging, provided that they are applied using the relevant Good Manufacturing Practices (a system for ensuring that products are consistently produced and controlled according to quality standards) and according to the guidelines in this Technical Data Sheet.

The printer, converter and the packer/filler each have a responsibility to ensure that the finished - printed - article is fit for the intended purpose(s) and that the ink and coating components do not migrate into the food at levels that exceed legal, regulatory and industry defined requirements.

Please refer to Siegwerk's "Statement of Composition" for further regulatory information.

In case of specific applications, please contact your technical application service.

For further information, please refer to Siegwerk's Customer Guidance: Printing Inks for Food Packaging ("Know How") on <https://www.siegwerk.com/en/our-responsibility/product-responsibility/customer-communications/food-packaging-safety.html> in particular chapter 5. "The printer's selection of ink" has to be observed.

### **SICURA Nutriflex 20 formula comprises no one of the following:**

- **Basic dye complex ("fanal") pigments with high bleeding tendency.**
- **Low molecular weight acrylates with potential to leave undesirable contents of free monomer in the cured printed layer, and with high potential to migrate into food at undesirable levels.**
- **With this advanced design, a high degree of ink-side safety is provided, enabling the converter to produce packaging, which is minimized in sensory impact and migration of concern according to today's standards.**

Note that set-off and migration are dependent on the processing conditions and sufficient barrier properties of the substrate. Particular consideration for these parameters, and for the selection of non-bleeding ink references with resistant pigment, is required in case of demanding areas such as packaging for:

- organoleptically sensitive foodstuffs in general
- liquid or pasty, fatty and/or aqueous or acid food
- pasty or solid fatty food

You will produce a safe packaging material if you observe good printing practices and restrictions as outlined in the technical data mentioned above. In particular, these inks are **not approved for direct contact with food**, separated from it or not by a varnish layer.

Please contact us if you plan to produce microwave- and ovenproof food packaging.

Material combinations are under your own control. You should conduct representative analytical investigations, such as organoleptic and migration testing, to cover each relevant application category. We will identify specific components whose migration should be monitored to assess compliance, and make available such information to those parties specifically involved in the compliance control.

#### Compliance Management

In the manufacture of food packaging, the printer and/or packer/filler have the responsibility to ensure that there is no migration of concern through the substrate and/or via set-off from the printed outer side to the food contact surface in the stack or the reel.

### 3. Properties / Substrates

#### Properties

- suitable for heat sealing
- suitable for lamination
- pasteurization and sterilization (selected pigment range) possible with suitable substrates and 2-comp. primer
- silicon free
- deep- and shock-freeze resistant (contact our technical department for use on paper materials)

Adhesion, resistance to scratching and scuffing, water resistance (wet scratch and wet scuff resistance), heat-sealing resistance, far-reaching resistance against hydrogen peroxide aseptic treatment and excellent resistances to fat, acid or alkaline products, cosmetics, lotions, shampoos, alcohol, cleaning agents and solvents are normally obtained on standard label substrates. Specific substrates after technical evaluation.

#### Adhesion problems

In case of adhesion problems, which cannot be solved by corona pre-treatment, use the primer varnish **85-601856-9** (Nutriflex Primer varnish SF E01).

For surface printing, pre-varnishing with 2-comp. primer **85-601856-9** (Nutriflex Primer varnish SF E01) or a 2-comp. opaque white (see separate TDS) can help. Each one with addition of 4% hardener **71-470074-7** (Nutri ADD Hardener E90). Both 2-comp. systems have a **maximum** pot life of 6 hours, which can vary depending on the ambient air temperature and humidity. It is recommended to first check the compatibility of the used ink-system with the hardener before printing.

#### Special applications

These products are in principle **suitable for Top-Coat thermal papers**. Except for special new paper qualities, the inks of this series are **not suitable for economic thermal papers** due to the darkening of the thermo-sensitive layer.

Principally **suitable for thermal transfer and hot foil stamping**. However, tests with original material under industrial conditions have to be done, since the result depends largely on the quality of the used substrate.

In case of doubt, please contact in time our technical department.

#### 4. Printing and processing instructions

##### Overprinting

If higher gloss, better mechanical resistance and/or improved fastness to packaging contents or moisture are required, over-printing with the UV-flexo varnishing unit of label printing machines or in a conventional flexo printing unit with one of our varnishes (see separate Technical Datasheet "SICURA Nutriflex OPV") is necessary.

##### Printing plates

In principle, photopolymer plates are suitable. However, the suitability has to be examined individually.

##### Anilox rollers

Depending on printing image and substrate e.g. the following or even finer laser-engraved anilox rollers (with doctor blade) can be used:

Application	Screen [l/cm]	Dip volume [cm <sup>3</sup> /m <sup>2</sup> ]
Four-color halftone prints:	360 - 420	2.0 - 4.5
Line images and/or texts:	220 - 280	4.0 - 6.0
Intensive solids:	160 - 180	5.0 - 7.0
Matt varnishes:	120 - 140	5.0 - 7.0
Gold / Silver:	100 - 120	10.0 - 12.0
Overprint varnishes:	120 - 165	8.5 - 10.0

In case of doubt, please contact in time our technical department.

##### Guidelines for use

*Before the print job is started, new materials must be checked for compatibility with the inks of this series or with the planned ink-/overprinting varnish combination, even if their suitability on a comparable type of the same substrate group is proved.*

*The test prints, especially on self-adhesive labels, have to be examined after die-punching (in particular at the edges), for adhesion, resistance to scratching and water (resistance to wet scratching and scuffing), adhesion and scratch resistance after heat-sealing, resistance of the printed ink to the packaging contents and other application-specific requirements.*

*Due to the post-curing process, these properties may change during the first 24 hours after printing. Therefore please make a re-check after one day.*

*Consequently, for every new job in which printing is done on a known material, but with untested ink and printing combinations, the aforementioned tests have to be carried out as well.*

*In case of very extended lightening of the colored inks to pastel shades or gold varnishes, in particular if pigments with different resistance to temperature are present in the mixture, irreversible color changes may happen due to heat-sealing or other thermal stress starting from 120 °C. Correspondent tests under original conditions are indispensable.*

*At heat-seal temperatures or other thermal stress over 200 °C - as well as following immersion in a hydrogen peroxide aseptic bath - certain combinations of light shades and/or of varnishes of this series with foreign primers, white inks and/or overprinting varnishes may cause **irreversible browning** due to interactions with foreign elements. Correspondent tests under original conditions are indispensable.*

Stir up well each ink or varnish before use. Mainly whites, colours containing white, varnishes, lacquers, mat varnishes as well as gold and silver inks show sedimentation of essential components.

Do not handle products without having consulted the corresponding safety data sheets. We supply them together with the first shipment.

## Cleaning

The inks can be removed from rollers and tools by using methoxypropanol. Reactive UV thinners are not suitable for cleaning.

## 5. Shelf life

The inks of this series have under normal conditions a shelf life of **at least 12 months**. Within this period the products are usable in conformity with the indications of this data sheet.

### **Exceptions:**

Items marked with \* in the product list have a **shelf life of only 9 months!**

Normal conditions mean:

- Storage in firmly closed, not yet tapped containers.
- Temperatures not exceeding 20°C for weeks or 25°C for days.
- Do not expose open containers to direct sunlight or strong light sources.

**6. Product list**

<b>Product name</b>	<b>Product number</b>	<b>Light Resistance on woolscale WS (DIN ISO 12040)</b>	<b>Alkali Resistance (DIN ISO 2836)</b>	<b>Ethanol Resistance (DIN ISO 2836)</b>	<b>Solvent Resistance (DIN ISO 2836)</b>
Nutriflex 20 Process Yellow E01	<b>80-300518-0</b>	4	No	Yes	Yes
Nutriflex 20 Process Magenta C E01	<b>80-801004-5</b>	5	Yes	No	No
Nutriflex 20 Process Cyan C E01	<b>80-110885-3</b>	7-8	Yes	No	Yes
Nutriflex 20 Black intensive E01 *	<b>81-900368-2</b>	7	Yes	No	Yes
Nutriflex 20 Transparent white E01	<b>81-000235-2</b>		Yes	Yes	Yes
Nutriflex 20 Greenish Yellow E01	<b>81-300523-8</b>	6-7	Yes	Yes	No
Nutriflex 20 Orange 021C E01	<b>81-700218-1</b>	4	Yes	Yes	No
Nutriflex 20 Warm Red C E01	<b>81-801017-5</b>	4	Yes	Yes	No
Nutriflex 20 Warm Red light resist. E01	<b>81-801016-7</b>	6-7	Yes	Yes	Yes
Nutriflex 20 Rubine Red E01	<b>81-801073-8</b>	4	Yes	No	No
Nutriflex 20 Purple C E01	<b>81-100271-6</b>	4-5	Yes	Yes	Yes
Nutriflex 20 Violet C E01	<b>81-100270-8</b>	6-7	Yes	Yes	Yes
Nutriflex 20 Blue 072 C E01 *	<b>81-110896-8</b>	6-7	Yes	No	Yes
Nutriflex 20 Reflex Blue C E01 *	<b>81-110895-0</b>	6-7	Yes	No	Yes
Nutriflex 20 Green C E01	<b>81-500360-3</b>	8	Yes	Yes	Yes
Nutriflex 20 Black C E01 *	<b>81-900397-1</b>	7	Yes	No	Yes
Nutriflex 20 Blending varnish E01	<b>81-000240-2</b>		Yes	Yes	Yes

\* = Items with a shelf life of only 9 months.

**7. Additive list**

Product name	Product code	Requested addition quantity	Silicon containing	Comments
<b>Reactive diluents</b>				
Nutri-ADD Reactive diluent E10	<b>85-601859-3</b>	max. 5%	No	Decreases the viscosity
<b>Initiators</b>				
Nutri-ADD Initiator E20	<b>85-601860-1</b>	max. 5%	No	Increases the reactivity of dark ink shades.
Nutri-ADD Photoinitiator E21	<b>81-470149-6</b>	max. 5%	No	Increases the reactivity of light ink shades.
<b>Various</b>				
Nutri-ADD Defoamer E30	<b>81-470150-4</b>	max. 0.2%	No	Deaerating and defoaming effect.
Nutri-ADD Scratch paste E15	<b>71-470086-1</b>	max. 5%	Yes	Increases scuff resistance of OPV's. Overprinting, TT-printability and hotfoilstamping <b>not</b> possible anymore.
Nutri ADD Hardener E 90 *	<b>71-470074-7</b>	max. 4%	No	* See notes below.
Nutri-ADD Matt paste E01	<b>81-470300-5</b>	10 - 30%	No	Matting effect. Needs additional photoinitiator from addition of >10%

\* To achieve a better adhesion of the overprinted inks, they can optionally be used with addition of 4% hardener **71-470074-7**(Nutri ADD Hardener E 90). This 2-comp. system has a maximum pot life of 6 hours, which can vary depending on the ambient air temperature and humidity. It is recommended to first check the compatibility of the used ink-system with the hardener before printing.

The addition of above-mentioned additives to an existing ink system influences curing and migration behaviour. Be aware of possible negative effects on migration level.

Because of the differences in materials for printing, processing conditions and test criteria this Technical Data Sheet can only be of an advisory nature. Our data reflect the latest state of our knowledge and are based on the characteristics established in the laboratory and on practical experience. Your own tests with the original materials under the respective conditions are indispensable. We disclaim any liability for applications for which this ink series is not foreseen.

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